INFO SMARTS: DEVELOPING THE INFORMATION LITERACY YOU NEED FOR EFFECTIVE AND ETHICAL PARTICIPATION IN INFORMATION ECOSYSTEMS



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Santa Barbara City College

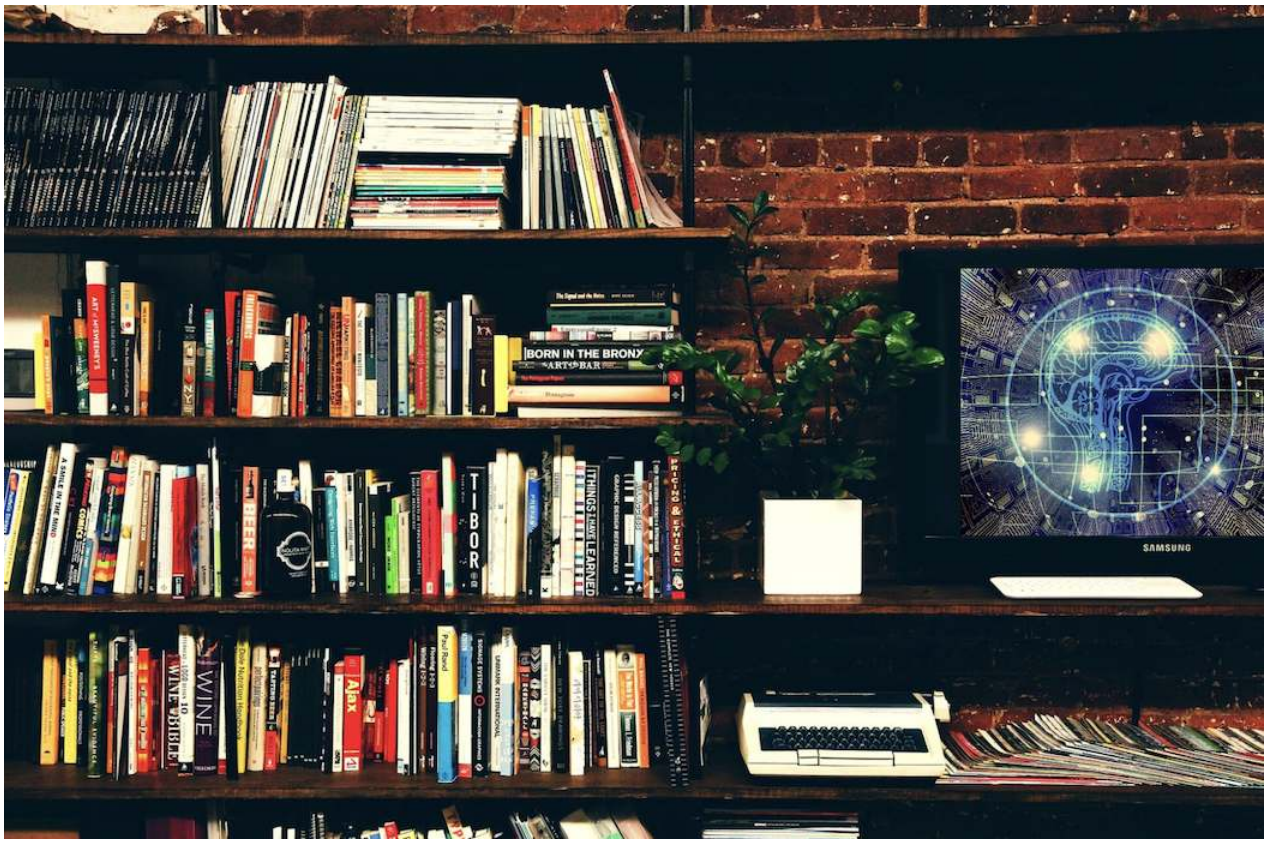
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Info Smarts

Developing the Information Literacy You Need for Effective and Ethical Participation in Information Ecosystems



Ellen Carey

Santa Barbara City College

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Butler, W.D., Sargent, A., & Smith, K. (2021). *Introduction to college research*. Pressbooks.

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I also thank my library faculty colleagues at Santa Barbara City College, who provided feedback on the broad content areas and their arrangement.

Ellen Carey
July 2025

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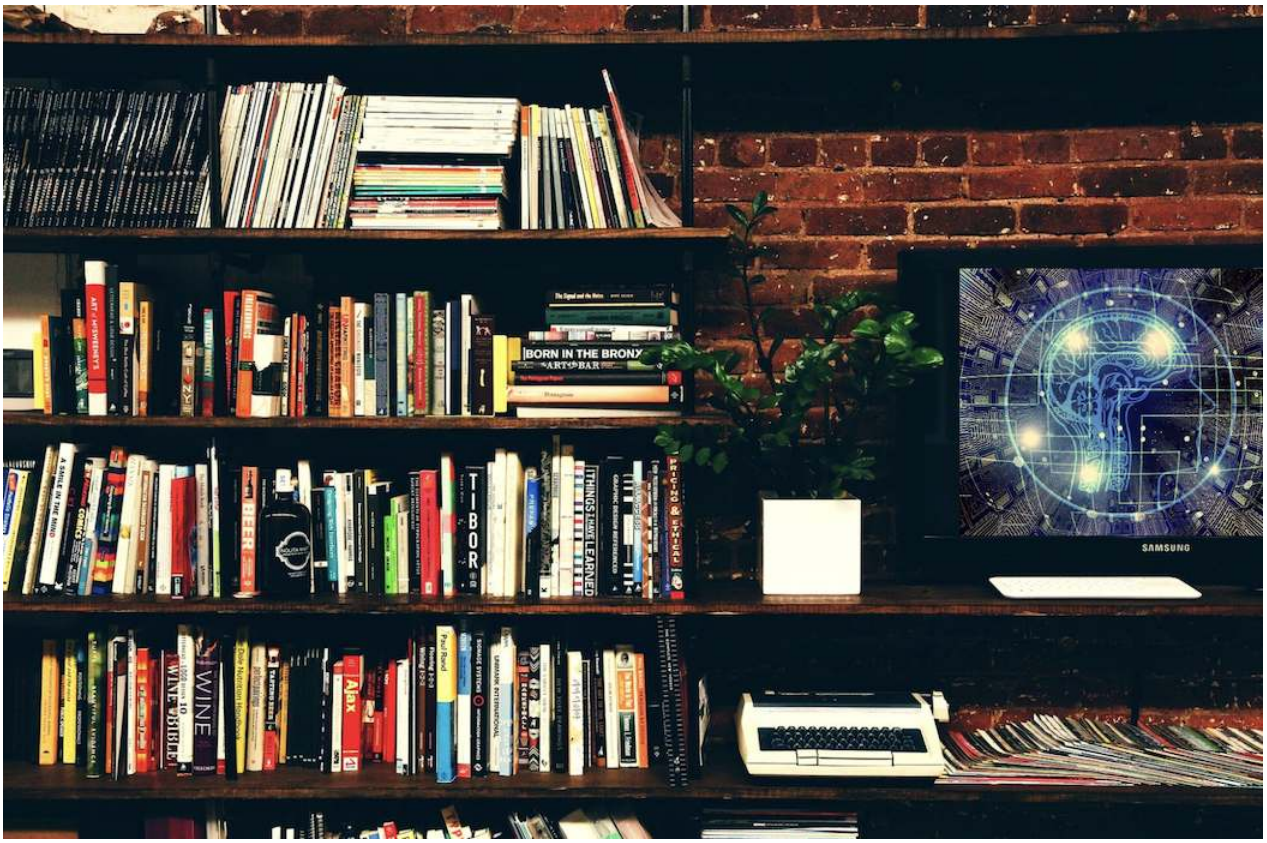
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Detailed Licensing

About This Book



This Book is a Work in Progress!

This book is not yet complete and is not intended for use as a whole in this form! We will continue to update, add to, and edit its content before publishing a more complete 2nd edition for use in college courses. In the meantime, feel free to use, adapt, and share the content we have included so far.

Overview

The information landscapes we study, work, and play within are constantly changing, requiring us to adapt to new technologies and ways of creating and interacting with information. This book critically examines key concepts in how information ecosystems function and how we can engage our critical thinking to develop the information literacy we need to engage with all types of information more effectively, both in school and in our work and personal lives. The goal of this book is to prepare you to cultivate critical thinking about information and apply information literacy in all areas of your life as a lifelong practice.

Key Topics and Concepts

This book critically addresses the following topics and concepts, offering both a foundation for critical thinking about information and practical tools for success in school research assignments.

- Information Literacy
- Information Ecosystems, Algorithms, and Organization
- Misinformation, Disinformation, and Fact-Checking
- Information Social Justice
- Information Value and Ethics
- Research as a Process of Inquiry
- Information Sources and Their Creation Processes

- Strategic Searching
- Authority and Credibility
- Scholarly Communication and Knowledge-Building

Key Questions

Throughout the book, we will explore a number of critical and timely questions, including:

- Are Google search results really an unbiased presentation of the best available information on a research question?
- How do algorithms and “engagement” on digital platforms influence the way that we perceive information, and each other?
- In a world of misinformation and disinformation, how do we determine truth? How do we know which sources of information to trust?
- When we find a source of information, how can we verify that it is a reliable and effective piece of evidence for our research?
- Why might it be valuable to include different information types and formats in our research? How do we recognize when a resource has bias? Whose voices are included in our research, and whose are left out?
- Why is choosing a topic so often the hardest part of the research process? What are some strategies for developing a meaningful research topic?
- How do we break a research topic into an effective combination of keywords and phrases for searching? How can we avoid confirmation bias when choosing our keywords?
- How do we search and find information through our college library? How are the materials organized in the library?
- What are library “databases” and how are they different from Google? What kinds of information can be found in these databases, and what are the advantages of using them?
- How has Web search become embedded in our daily lives, and what conveniences and concerns does this present? How can we conduct academic research effectively on the Web?
- When we engage in the scholarly conversation through research, how can we respect intellectual property and academic integrity by using sources ethically?
- How can we give credit to the work of others by citing our sources in MLA, APA, or another style?

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CHAPTER OVERVIEW

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1.2: What is Information Literacy and Why Does it Matter?

1.2.1: Critical Thinking

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1.4: Questions for Critical Thinking

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1.1: Chapter Overview



This chapter will...

- Define information literacy
- Examine information literacy's relationship to other types of literacy and critical thinking
- Describe the importance of information literacy

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1.2: What is Information Literacy and Why Does it Matter?



Why This Book?

The key to navigating the world of information and misinformation, and succeeding in college research, is to develop and hone your information literacy skills. These skills will prepare you to find and use information not only for college, but also in the workplace and your personal life. Having strong information literacy skills will make you a more thoughtful and effective consumer and creator of information, and will increase your awareness of and resilience toward the psychological, physiological, and sociological effects of living in a society overloaded with information.

> "Recent events underscore the threat that digital illiteracy poses to public health and democracy" (Breakstone et al.).

What is Information Literacy?

Some of the skills and abilities that fall under the umbrella of information literacy include:



- critical thinking
- research skills
- media literacy
- visual literacy
- computer literacy
- digital literacy
- AI literacy
- science literacy
- news literacy
- algorithmic literacy
- ethical reasoning
- cultural literacy
- civic engagement

We will address some of these components of information literacy directly in this chapter and throughout this book.

Information literacy acknowledges that students are not just **passive consumers** of knowledge, but that you are **active creators** and participants in the information environment. It is a set of skills that aims to help students navigate this landscape, "not just for

college courses but **beyond**—in the workplace, in their personal lives, as lifelong learners, and as news consumers, creators, and voters" (Head et al. 12; emphasis added).

You might also hear this idea referred to as "information competency," which is an equivalent term.

Definition: Information literacy

"Information literacy is an integrated set of skills, knowledge, practices, and dispositions that prepares students to discover, interpret, and create information ethically while gaining a critical understanding of how information systems interact to produce and circulate news, information, and knowledge" (Head et al. 8).

National & International Perspectives

In the U.S., the Obama administration made information literacy a priority. The 2009 "Presidential Proclamation on National Information Literacy Awareness Month" stated that:

Over the past decade, we have seen a crisis of authenticity emerge. We now live in a world where anyone can publish an opinion or perspective, whether true or not, and have that opinion amplified within the information marketplace. At the same time, Americans have unprecedented access to the diverse and independent sources of information, as well as institutions such as libraries and universities, that can help separate truth from fiction and signal from noise….The ability to seek, find, and decipher information can be applied to countless life decisions, whether financial, medical, educational, or technical.

Internationally, the Alexandria Proclamation of 2005 defined the term as a human rights issue: "Information Literacy lies at the core of lifelong learning. It empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals. It is a basic human right in a digital world and promotes social inclusion in all nations."



"Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" ("Framework for Information Literacy for Higher Education").

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1.2.1: Critical Thinking



Critical thinking is one of those things that most people are in favor of – especially in colleges and universities. But people in different fields and traditions have varying definitions, and it is not obvious that all are in favor of the same thing. How should we decide on a definition?

The American Association of Colleges and Universities came up with a definition of critical thinking that we will use as a starting place:

Definition: Critical thinking

"Critical Thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas and artifacts before accepting or formulating an opinion or conclusion" (AAC&U, 2017)

Here are a few things to notice about this definition as we begin exploring this topic:

- Critical thinking is characterized as a habit of mind. This book will introduce you to some component skills of this habit. Your routine and daily decisions will determine whether you develop (or deepen) the habit, or not.
- Readers of this book are likely to vary with respect to critical thinking habits. Some readers will already have strong critical thinking skills. For them, our discussion about critical thinking will offer ways to think about and double-check their current habits. Others will begin reading believing they are already critical thinkers — already skilled in the habits of thoughtfulness — but will be exposed to vocabulary and ideas that challenge that pre-existing belief.
- The basic value judgment involved in critical thinking, as this field has grown out of the European philosophical tradition, is this: when issues are important, reflective opinions are more valuable than opinions of the moment. When an issue is important, it is worthwhile to have the skills available to think deeply and well. Those are the skills we will be focusing on in this book.

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1.2.2: Media Literacy

What Is Media Literacy?

Media literacy falls under the umbrella of information literacy. The National Association for Media Literacy Education (NAMLE) describes media as "all electronic or digital means and print or artistic visuals used to transmit messages" and defines media literacy as follows (NAMLE).

Definition: Media literacy

"The ability to access, analyze, evaluate, create, and act using all forms of communication...Media literacy empowers people to be critical thinkers and makers, effective communicators, and active citizens" (NAMLE).

Why Is Media Literacy Important?



Sources

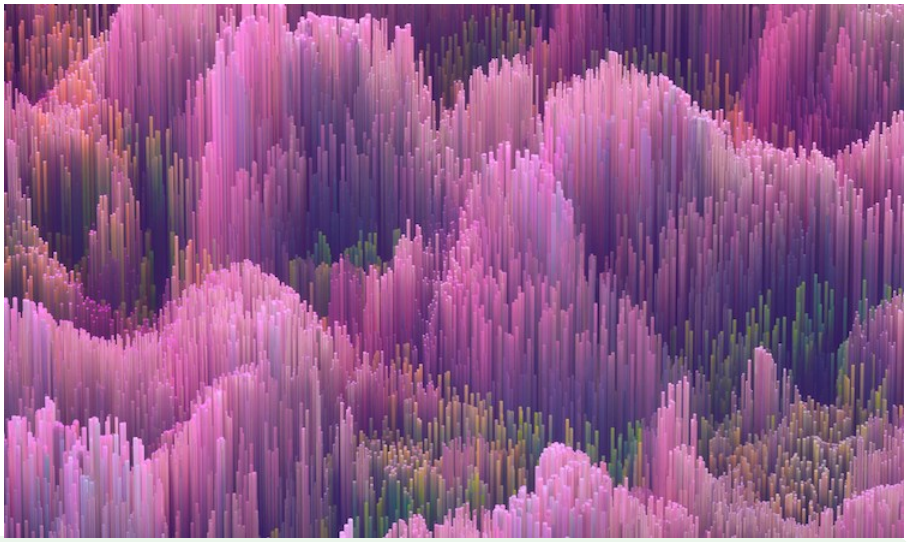
NAMLE. (n.d.). *Media literacy defined*.

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1.2.3: Data Literacy

Data vs. Information

"Data" refers to "factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation" (Merriam-Webster). Data become information when they are analyzed or interpreted.



Data Literacy

Data literacy is important to making sense of raw data. According to Education Development Center (EDC)'s Oceans of Data Institute, "data literacy" can be defined as follows.

Definition: Data literacy

"The data literate individual understands, explains and documents the utility and limitations of data by becoming a critical consumer of data, controlling [their] personal data trail, finding meaning and taking action based on data. [They] can identify, collect, evaluate, analyze, interpret, present and protect data" (EDC, 2016).

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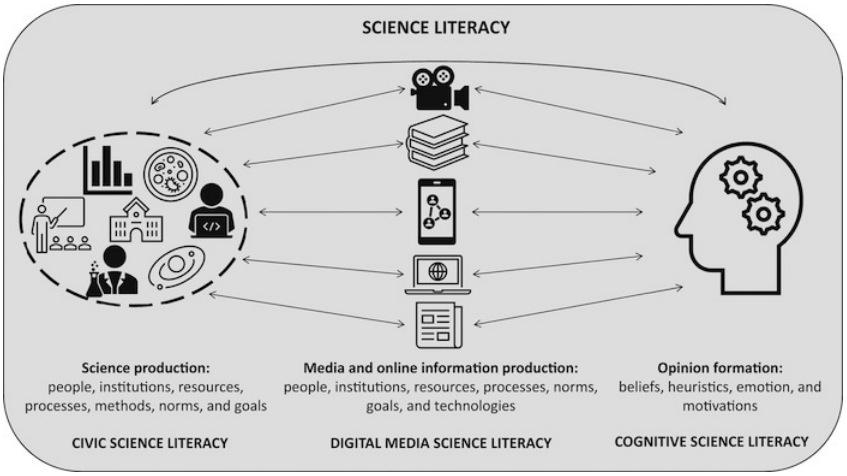
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1.2.4: Science Literacy

Science Literacy

Science literacy refers to having a basic understanding of science for use in everyday decision making. According to Emily L. Howell and Dominique Brossard, science literacy includes three components:

- understanding how science is produced and how science relates to society
- understanding how science information appears and moves through media systems
- understanding how people interpret science information (Howell & Brossard, 2021).



Science Literature

Science literature includes everything from books to technical reports, to scholarly articles in specialized journals, to popular articles. Primary sources are especially important because they are written by scientists who have conducted the research they are reporting on. Secondary sources draw from this primary research and include articles published in magazines such as *Scientific American* or newspapers such as the *New York Times*. Popular articles like these are meant to make the complex and/or technical language of science understandable for non-scientists.

Sources

Howell, E.L. & Brossard, D. (2021) (Mis)informed about what? What it means to be a science-literate citizen in a digital world, *Proceedings of the National Academy of Sciences (PNAS)*, *118*(15), e1912436117. https://doi.org/10.1073/pnas.1912436117

Image: *A representation of the dimensions of literacy necessary for science literacy, across the schematic lifecycle of science information in society.* by Howell & Brossard.

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1.2.5: AI Literacy

What Is AI Literacy?

AI literacy includes being about to think critically about artificial intelligence as well as to use it ethically and effectively.

Definition: AI literacy

"The knowledge and skills that enable people to critically understand, evaluate, and use AI systems and tools to safely and effectively participate in an increasingly digital world" (Mills et al. 2024).

Why Is AI Literacy Important?



Sources

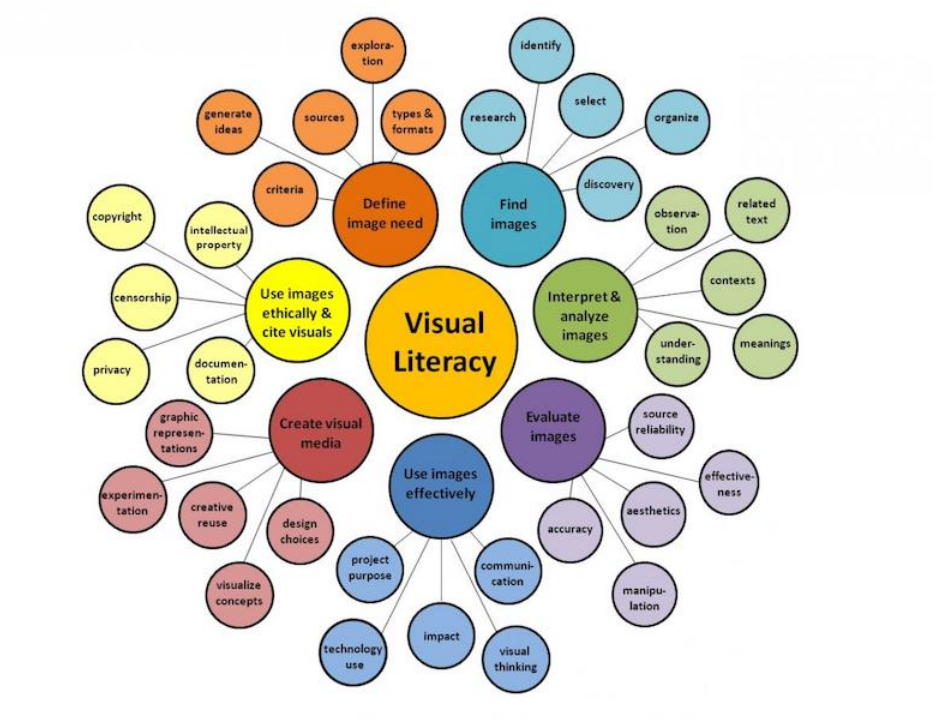
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1.2.6: Visual Literacy

Images As Information

Images communicate differently than written or spoken language, but often convey a large amount of information in a compact package. They are a form of nonverbal communication. After all, “a picture is worth a thousand words,” right?



One of the ways sighted people begin learning about the world as infants is through our visual experience, well before we have the ability to learn to read text. For most of us this continues to be a primary way we encounter the world, and how we make sense of it. In fact, visual literacy skills can be extremely helpful for people who have difficulty processing written text. Visual literacy is essential for participating in the current information landscape.

What does visual literacy mean? The 2011 Association of College and Research Libraries (ACRL) definition of visual literacy essentially still holds true:

Definition: visual literacy

"A set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. Visual literacy skills equip a learner to understand and analyze the contextual, cultural, ethical, aesthetic, intellectual, and technical components involved in the production and use of visual materials. A visually literate individual is both a critical consumer of visual media and a competent contributor to a body of shared knowledge and culture." (ACRL, 2011).

Sources

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Image: Visual Literacy Array based on ACRL’s Visual Literacy Standards by D. Hattwig, K. Bussert, and A. Medaille Copyright 2013 The Johns Hopkins University Press. This image first appeared in PORTAL: LIBRARIES AND THE ACADEMY, Volume 13, Issue 1, January 2013, p. 75. (Reprinted in Brown, et al.)

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1.3: How Librarians Support Information Literacy Development



People with common interests or concerns create formal or informal information communities, made up of people with different levels of expertise. Developing expertise is a process and learners can be assisted in that process by those who are more expert in the field, and those with related expertise, such as a librarians.

You may have seen negative stereotypes of librarians in the popular culture of the United States -- think of an image of an old, cranky woman with her hair in a bun peering over her glasses and shushing people while pushing around a cart of dusty, old books. In reality, most librarians stay up-to-date with the rapidly-changing world of information and are fierce advocates for equitable access to information and strong supporters of learning. Contrary to the stereotype, many libraries themselves are vibrant, active places, full of people engaging in conversation, activities, learning, and building knowledge.

Librarians have Masters degrees in Information Science and are experts on the information "ecosystem" and how to navigate it. They can help you think critically about concepts related to the production, evaluation, and ethical use of all kinds of information, and the creation of knowledge. They can help you develop research plans and learn better search strategies for using library resources, the internet, and other sources of information for class assignments as well as for life in general.

Seek out the librarians at your school for support in applying the concepts covered in this book!

Image: Cover illustration from This Book is Overdue: How Librarians and Cybrarians Can Save Us All, by Marilyn Johnson.

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1.4: Questions for Critical Thinking



Questions for Critical Thinking About Information Literacy

- How do you feel about your ability to find, evaluate, and use information in everyday life? What do you want to learn to do better?
- What is the difference between data, information, and knowledge? Does something have to be factual to count as information?
- What are different ways that information is conveyed?
- How have you been a consumer of information? How have you evaluated the information you encounter?
- How have you been a creator of information?
- How do you think improving your information literacy and critical thinking abilities could be valuable to you in the future, personally and professionally?

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CHAPTER OVERVIEW

2: Information Ecosystems, Algorithms, and Organization

2.1: Chapter Overview
2.2: Information Environments, Ecosystems, and Landscapes
2.3: Algorithms and The Attention Economy
2.3.1: What are Algorithms?
2.3.2: The Influence of Algorithms
2.3.3: Algorithmic Bias
2.3.4: The Attention Economy
2.3.5: Algorithms and Polarization
2.4: Epistemic Bubbles, Filter Bubbles, and Echo Chambers
2.5: Organization of Information
2.5.1: Is There a Right Way To Organize Information?
2.5.2: How Libraries Organize Information
2.5.3: Organizing Your Own Information
2.6: Questions for Critical Thinking

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2.1: Chapter Overview



This chapter will...

- Identify the elements of information landscapes and ecosystems
- Describe algorithms and their relationship to filter bubbles, epistemic bubbles, and echo chambers
- Identify key concerns surrounding algorithmic bias
- Examine the psychological, physiological, and sociological effects of algorithms, the attention economy, and digital polarization
- Introduce formal and informal systems for organization of and access to information

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2.2: Information Environments, Ecosystems, and Landscapes



The Information Environment

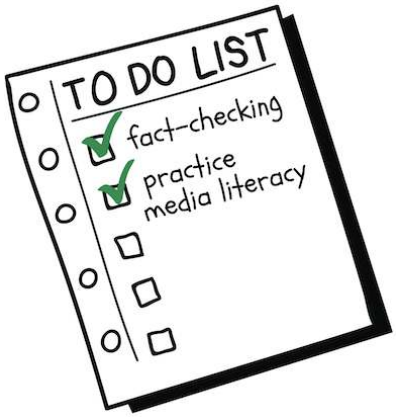
The physical world is often used as an analogy for the world of information. While climate scientists and other experts study our planet's physical environment, experts in information sciences study information environments.

The International Panel on the Information Environment (IPIE) defines **information environment** as "the aggregate of the physical, social, and digital surroundings that influence how individuals, organizations, or countries communicate, interact, and process information" (2024, p. 7). Some topics related to the information environment include: "the news, social media, digital platforms, recommendation algorithms, misinformation, hate speech, media or news literacy, fact-checking, etc." (International Panel on the Information Environment, 2024, p. 8).

A 2024 IPIE survey of experts researching elements of the information found that most of them (63%) expect the global information environment to get worse (International Panel, 2024, p.3). While two thirds of the researchers "are hopeful that generative AI will improve content detection, facilitate journalism, improve cross-cultural and cross-modal communication, and increase the personalization and persuasiveness of reliable information," more than half think AI will also negatively impact the information environment. (International Panel, 2024, p.3).

How Can We Create A Healthy Information Environment?

According to the experts who responded to IPIE's survey, important components of a healthy information environment include availability of accurate information, diverse voices, diversity of media ownership, and absence of false and/or hateful content (International Panel, 2024, p. 13).



In addition to measures such as labeling of content that is false, from an untrustworthy source, or created by AI, more than half of the experts surveyed think that improving individuals' media literacy and fact-checking will improve the information environment (International Panel, 2024, p. 14, emphasis added).

Later in this chapter we will cover specific strategies for fact-checking and improving media literacy.

Information Ecosystems

The overall global information environment includes multiple, sometimes overlapping **information ecosystems**. An information ecosystem is a complex system made up of people, tools, media, practices, and technologies that create, share, and use information. It includes social relationships, communication networks, and shared ideas that allow information to flow and be understood. These ecosystems can be small, like a local community or a college campus, or large, like a national media network. They shape how people access and make sense of information, and are influenced by broader systems like politics, economics, education, and technology. Examining an information ecosystem includes considering information needs, social trust, dynamics of access to information, and the impact of information. (Wanless, Lai, & Hicks, 2025; Mansell et al, 2025; Internews, 2015).

Healthy Information Ecosystems

Healthy information ecosystems are balanced, flexible, and able to adapt to change. They support diverse voices and sources of information. They are able to ensure the accuracy and origin of information, as well as the security of information, because "when information that cannot be verified floods the system, or poor digital security practices enable hacking and impersonation, the

integrity of information becomes suspect" (Radsch, 2023). Healthy information ecosystems are characterized by transparency, which builds trust.

"As generative AI promises to exponentially increase the amount of content created, the ability to detect and authenticate provenance will become increasingly important even as it becomes drastically more difficult." (Radsch, 2023).

Information Landscapes

An **information landscape** is one component of an information ecosystem. It includes "the physical and institutional infrastructure that supports information production and flow (e.g. media outlets, government, private industry, and civil society)" (Internews, 2015). In other words, an information landscape includes the types of information sources available and the structures and systems that allow them to be created, published, shared, and used. In academia, "each discipline has its own information landscape with established journals, publishers, and ways of engaging in scholarly communication" (Information landscapes).

Information Pollution

Information landscapes, ecosystems, and environments can produce both accurate and inaccurate information. **Information pollution** and **truth decay** are widespread problems in our current information environment. We'll explore these issues -- and what we can do about them -- in Chapter 3.

In the rest of this chapter, we'll examine how algorithms shape our information world, and different ways of organizing information.

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SECTION OVERVIEW

2.3: Algorithms and The Attention Economy

2.3.1: What are Algorithms?

2.3.2: The Influence of Algorithms

2.3.3: Algorithmic Bias

2.3.4: The Attention Economy

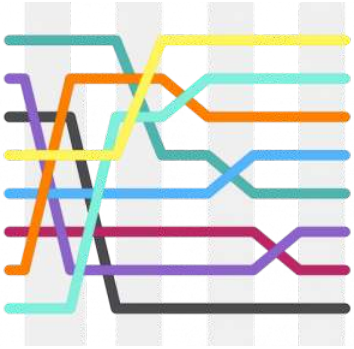
2.3.5: Algorithms and Polarization

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2.3.1: What are Algorithms?

Overview

> "Everyone who has accessed the internet has experienced the personalizing actions of algorithms, whether they realize it or not. These invisible lines of code can track our interactions, trying to game our consumer habits and political leanings to determine what ads, news stories and information we see….As tracking practices have become more common and advanced, it has become urgent to understand how these computer programs work and have widespread impact. How do students understand the hidden filters that influence what they see and learn, and shape what they think and who they are?" (Head et al. 13)



Algorithms are step-by-step instructions that computers follow to complete tasks, solve problems, and make automated decisions. They use data to make predictions about people, including their preferences, attributes, and behaviors. Algorithms power nearly everything we see online, including search engines, social media, video games, online dating, and smartphone apps. They are used to shape and filter content on the platforms many of us interact with daily, such as Google, YouTube, Instagram, Netflix, Facebook, Amazon, Twitter, and Spotify. For example, algorithms determine which websites you see first in your Google search results, which posts you see on Facebook, and which videos YouTube "recommends" and autoplays for you.

Data & Algorithms

The following TED Talk [9:44] with computer scientist Jennifer Golbeck provides a clear explanation of how data is collected on social media sites, and how this can be used to create algorithms that predict attributes like political affiliation, intelligence, sexual orientation, relationship strength, and even drug/alcohol usage.



Note: Turn on closed captions with the subtitles button or use the interactive text transcript if you prefer to read.

Sources

Head, Alison J., Barbara Fister, and Margy MacMillan. "Information Literacy in the Age of Algorithms." *Project Information Literacy*, 15 Jan. 2020. Licensed under CC BY-NC-SA 4.0

Image: "Shell Sorting Algorithm Color Bars" by Balu Ertl is licensed under CC BY 4.0

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2.3.2: The Influence of Algorithms



> "We live in an era of ambient information. Amidst the daily flood of digital news, memes, opinion, advertising, and propaganda, there is rising concern about how popular platforms, and the algorithms they increasingly employ, may influence our lives, deepen divisions in society, and foment polarization, extremism, and distrust" (Head et al. 1).

Positive & Negative

As companies, governments, and other organizations continue to collect and analyze massive amounts of our data, the use of algorithms has become pervasive. In fact, many are referring to this period as the "Age of Algorithms" or the "Algorithm Era," and researchers are considering the significant impacts that these tools may have—both positive and negative.

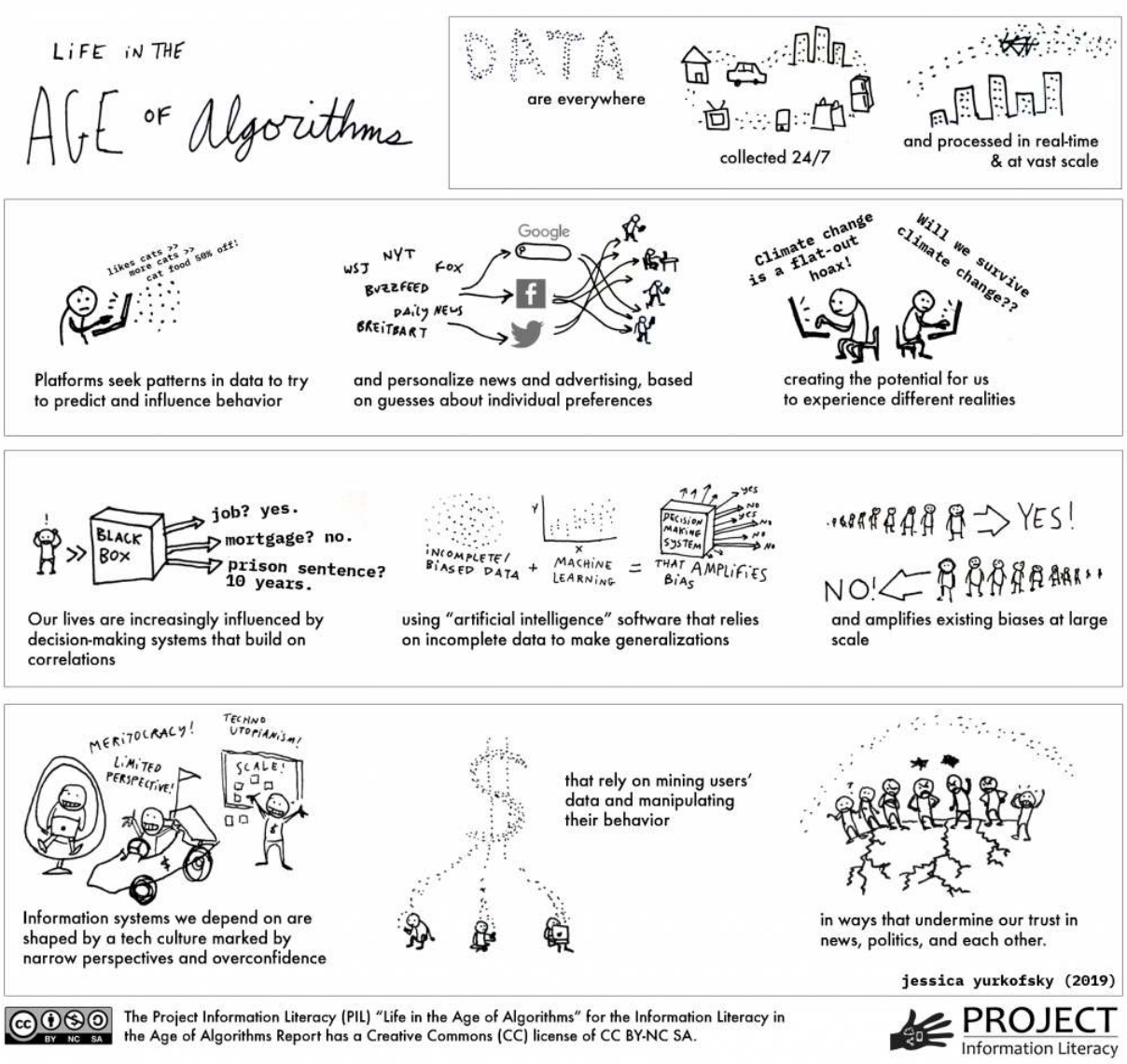
There is no doubt that algorithms can be useful and help to improve our lives. For example, it certainly saves a lot of time and frustration to be able to pull up a map on our phones and instantly determine the fastest way to reach our destination. However, as technology and social media scholar danah boyd has noted, "the same technology can be used to empower people…or harm them. It all depends on who is using the information to what ends" (qtd. in Rainie and Anderson). Eni Mustafaraj, Assistant Professor of Computer Science at Wellesley College, similarly notes that "if we want more people in the world to have access to the total human knowledge accessible on the Internet, we need algorithms. However, what we need to object against are the values driving the companies that own these algorithms" (qtd. in Head et al. 42).

Concerns

What happens when algorithms are used to predict when college students are "cheating" on a test, or to predict who should be hired for a job or who should get a loan, or to decide the type of information we see in our social media newsfeeds, or to calculate credit scores, or even to predict criminal behavior and determine prison sentences? Are Google search results really an unbiased presentation of the best available information on a research question? How do algorithms impact our perception of a research topic, or of our own realities?



One of the most prominent examples in recent history is the Facebook-Cambridge Analytica data scandal, in which the personal profile data of at least 87 million Facebook users was harvested by a political consulting firm working for the Trump campaign. In this case, Cambridge Analytica used algorithms to develop psychographic profiles in order to more effectively direct its messaging and influence voter behavior in the 2016 U.S. Presidential election.



Zoom in or read the text version of the infographic

Sources

Head, Alison J., Barbara Fister, and Margy MacMillan. "Information Literacy in the Age of Algorithms." *Project Information Literacy*, 15 Jan. 2020. Licensed under CC BY-NC-SA 4.0

Image: "Big Data is Watching You" by ev is in the Public Domain, CC0

Image: "Facebook Concept Binary" by geralt on Pixabay

Infographic: "Life in the Age of Algorithms" by Jessica Yurkofsky for Project Information Literacy is licensed under CC BY-NC-SA 4.0

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2.3.3: Algorithmic Bias

> "Although the impulse is to believe in the objectivity of the machine, we need to remember that algorithms were built by people" (Chmielinski, qtd. in Head et al. 38).

Overview & Examples

Because we often assume that algorithms are neutral and objective, they can inaccurately project *greater authority than human expertise*. Thus, the pervasiveness of algorithms—and their incredible potential to influence our society, politics, institutions, and behavior—has been a source of growing concern.

Algorithmic bias is one of those key concerns. This occurs when algorithms reflect the implicit values of the humans involved in their creation or use, systematically "replicating or even amplifying human biases, particularly those affecting protected groups" (Lee et al.). In search engines, for example, algorithmic bias can create search results that reflect racist, sexist, or other social biases, despite the presumed neutrality of the data. Here are just a few examples of algorithmic bias (Lee et al.):

- An algorithm used by judges to predict whether defendants should be imprisoned or released on bail, was found to be biased against African-Americans.
- Amazon had to discontinue using a recruiting algorithm after discovering gender bias: The algorithm was penalizing any resume that contained the word "women's" in the text, because the data was based on resumes historically submitted to Amazon, which were predominantly from white males.
- Princeton University researchers analyzed algorithms and found that they picked up on existing racial and gender biases: European names were perceived as more pleasant than those of African-Americans, and the words "woman" and "girl" were more likely to be associated with the arts instead of science and math.
- Numerous articles have examined the role that YouTube's recommendation algorithm might play in radicalizing viewers.

AI-generated content is also influenced by algorithmic bias. AI image generation software consistently demonstrates biases including, sexism, ageism, homophobia, racism, classism, and urbanism, such as by portraying rich people as white, criminals as people of color, associating women with domestic occupations portraying successful people as white men (UNESCO & IRCAI, 2024; Thomson & Thomas, 2023; Baum & Villasenor, 2024).

Challenging the Algorithms of Oppression

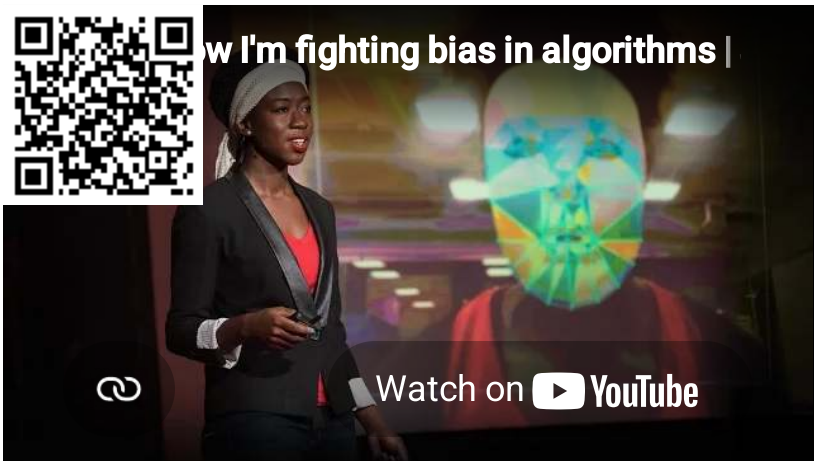
Dr. Safiya U. Noble, Associate Professor at UCLA (Departments of Information Studies and African American Studies) is the author of the book, *Algorithms of Oppression: How Search Engines Reinforce Racism*. She is also Co-Director of the UCLA Center for Critical Internet Inquiry, and co-founder of the Information Ethics & Equity Institute. In the video below [3:43], Dr. Noble discusses her findings about algorithmic bias in Google search results, particularly for women of color.



Note: This video is auto-captioned. Accurate captions are available at the Amara version. Use the text transcript if you prefer to read.

Fighting Bias in Algorithms

Joy Buolamwini, MIT researcher, Rhodes Scholar, Fulbright Fellow, poet of code, and founder of the Algorithmic Justice League, found that the algorithms powering facial recognition software systems were failing to recognize darker-skinned complexions, because they were based on data sets that were largely white and male. Now she's committed to fighting bias in machine learning, which she calls the "coded gaze." In the following video [8:44], she explains her work with facial recognition and also asks important questions about how algorithms influence critical decisions, like: Who gets hired or fired? Do you get that loan? Do you get insurance? Are you admitted into the college you wanted to get into? Do you and I pay the same price for the same product purchased on the same platform?



Note: Turn on closed captions with the subtitles button or use the interactive text transcript if you prefer to read.

Weapons of Math Destruction

Cathy O'Neil has written several books on data science, including *Weapons of Math Destruction*. She was the former Director of the Lede Program in Data Practices at Columbia University Graduate School of Journalism. In the following video [13:11], she explains how algorithms are not fair and objective, and may in fact "automate the status quo" and "codify" sexism and bigotry. She concludes that these secret "black box" algorithms, created by private companies, can hide ugly truths, often with destructive results.



Note: Turn on closed captions with the subtitles button or use the interactive text transcript if you prefer to read.

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2.3.4: The Attention Economy



> "Attention is a resource—a person has only so much of it" (Crawford 11).
>
> "How do you focus your attention? How do you protect it? How do you apply it productively and strategically, and avoid giving it to bad actors or dubious sources? And how do you do that in a world where decisions about what to engage with are made in seconds, not minutes or hours?" (Caulfield)

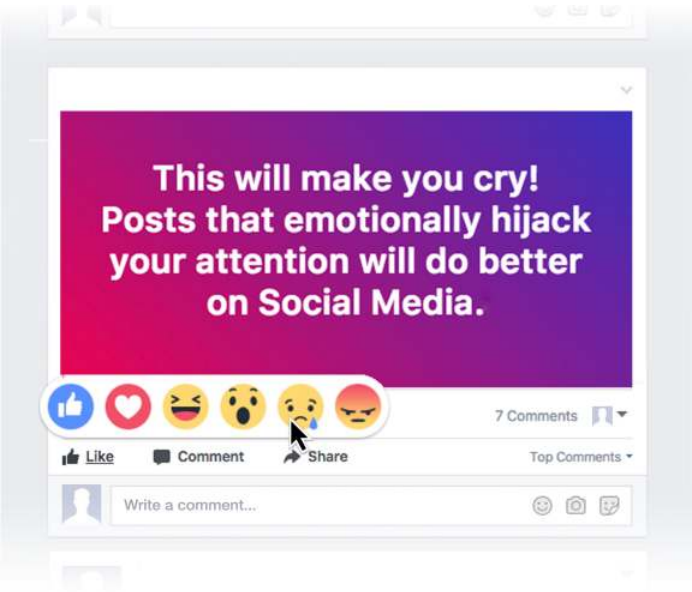
Overview

In a world where information is abundant, where we are overloaded and overwhelmed with information on a daily basis, **attention** is the scarcity (Caulfield).

Algorithms are being used by social media platforms and news organizations to keep our attention focused on their websites. These and other digital platforms have discovered that the best way to keep us engaged with their websites is to promote sensational, divisive, or outrage-inducing content. Emotional responses are what keep us clicking, liking, commenting, and sharing—when trying to capture attention, our anger, fear and disgust are a signal in the noise. "People tend to react more to inputs that land low on the brainstem. Fear and anger produce a lot more engagement and sharing than joy. The result is that the algorithms favor sensational content over substance" (McNamee).

"Engagement"

> "Many of the biggest problems we face in this moment as a society result from decisions being made by the hidden creators of our digital world—the designers, developers, and editors that create and curate the media we consume….They do this by focusing on one over-simplified metric, one that supports advertising as its primary source of revenue. This metric is called engagement, and emphasizing it—above all else—has subtly and steadily changed the way we look at the news, our politics, and each other" (Rose-Stockwell, "This Is How Your Fear and Outrage Are Being Sold for Profit").



Tobias Rose-Stockwell, a writer and technologist focused on ethical design, explains how emotional reactions are strong indicators of engagement, and how divisive content that captures our attention will be shown in our feeds first. We then share our moral judgments with our own followers, creating what he calls "outrage cascades" that dominate our conversations online.

Definition: **en-gage-ment**

noun

1) The metric by which companies evaluate the number of clicks, likes, shares, and comments associated with their content.

2) The currency of the attention economy.

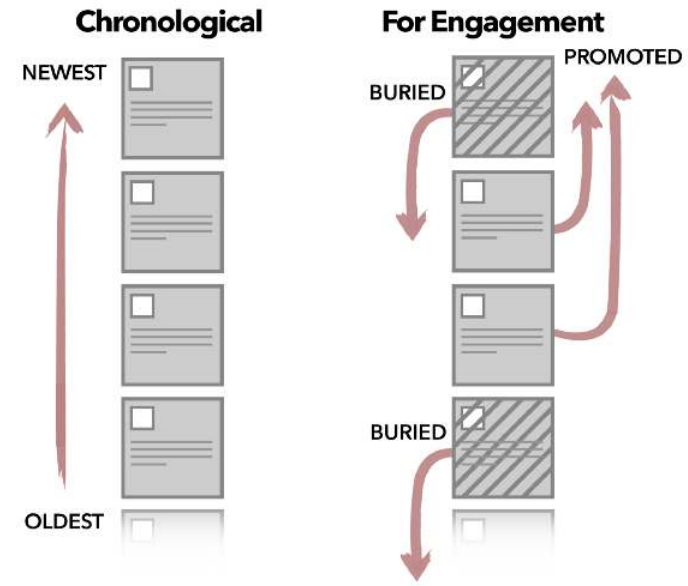
Definition: **affective engagement**

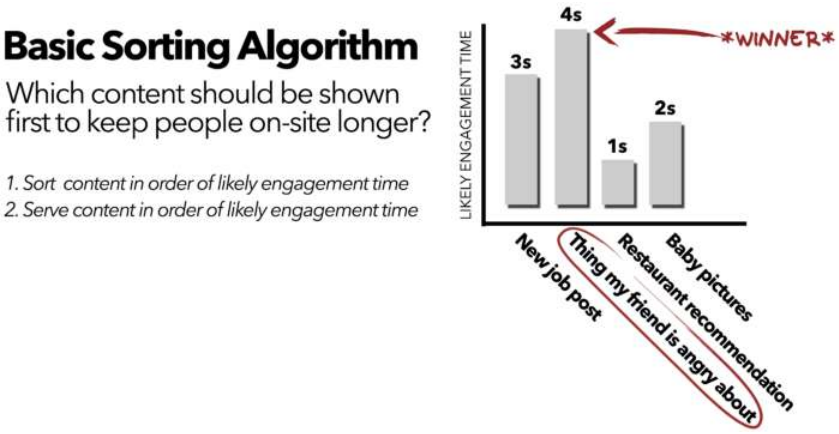
noun

1) An emotional reaction to content based on flashes of positive or negative feeling.

Indeed, in their report on "Information Disorder," researchers Wardle and Derakhshan emphasize that: "Social networks are driven by the sharing of emotional content. The architecture of these sites is designed such that every time a user posts content—and it is liked, commented upon or shared further— their brain releases a tiny hit of dopamine (13).

The most notable example of this idea? Most of our content feeds and timelines are no longer sorted chronologically or by relevance. Instead, the decision about which content to show us is instead based on **how likely we are to engage with it**.





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Image: "Boy Mobile Phone" by Andi_Graf on Pixabay

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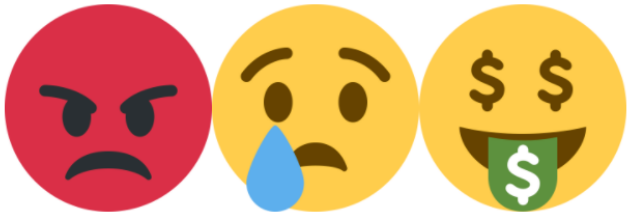
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2.3.5: Algorithms and Polarization

> "At its best the net gives us voices and perspectives we would have never discovered otherwise….at its worst, our net-mediated digital world becomes an endless stream of binary actions—like/don't like, share/pass, agree/disagree, all in an architecture that slowly segments and slips us into our correct market position a click at a time, delivering us a personalized, segregated world. We can't laud the successes of one half of this equation without making a serious attempt to deal with the other side of the story" (Caulfield).

Polarization for Profit



Leading scholars in this field have argued that digital platforms are using algorithms to promote *polarization for profit*. That is, corporations use these algorithms to engage and outrage, to knowingly cause divisiveness and polarization, ultimately for one simple purpose: to sell ads. In other words, these platforms have used "massive surveillance of our behavior, online and off, to generate increasingly accurate, automated predictions of what advertisements we are most susceptible to and what content will keep us clicking, tapping, and scrolling down a bottomless feed" (Tufekci).

For a fascinating explanation of this, watch the following TED Talk [22:47] from Zeynep Tufekci, techno-sociologist and Associate Professor at UNC School of Information and Library Science:



Note: Turn on closed captions with the subtitles button or use the interactive text transcript if you prefer to read.

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2.4: Epistemic Bubbles, Filter Bubbles, and Echo Chambers



The Problem With Personalization

> "I'm more concerned about, like, the larger scale trend of predicting what we want, but then also predicting what we want in ways that push a lot of people towards the same cultural and political endpoint" (Anonymous student qtd. in Head et al. 20).

One significant and widely-discussed feature of the Age of Algorithms has been the "personalization" of information we see online. Algorithms will filter, sort, and personalize information in an attempt to provide content that is relevant to our interests, based on, for example, our search histories and patterns of past online activities. This type of algorithmic personalization may actually distort, manipulate, and amplify our own worldviews by creating so-called "filter bubbles" that limit our exposure to outside perspectives.

> "Using algorithms to deliver content that we are most likely to enjoy, these platforms reinforce our worldviews and allow us to stay encased in our safe, comfortable echo chambers….The fundamental problem is that "filter bubbles" worsen polarization by allowing us to live in our own online echo chambers and leaving us with only opinions that validate, rather than challenge, our own ideas" (Wardle and Derakhshan 49).

Roger McNamee, an early Facebook investor-turned-critic, considers filter bubbles to be "the most important tool used by Facebook and Google to hold user attention" because they lead to an "unending stream of posts that confirm each user's existing beliefs." The result is polarization: "Everyone sees a different version of the internet tailored to create the illusion that everyone else agrees with them." Further, this "continuous reinforcement of existing beliefs tends to entrench those beliefs more deeply, while also making them more extreme and resistant to contrary facts."

Terminology

The terms "filter bubble" and "echo chamber" are often used interchangeably, but some scholars argue that the distinctions between them are important (Nguyen, 2019). Filter bubbles are a particular type of **epistemic bubble** in which algorithms determine which information and/or ideas are omitted from someone's view. More broadly, the term "epistemic bubble" refers to any community in which some information, ideas, or perspectives are omitted. Echo chambers, on the other hand, actively exclude or denigrate outside ideas. Trust is reserved for insiders within the echo chamber, and all outsiders are distrusted (Nguyen, 201).

Epistemic bubble

An ecosystem or community in which insiders are not exposed to outsiders, sometimes accidentally.

Filter bubble

An epistemic bubble created by online algorithms that omit particular information or ideas from insiders' view.

Echo chamber

An ecosystem or community that actively excludes and/or discredits information or ideas from outsiders.

Online Filter Bubbles

For a more detailed explanation of filter bubbles, watch Eli Pariser's TED Talk "Beware Online 'Filter Bubbles'" [8:49], based on his influential 2011 book of the same name:



Note: Turn on closed captions with the subtitles button or use the interactive text transcript if you prefer to read.

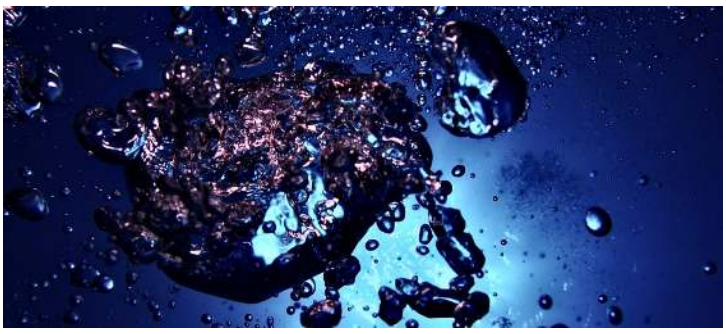
New Research on Filter Bubbles

A 2018 study has called the filter bubble premise into question, finding that polarization could actually increase upon **exposure** to opposing views (Bail et al.). Most notably, this study found that "Republicans who followed a liberal Twitter bot became substantially more conservative" (Bail et al. 9216). This suggests that exposure to opposing viewpoints (which are often presented with a divisive and moralistic tone in order to capture our attention) may actually backfire, and create further polarization by causing negative or defensive reactions.

An interesting 2017 study examined polarization in the U.S. across different age ranges and surprisingly found that "growth in polarization in recent years is **largest** for the demographic groups **least likely to use the internet** and social media"—namely, those **over 75** years old (Boxell et al.; emphasis added). Indeed, in a 2020 study, students expressed concerns about the ability of older adults to navigate systems designed for algorithmic attention, with one student noting that "everyone was so focused on making sure that kids learned that they forgot they also needed to teach grandparents" (Head et al. 26).

This idea might be further understood with the results of two 2017 studies which showed that:

- Users of social media and search engines experience more diversity than non-users
- People who are involved in politics online are "more likely to double-check questionable information they find on the internet and social media, including by searching online for additional sources in ways that will pop filter bubbles" (Wardle and Derakhshan 53).



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2.5: Organization of Information

2.5.1: Is There a Right Way To Organize Information?

2.5.2: How Libraries Organize Information

2.5.3: Organizing Your Own Information

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2.5.1: Is There a Right Way To Organize Information?

People have sorted and organized information in various ways for millennia, long before the use of online algorithms. We can be so accustomed to particular organizational schemes that is can be easy to assume that those schemes are universal.

In the video below, entrepreneur Derek Sivers explores some cultural differences in how we organize information about the world. Do any of these differences surprise youor prompt you to question your assumptions about "correct" ways to organized information?



Note: Turn on closed captions with the subtitles button or view the transcript on the TED website.

Sources

Sivers, D. (2010, Jan 29). *Weird or just different?* uploaded by TED.

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2.5.2: How Libraries Organize Information

Two Systems



There are two main systems that libraries in the United States use to organize materials on the shelves: the **Dewey Decimal Classification** (DDC) and the **Library of Congress Classification** (LCC, sometimes also informally called LC or LOC). Both classification systems provide a systematic way for the libraries to keep their materials organized.

Which classification system a library uses depends on local preferences and practices, but in general: academic and research libraries typically use the Library of Congress Classification, while public libraries tend to use the Dewey Decimal Classification.

Both systems assign each book a **call number** based on the subject of the book. The call number serves as the "address" for where the book belongs on the shelf.

Definition: Call Number

A series of numbers and letters, usually provided on a book's spine label, which designates where the item should be placed on library bookshelves in order to be located with other titles of a similar subject.

While we will introduce you to both library classification systems, please note that your college library probably only uses one of them.

Dewey Decimal Classification System

The Dewey Decimal System is the mostly widely used system in the world, with over 138 countries using it to organize book collections. This sytem first organizes books into ten main classes, which are then divided into divisions and sections. The first three numbers of a Dewey Decimal call number are the class:

- 000 Computer science, information, & general works
- 100 Philosophy & psychology
- 200 Religion
- 300 Social sciences
- 400 Language
- 500 Science
- 600 Technology
- 700 Arts & recreation
- 800 Literature
- 900 History & geography

From there, the 'hundreds' field is broken down into sub-categories, for example:

- 600 Technology
  - 630 Agriculture
    - 636 Animal husbandry

The call number includes three letters at the end which refer to the name of the author(s) or editor(s).

Library of Congress Classification System

The Library of Congress system is more complex, with more specific subject areas. This complexity is useful in academic collections focused on research. Each Library of Congress call number includes a series of letters and numbers that classify a book into subject categories, and then subclasses within that subject category.

The first lines of each call number include 1-2 letters and then numbers. Books are first organized on the shelves by broad subject, identified by the letters. These are organized in alphabetical order, from A to Z. After that, books are organized within their subject category based on a whole number.

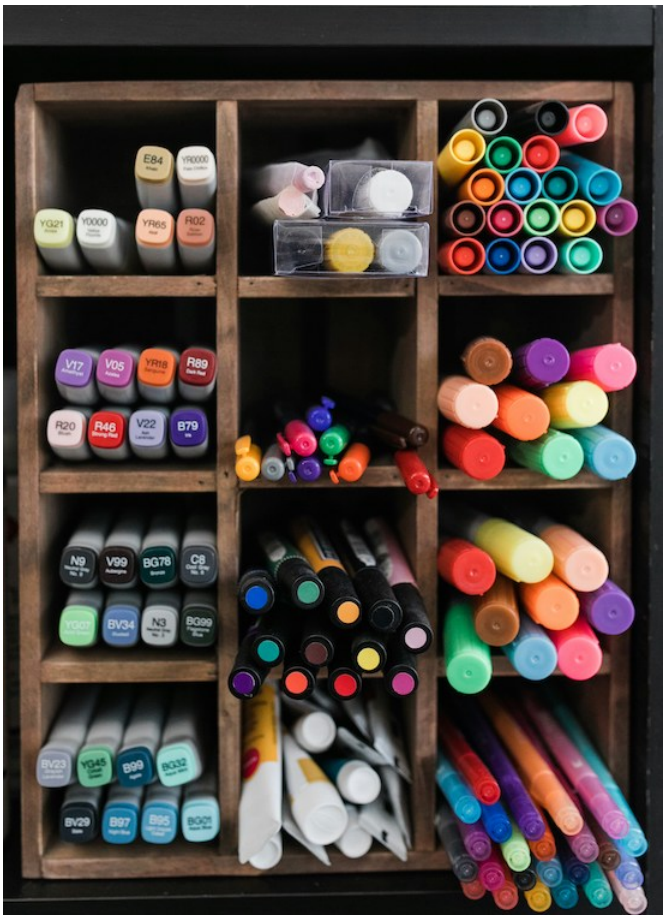
Sources

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2.5.3: Organizing Your Own Information



You may already have your own ways of organizing your belongings, or your materials for school, such as notebooks of different colors for each class.

Having a way to organize the information you find for research assignments can save time. For example, you could save all of the sources you find for you assignment in one folder on your computer or in your Google Drive. Later in this book we will explore more strategies for organizing your research.

Sources

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2.6: Questions for Critical Thinking



Questions for Critical Thinking About Information Ecosystems, Algorithms, and Organization

This chapter introduced the often concerning effects of living in the Age of Algorithms, including algorithmic bias, the attention economy, and digital polarization. These overlapping and intersecting concepts will greatly shape the type of information we see online, and will influence our opinions, behaviors, decisions, and worldviews.

- How can we apply our awareness and understanding of the information environments to take advantage of the benefits they offer **and** use them more effectively?
- How important is it important for us to seek out information that algorithms do not put in front of us? How might doing so affect our opinions and decisions?
- How do you organize your personal items (clothing, books, or equipment for sports, hobbies, or other interests)? How do your organizational schemes reflect your own cultural or social perspectives, priorities, or biases? Would they make sense to someone else?
- What strategies do you have for organizing the information you gather for research assignments or for personal or professional use?

> "Despite the emerging awareness of many of the terrible side effects of these platforms, we are dependent on them. They've become our local news channels, our emergency communication systems, our town squares, and the primary windows into the lives of our loved ones and governments. They are a critical part of how we rally around shared causes and engage with our politics. **How do we reconcile their toxicity with their utility**?" (Rose-Stockwell; emphasis added)

Sources

Rose-Stockwell, Tobias. "How to Design Better Social Media." *Medium*, 13 Apr. 2018. Licensed under CC BY-NC 4.0.

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CHAPTER OVERVIEW

3: Mis/Disnformation, Information Disorder, and Fact-Checking

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3.1: Chapter Overview



This chapter will...

- Analyze different types of misinformation and disinformation, including those generated by AI, and their impacts
- Explore information disorder, information pollution, and information cynicism and identify strategies for addressing them
- Examine fact-checking strategies

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SECTION OVERVIEW

3.2: Misinformation, Disinformation, and Malinformation

3.2.1: Types of Mis/Disinformation

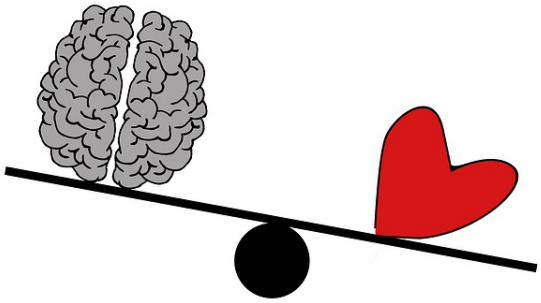
3.2.2: What About AI-Generated Information?

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3.2.1: Types of Mis/Disinformation

Background

In an information environment shaped by pervasive algorithms, the attention economy, engagement, and polarization, how do we determine truth? How do we know which sources of information to trust? These questions are becoming increasingly difficult to answer, and even more so as "disinformation that is designed to provoke an emotional reaction can flourish in these spaces" (Wardle).



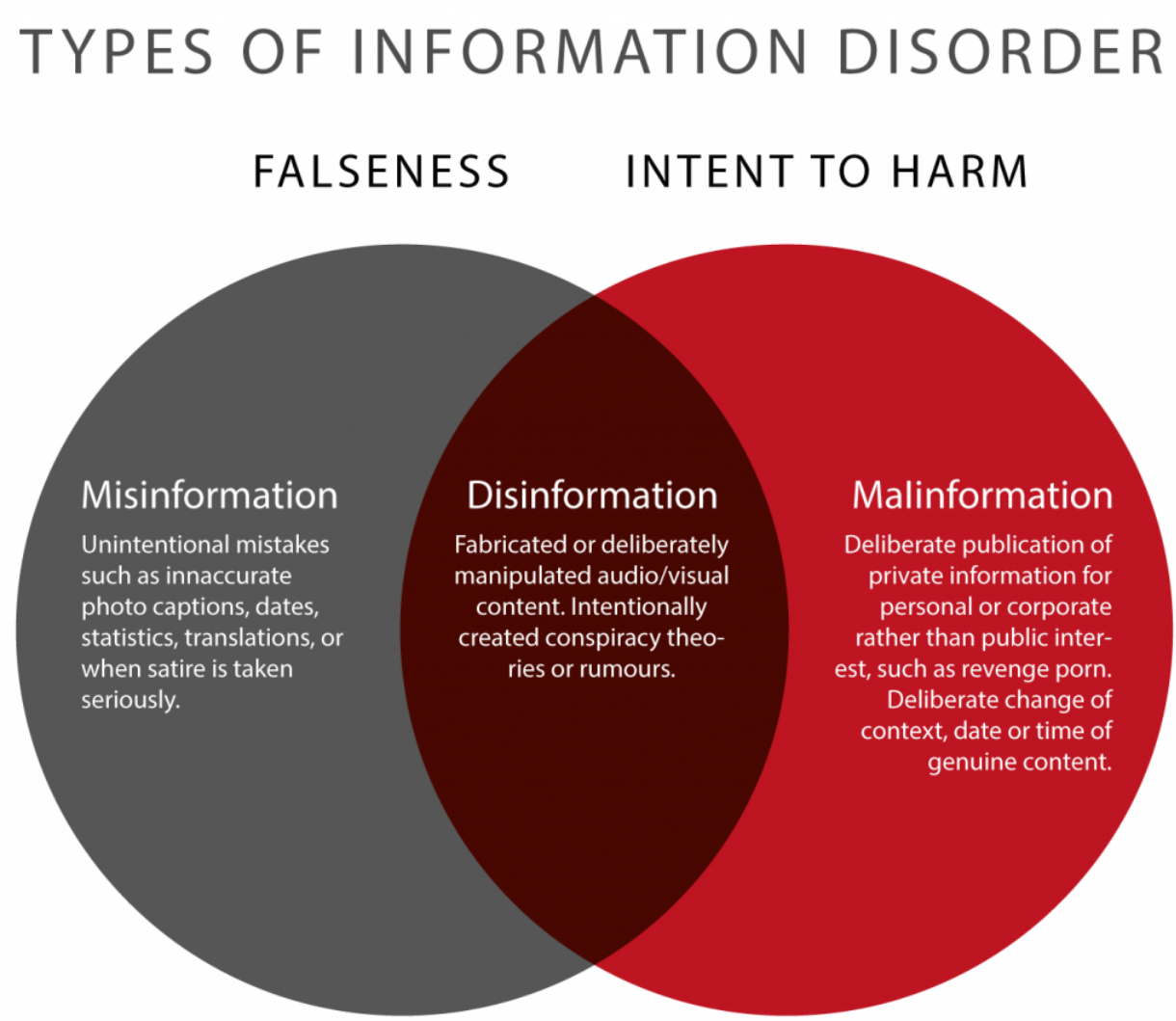
> "We tend to think that we have rational relationships to information, but we don't. **We have emotional relationships to information**, which is why the most effective disinformation draws on our underlying fears and worldviews….We're less likely to be critical of information that reinforces our worldview or taps into our deep-seated emotional responses" (Wardle, qtd. in Vongkiatkajorn; emphasis added).

Types of Misinformation, Disinformation, and Malinformation

Claire Wardle, a world-renowned expert in this field, has used **"information disorder"** as an umbrella term for the various types of false, misleading, manipulated, or deceptive information we have seen flourish in recent years. She also created an **essential glossary for information disorder** (2018), with definitions for related words and phrases. For example, you will find helpful definitions for terms like algorithm, bots, data mining, deepfakes, doxing, sock puppet, and trolling.

The graphic below illustrates the scale and range of intent behind false information, from unintentionally inaccurate to deliberately deceptive and harmful. For a much more detailed explanation of each form of information disorder, from "satire" to "fabricated

content" to "false context," see **First Draft's Essential Guide to Understanding Information Disorder** (Wardle, 2019).



Text version of this Venn diagram

Sources

Image: *3 types of information disorder* graphic by Claire Wardle & Hossein Derakshan is licensed under CC BY-NC-ND 3.0

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3.2.2: What About AI-Generated Information?

What Exactly Do We Mean By "AI"?



The term "artificial intelligence" or "AI" can refer to many different technologies. When we think of AI today, most of us think of something like ChatGPT, which is a specific type of AI -- called a large language model or LLM -- that generates text. Most generally, AI refers to "computer systems that can perform complex tasks normally done by human-reasoning, decision making, creating, etc." (NASA, 2024).

Definition: Artificial intelligence (AI)

A system that learns how to learn and applies what it has learned to a specific task.

Definition: Generative artificial intelligence (GenAI)

A system that learns to recognize patterns in content used in its training (text, images, data, etc.) and produces content that mimics the source material used in its training.

Definition: Large language model (LLM)

A system that responds to natural language inputs and produces natural-sounding paragraphs of text. LLMs use probability to predict the next word in a sentence.

Despite the terms used to describe it, AI is not actually "intelligent" in that it is not conscious and does not "understand" text or images in the way humans do. Instead, it predicts a plausible response based on its training material.

Can AI Produce Mis/Disinformation?

AI "Hallucinations"

Generative AI tools do not always create accurate information. Though they mimic human-created text or images, they do not fact-check what they create. The term AI hallucination is used to describe AI-generated "information that seems plausible but is actually inaccurate or misleading" (Choi & Mei, 2025). For example, ChatGPT might create citations for sources that do not actually exist. Because AI does not have the consciousness to lie on purpose, AI hallucinations a form of misinformation rather than disinformation. However, humans can use AI to spread disinformation.

Malicious Use of AI

In addition to unintentional AI hallucinations, AI tools make the creation of large amounts of disinformation cheaper for those who want to spread it. As a result, "we're now seeing the real-life impacts by malicious actors, in the form of networks of AI-generated news websites and 'deepfakes' of politicians which attempt to persuade the public" (Williams, 2024).

Learn more about this issue, and about some of the pros and cons of large language models, by watching the video below.



Other Issues Related to AI

AI can also present privacy, ethical, and environmental issues. We will address those concerns in later chapters of this book.

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3.3.4: Information Cynicism

3.3.5: College Students and Cynicism

3.3.6: Information Hygiene and Info-Environmentalism

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3.3.1: Truth, Truth Decay, and Trust

Truth and Trust



A 2020 study from Project Information Literacy confirms that the way information is delivered today—with opinion and propaganda mingled with traditional news sources, and with algorithms highlighting sources based on engagement rather than quality—has left many college students concerned about the trustworthiness of online content. Students reported that it was difficult to know where to place their trust when credible sources are buried by a deluge of poorer-quality content and misinformation. One student noted that "it's not that we're lacking credible information. It's that we're drowning in like a sea of all these different points out there" (Head et al, 2020, p. 20).

> "This is happening at a time when falsehoods proliferate and trust in truth-seeking institutions is being undermined. Even the very existence of truth itself has come into question….People no longer know what to believe or on what grounds we can determine what is true" (Head et al, 2020 pp. 11, 36).

Indeed, in 2016, Oxford Dictionaries selected post-truth as the Word of the Year, defining it as: "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief" (Oxford word of the year, 2016).

Truth Decay

The nonpartisan, nonprofit research organization the RAND Corporation describes as **truth decay** "the diminishing role of facts and analysis in American public life"

and describes its four key characteristics as:

1. Increasing disagreement about facts and analytical interpretations of facts and data
2. A blurring of the line between opinion and fact
3. The increasing relative volume and resulting influence of opinion and personal experience over fact
4. Declining trust in formerly respected sources of facts (RAND, 2018)

The video [3:11] below explains how truth decay happens.



For more in-depth information about truth decay, download the full RAND report, *Truth Decay: An Initial Exploration of the Diminishing Role of Facts and Analysis in American Public Life* for free, or watch the 12-minute Truth Decay video based on the report.

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Image: *Line Mind* by ElisaRiva on Pixabay

Image: *Trust shark balloon prompt* by Gerd Altmann from Pixabay

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3.3.2: Fact vs. Opinion

Is is Fact or Opinion?



Just as our emotional response can influence our susceptibility to disinformation (Vongkiatkajorn, 2018), our emotions can influence our ability to distinguish between factual and opinion statements. In 2018, the Pew Research Center studied people's ability to tell the difference between faculty statements and opinion states in news media. The study found that "political awareness, digital savviness and trust in the media play large roles in the ability to distinguish between factual and opinion news statements" (Mitchell et al.).

> It is important to note that Pew's research focused on people's ability distinguish between factual and opinion *statements*, not on their ability to determine whether the factual statements were *accurate* (though all the examples of factual statements the study used were also accurate). Determining whether a statement presented as fact is actually correct, is something we will explore later in this chapter.

How Well Can You Distinguish Between Factual and Opinion Statements?

Which of the following statements are factual statements and which are opinion statements?

- Snakes are scary and gross.
- Dog owners score higher on tests of well-being than cat owners.
- Snake owners are the likeliest to consider their pet “part of the family.”
- Dogs make better pets than cats.

Answer

- Snakes are scary and gross. **OPINION**
- Dog owners score higher on tests of well-being than cat owners. **FACTUAL**
- Snake owners are the likeliest to consider their pet “part of the family.” **FACTUAL**
- Dogs make better pets than cats. **OPINION**

If you have negative feelings about snakes, the second factual statement might be hard to believe. And yet, some studies have found both of the factual statements above to be true (Brooks, 2021).

You can take the Pew Research Center's **Quiz: How well can you tell factual from opinion statements?** to see how your results compare to the group of 5,000 U.S. adults who participated in the study.

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3.3.3: Web Evaluation Skills - A “Bleak” Track Record

> “At present, we worry that democracy is threatened by the ease at which disinformation about civic issues is allowed to spread and flourish” (Wineberg et al., “Evaluating Information”).

How are we doing when it comes to recognizing disinformation and navigating the information disorder landscape?

Web Evaluation Skills: Students



In 2016, a few months before the U.S. Presidential election, an influential study on Web literacy was completed by the Stanford History Education Group. Their report—titled “Evaluating Information: The Cornerstone of Civic Online Reasoning”—was concerned with the spread of disinformation online, and how this might threaten our democracy. The study asked nearly 8,000 students (in middle school, high school, and college) to perform five Web evaluation tasks. The results were quite shocking:

- **80%** of students couldn’t distinguish “sponsored content” from news articles on websites
- **67%** of students failed to recognize potential bias in online information
- **65%** of students took online images at face value
- Almost **all** struggled to evaluate information on social media.

In 2019, as yet another U.S. Presidential election approached, the Stanford History Education Group conducted a similar study of civic online reasoning, this time with a sample of 3,446 high school students. The results?

- **52%** of students believed a grainy video shot in Russia constituted “strong evidence” of voter fraud (ballot stuffing) in the U.S.
- **Two-thirds** of students couldn’t tell the difference between news stories and ads (“Sponsored Content”)
- **96%** of students did not consider how bias impacts website credibility (for example, ties between a climate change website and the fossil fuel industry).

These studies conclude by describing student’s ability to reason about the information as either “bleak” or “troubling” (Wineberg et al., “Evaluating Information”; Breakstone et al.).

However, as we will see below, this trouble is **not** just limited to students.

Web Evaluation Skills: “Experts”



In 2017, the Stanford History Education Group conducted a study, “Lateral Reading: Reading Less and Learning More When Evaluating Digital Information.” Here, they assessed the Web evaluation skills of presumed **experts**: Stanford undergraduates, History professors, and professional fact-checkers. This fascinating study confirmed that even Stanford students and professors with PhDs in History struggled to identify credible sources on the Web.

For example, in one task, the participants were presented with two websites that provided information on bullying, and they were given up to ten minutes to determine which was the more reliable site. One of the websites (American Academy of Pediatrics) was

from the largest professional organization of pediatricians in the world, while the other site (American College of Pediatricians) had been labeled a hate group because of its virulently anti-gay stance. The result?

- Only **50%** of the historians identified the reliable website
- Only **20%** of the undergrads identified the reliable website
- **100%** of the fact-checkers were able to quickly identify the reliable website (Note: For effective strategies, see the chapter on Fact-Checking)

Sources

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Image: "College Student" by Gan Khoon Lay, adapted by Aloha Sargent, is licensed under CC BY 4.0

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3.3.4: Information Cynicism

Skepticism vs. Cynicism

> "While skepticism is healthy, cynicism—real cynicism—is toxic" ("Astroturfing: Last Week Tonight with John Oliver").



As defined by the Oxford English Dictionary:

- **Skeptical**: Not easily convinced; having doubts or reservations
- **Cynical**: Believing that people are motivated purely by self-interest; distrustful of human sincerity or integrity

When it comes to information you encounter in your personal, professional, or academic research, a skeptical approach can be productive. For example, information skeptics might take a moment to fact-check, verify, or investigate a source before using or sharing it.

However, when skepticism turns to cynicism and deep distrust, research can become unproductive. Information cynics may feel powerless to identify reliable and useful sources. That is, while learning to question **everything**, they have begun to believe **nothing**—even highly-credible sources of information.

> "Without feeling empowered to sort fiction on the web, a lot of students are merely cynical and believe they can't trust **anything"** (Caulfield, qtd. in Young; emphasis added).

Sources

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"Cynical." *Lexico*, Oxford.

Image: "Painting on wall of girl blowing question marks" by Matthew Paul Argall is licensed under CC BY 2.0

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Young, Jeffrey R. "Can a New Approach to Information Literacy Reduce Digital Polarization?" *EdSurge*, 22 Mar. 2018.

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3.3.5: College Students and Cynicism

> "It is really hard to know what is real in today's society; there are a lot of news sources and it is difficult to trust any of them" (Anonymous student qtd. in Head et al., "How Students Engage With News," 14).

Project Information Literacy, a nonprofit research institute that studies what it is like to be a student in the digital age, has published a number of influential reports that illustrate the rise in information cynicism among college students.

An "Increasing Avalanche" of Information



In 2018, they conducted a study of almost 6,000 students at 11 U.S. colleges (Head et al., "How Students Engage With News"), finding that:

- 82% of students said that news is necessary in a democracy
- 72% get news from social media on a daily basis
- 68% said the sheer amount of news available to them was overwhelming
- 45% found it difficult to tell real news from "fake news"
- 36% said "fake news" had made them distrust the credibility of any news
- "Deep political polarization" had made students "suspicious of biased reporting"
- Students were highly critical of an "increasing avalanche" of news that "appeals to emotions rather than conveying credible facts."

"Super Cynical:" A Lack of Trust

Information cynicism was explored more deeply in their 2020 report based on student focus groups and faculty interviews at eight U.S. colleges (Head et al., "Information Literacy"). This study found that:



- Students were cynical almost to the point of believing their concerns and actions had little meaning, and that it was not possible to change things
- An important theme was that "no news source could be trusted at face value" and there was a pervasive belief among students that they should "rely on themselves" to decide what to believe
- Many students felt they had been taught to be critical of everything they encountered, which even extended to the authority of their teachers. One student noted: "We're all super cynical and untrusting of information to the point that we want to find it out ourselves, so if a teacher says, 'There's five rows,' then we actually look, and, yep, there's five rows."

Interestingly, the study found that as a whole, this lack of trust in traditional authority figures meant that trust was placed in Google as the arbiter of truth—a dangerous conclusion, given the nature of algorithms. One student who was also a parent described how

he had tried to explain to his child that the bogeyman was not real, but his child had not believed him until a Google search confirmed it!

Sources

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Image: "Avalanche" by Lorenzo Stella, adapted by Aloha Sargent, is licensed under CC BY 4.0

Image: "Suspicious" by Freepik, adapted by Aloha Sargent, from Flaticon.com

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3.3.6: Information Hygiene and Info-Environmentalism



Information Hygiene



The term **information hygiene** refers to the "metaphorical handwashing you engage in to prevent the spread of misinformation" (Caulfield, "It Can Take").

This idea has gained prominence in recent years, and particularly during the COVID-19 pandemic, as we have witnessed a massive outbreak of misinformation, disinformation, hoaxes, and conspiracies surrounding this coronavirus. The World Health Organization (WHO) and other experts have even referred to the COVID-19 pandemic as an "**infodemic**"—an epidemic of information. In their February 2020 Novel Coronavirus Situation Report, the WHO noted that the COVID-19 outbreak and response "has been accompanied by a massive 'infodemic'—an over-abundance of information—some accurate and some not—that makes it hard for people to find trustworthy sources and reliable guidance when they need it."

This is a stark example of the real-world impact that our online information can have. In this case, false information that we view, "like," and share can actually help to shape the public perceptions about the pandemic, as well as our responses and decisions about how to behave. Can you think of any other recent examples that demonstrate the **real-world impact** of disinformation?

So, the message here is that, in addition to actual hygiene, we also need to focus on information hygiene and "flattening the curve of dangerous falsehoods online by taking proactive steps to reduce their spread" ("Practice Information Hygiene"). Fact-checking, which we will discuss in the next chapter, is an example of good information hygiene. Much like hand sanitizer or hand washing, it isn't a cure, but rather a prevention for the spread of misinformation (Caulfield, "Misinformation").

Info-Environmentalism



The idea behind "info-environmentalism" is that if our information environment is polluted, we shouldn't abandon it—instead, we should help to clean it up. That is, if we are frustrated with the content posted on platforms like Facebook or YouTube or with low-quality Google search results, why not clean it up by posting as much reliable information as we can?

Of course, a big part of this movement will involve putting pressure on the platforms themselves to act responsibly. But because the Web is a collectively-maintained and produced environment, we, as consumers and creators, can also participate in the process through direct action. Here are some examples of actions you might take to improve the information environment (Caulfield, "Info-Environmentalism"):

- Minimize your own "misinformation footprint" by being more thoughtful about what you post and share on social media. Do a quick fact-check first.
- Shift your focus from arguing points to explaining things to others.
- Edit and improve Wikipedia articles.
- Create explanatory YouTube videos.
- Post pages on blogs or wikis that provide helpful guidance on important issues.
- Post better answers on question-and-answer websites like Quora or StackExchange.
- When you do share information, use evidence and cite your sources.

Sources

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Image: "Hand Sanitizer" by Freepik, adapted by Aloha Sargent, from Flaticon.com

Image: "Recycle" by Freepik, adapted by Aloha Sargent, from Flaticon.com

Image: "Wash Your Hands" by United Nations COVID-19 Response is in the Public Domain, CC0

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SECTION OVERVIEW

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3.4.1: Why Fact-Checking?

3.4.2: The SIFT Method

3.4.3: Using Wikipedia Effectively

3.4.4: Fact-Checking Images and Memes

3.4.5: What Makes Quality News Sources

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3.4.1: Why Fact-Checking?

Introduction

When you find a source of information, how do you know if it's true? How can you be sure that it is a reliable, trustworthy, and effective piece of evidence for your research? This chapter will introduce you to a set of strategies to quickly and effectively verify your sources, based on the approach taken by professional fact-checkers. Fact-checking is a form of information hygiene—it can minimize your own susceptibility to misinformation and disinformation, and help you to avoid spreading it to others.

As an introduction, please watch the following video [3:13], which discusses the results of a very interesting study of Stanford students, historians, and professional fact-checkers (Wineburg and McGrew). Which group do you think did the best job of identifying reliable sources?



Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Sources

"Online Verification Skills – Video 1: Introductory Video." *YouTube*, uploaded by CTRL-F, 29 June 2018.

Wineburg, Sam, and Sarah McGrew. "Lateral Reading: Reading Less and Learning More When Evaluating Digital Information." *Stanford History Education Group Working Paper No. 2017-A1*, 6 Oct. 2017, dx.doi.org/10.2139/ssrn.3048994.

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3.4.2: The SIFT Method

Mike Caulfield, Washington State University digital literacy expert, has helpfully condensed key fact-checking strategies into a short list of four moves, or **things to do** to quickly make a decision about whether or not a source is **worthy of your attention**. It is referred to as the "SIFT" method:



Stop



When you initially encounter a source of information and start to read it—**stop**. Ask yourself whether you know and trust the author, publisher, publication, or website. If you don't, use the other fact-checking moves that follow, to get a better sense of what you're looking at. In other words, don't read, share, or use the source in your research until you know what it is, and you can verify it is reliable.

This is a particularly important step, considering what we know about the attention economy—social media, news organizations, and other digital platforms purposely promote sensational, divisive, and outrage-inducing content that emotionally hijacks our attention in order to keep us "engaged" with their sites (clicking, liking, commenting, sharing). Stop and check your emotions before engaging!

Investigate the Source



You don't have to do a three-hour investigation into a source before you engage with it. But if you're reading a piece on economics, and the author is a Nobel prize-winning economist, that would be useful information. Likewise, if you're watching a video on the many benefits of milk consumption, you would want to be aware if the video was produced by the dairy industry. This doesn't mean the Nobel economist will always be right and that the dairy industry can't ever be trusted. But knowing the expertise and agenda of the person who created the source is **crucial** to your interpretation of the information provided.

When investigating a source, **fact-checkers read "laterally"** across many websites, rather than digging deep (reading "vertically") into the one source they are evaluating. That is, they don't spend much time on the source itself, but instead they quickly **get off the page** and see what others have said about the source. They open up many tabs in their browser, piecing together different bits of information from across the web to get a better picture of the source they're investigating.

Please watch the following short video [2:44] for a demonstration of this strategy. Pay particular attention to how Wikipedia can be used to quickly get useful information about publications, organizations, and authors.



Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Find Better Coverage



What if the source you find is low-quality, or you can't determine if it is reliable or not? Perhaps you don't really care about the source—you care about the **claim that source is making**. You want to know if it is true or false. You want to know if it represents a consensus viewpoint, or if it is the subject of much disagreement. A common example of this is a meme you might encounter on social media. The random person or group who posted the meme may be less important than the quote or claim the meme makes.

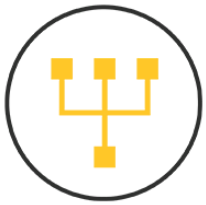
Your best strategy in this case might actually be to find a **better source altogether**, to look for **other coverage** that includes trusted reporting or analysis on that same claim. Rather than relying on the source that you initially found, you can trade up for a higher quality source.

The point is that you're not wedded to using that initial source. We have the internet! You can go out and find a better source, and invest your time there. Please watch this video [4:10] that demonstrates this strategy and notes how fact-checkers build a library of trusted sources they can rely on to provide better coverage.



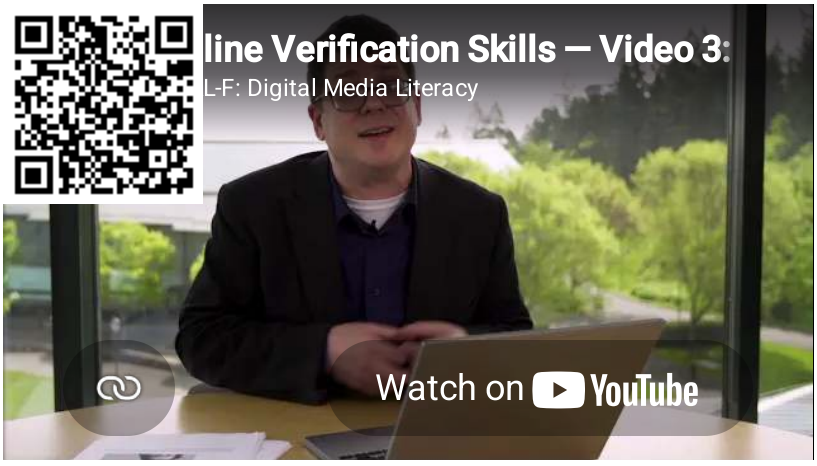
Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Trace Claims, Quotes, and Media to the Original Context



Much of what we find on the internet has been stripped of context. Maybe there's a video of a fight between two people with Person A as the aggressor. But what happened before that? What was clipped out of the video and what stayed in? Maybe there's a picture that seems real but the caption could be misleading. Maybe a claim is made about a new medical treatment based on a research finding—but you're not certain if the cited research paper actually said that. The people who re-report these stories either get things wrong by mistake, or, in some cases, they are intentionally misleading us.

In these cases you will want to trace the claim, quote, or media back to the source, so you can see it in its original context and get a sense of whether the version you saw was accurately presented. Please watch the following video [1:33] that discusses re-reporting vs. original reporting and demonstrates a quick tip: going "upstream" to find the original reporting source.



Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Sources

"Online Verification Skills – Video 2: Investigate the Source." *YouTube*, uploaded by CTRL-F, 29 June 2018.

"Online Verification Skills – Video 3: Find the Original Source." *YouTube*, uploaded by CTRL-F, 25 May 2018.

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3.4.3: Using Wikipedia Effectively

> "To tell students not to use Wikipedia is to deprive them of one of the most useful tools on the Internet. Instead of teaching them to avoid it, we should be teaching students how to use Wikipedia wisely" ("How to Use Wikipedia Wisely").

Misconceptions & Benefits

Wikipedia—the world's largest reference website—is broadly misunderstood. Because it is written by thousands of anonymous volunteers around the world, Wikipedia generates uncertainty or skepticism in many. If just *anyone* can change Wikipedia, won't there be inaccuracies? Won't people potentially abuse that power?

The open, collaborative approach of Wikipedia means that it is susceptible to vandalism, unverified information, or subtle viewpoint promotion. However, that same open approach also *increases* the chances that factual errors and misleading statements will be quickly corrected, and that articles will be consistently improved and updated. Indeed, an often-cited 2005 study (Giles), as well as a follow-up study in 2012 (Casebourne et al.), found no significant differences in accuracy between Wikipedia and Encyclopaedia Britannica articles.



Additionally, the Wikipedia community has strict rules about providing citations or references for facts and claims, and authors must adopt a neutral point of view. Because of this, Wikipedia articles are often the **best available introduction to a subject**. If you are researching a complex question, starting with the resources and summaries provided by Wikipedia can give you a substantial **running start** on an issue. For more information about this, see the section on Background Reading. The requirement for Wikipedia authors to cite their sources has another beneficial effect. If you can find a claim expressed in a Wikipedia article, you can almost always follow the footnotes to reliable sources for further research and evidence.

Areas for Caution

Not all Wikipedia articles are useful. Some articles are incomplete or contain "citation needed" warnings. You may find very short "stub" articles that are awaiting either further expansion, or deletion. You should avoid using these types of articles for your research.

Another known concern is systemic bias in Wikipedia, including gender and racial bias. For example, of the over 130,000 active editors of Wikipedia, only 8.5% to 16% are female; of the over 1.5 million biographies on Wikipedia, only 18% are about women (Kantor). Wikipedia has launched numerous initiatives to encourage more women to become editors and to improve their coverage of women; even so, the gender gap persists. With Wikipedia as well as other, more traditional forms of publishing, we must be aware of who creates the information we consume, and understand how that impacts our knowledge about research topics and the world around us. For more on bias, see the page on Information Sources: Bias.

Using Wikipedia Wisely

With an awareness of these benefits and concerns, you can more effectively use Wikipedia for fact-checking and to find background information on a topic. Please watch the following video [2:41] that addresses some of the common misconceptions about Wikipedia and demonstrates how you can **use this tool wisely, as professional fact-checkers often do**.



Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Sources

Casebourne, Imogen, et al. "Assessing the Accuracy and Quality of Wikipedia Entries Compared to Popular Online Encyclopaedias: A Comparative Preliminary Study Across Disciplines in English, Spanish and Arabic." *Wikimedia*, Epic and Univ. of Oxford, 2012. Licensed under CC BY-SA 3.0.

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Image: "Run" by Alex Podolsky, adapted by Aloha Sargent, is licensed under CC BY 4.0

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Misconceptions and Benefits section adapted from "Web Literacy for Student Fact-Checkers" by Mike Caulfield, licensed under CC BY 4.0 and "Teaching with Wikipedia: A High Impact Open Educational Practice" by TJ Bliss, licensed under CC BY-NC-SA 4.0

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3.4.4: Fact-Checking Images and Memes

Find Trusted Coverage

Often, claims or stories will come to you in the form of images and memes. How do you know if images have been digitally altered (Photoshopped) or if they are being shared out of context (misrepresented)?

If you want to find trusted coverage of the issue, claim, or photo, you have two options:

1. You can search the relevant text from the image
2. You can use “reverse image search”

Reverse Image Search Using Google

On your Computer

Using Chrome as your browser, right-click the image and select “Search Google for image.” Note: On a Mac, use Control-click. On a Chromebook, use Alt-click.

In the example below, we can do a reverse image search on this meme that suggests space lasers were responsible for the California wildfires.



This is a screenshot of a meme claiming that the California wildfires were caused by “powerful lasers.” We can try to check this claim with a reverse image search.

On your Phone

Using Chrome (app), touch and hold the image, then select “Search Google for This Image” Note: You may first have to click a menu option to “Open in Chrome”

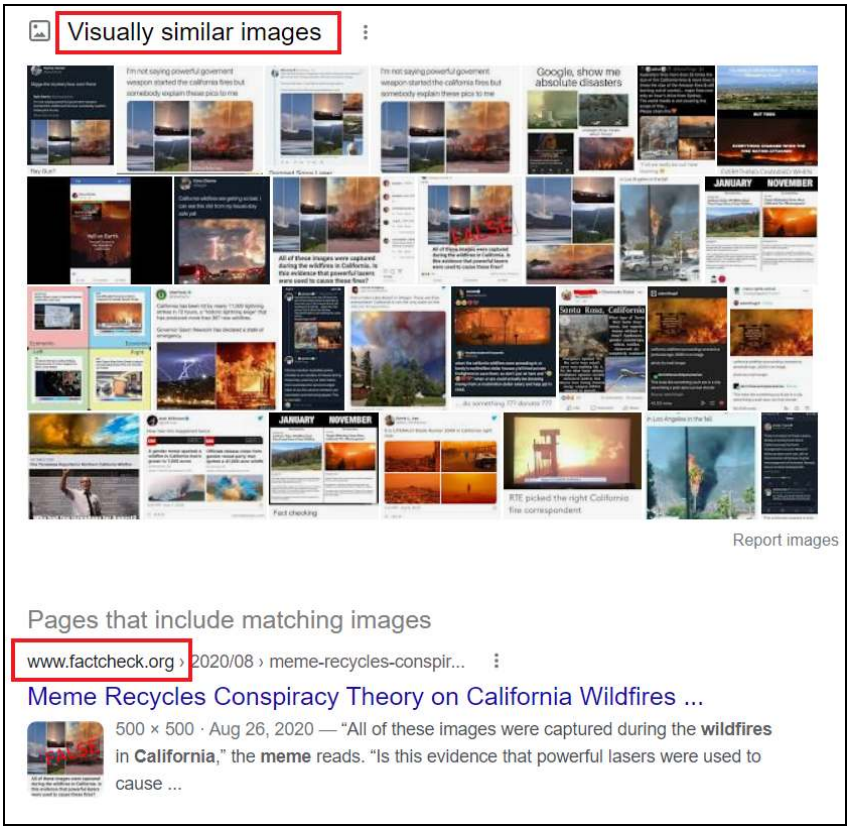


Although it is a bit more difficult, you can also conduct a reverse image search on your phone.

The Results

You will get a list of any other websites where the image has been used, including previous fact-checks of the image, and perhaps even a link to the real version of the photo.

In our example, we see that this meme has appeared in many other places, and that it has already been shown to be false by a reputable fact-checking organization.



Our reverse image search results show that factcheck.org has already found this conspiracy theory meme to be false.

The results of this fact-checking led to some of the actual images, in context. In the screenshot below from the Twitter account for SpaceX, we see that the first image from the meme was actually an image of a SpaceX rocket launch, not a laser beam hitting California.



A Tweet from the official Twitter account for SpaceX shows the origin of one of the supposed "laser" images.

Sources

Find Trusted Coverage section adapted from "Check, Please! Starter Course," licensed under CC BY 4.0

Reverse Image Search section adapted from "Library 10" by Cabrillo College Library, licensed under CC BY 4.0

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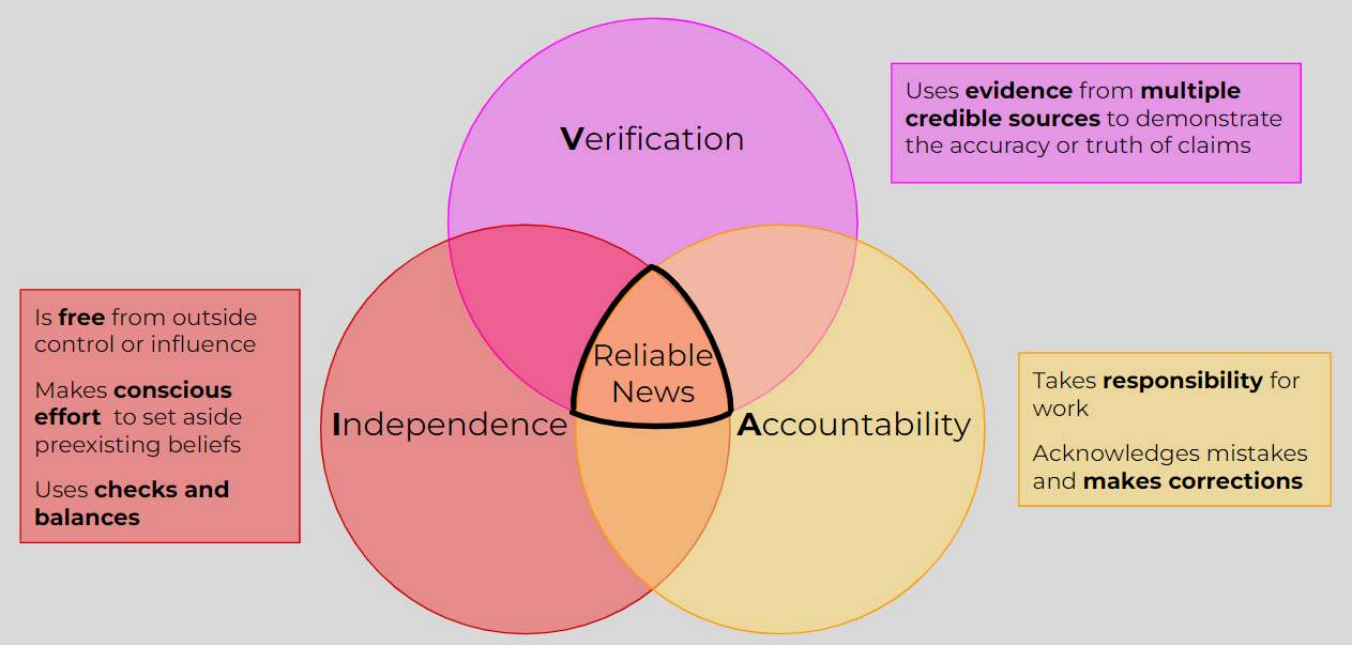
3.4.5: What Makes Quality News Sources

Journalistic Standards

While fact-checking strategies such as **SIFT** are useful for news sources as well as many other types of sources, it is also helpful to be able to identify the characteristics of quality news sources.

Quality Sources: **VIA**bility

The Digital Resource Center at Stony Brook University uses the acronym **V.I.A.** to describe journalistic standards -- the characteristics shared by trustworthy media companies and creators. Media outlets that create reliable news are committed to **Verification**, **Independence**, and **Accountability** (Digital Resource Center).



Verification

Criteria
The media outlet uses **evidence** from **multiple credible sources** to demonstrate the accuracy or truth of the claims they make in their reporting.

Things to Look For
- The source provides links to their sources, or gives enough information about them that you can find them yourself
- The source relies on evidence from verifiable experts in the field
- The source relies on research published in scholarly journals

Things to Avoid
- Sources that make claims without providing any evidence for them
- Phrases such as "multiple sources," "many experts," or "multiple studies" without any specific information about those sources, experts, or studies
- Sources whose "evidence" only links to other sources from their own website or organization

Independence

Criteria
The media outlet:
- is **free** from outside control or influence
- makes a **conscious effort** to set aside preexisting beliefs
- uses **checks and balances** to reduce bias

Things to Look For
- A named author whose identity and credentials can be verified by other sources (such as Wikipedia)
- Transparency about the author and/or media outlet's political or professional affiliations, relationships with advertisers, etc.

Things to Avoid
- Sources whose authors and/or affiliations cannot be identified
- Groups whose primary goal is to sell products directly related to their reporting (e.g. "Studies prove that this rare mushroom will increase your life span! Click the link to buy it from us.")

Accountability

Criteria
The media outlet:
- **takes responsibility** for their work
- **acknowledges mistakes** and **makes corrections**

Things to Look For
- Media outlets that have a history of correcting mistakes in previous work
- Journalist and/or media outlets that share their contact information so mistakes can be communicated

Things to Avoid
- Sources created by individuals or groups that cannot be contacted
- Groups that consistently dismiss or attack all evidence that challenges their claims

Sources

Digital Resource Center. (n.d.). *V.I.A.* Stony Brook University.

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3.5: Questions for Critical Thinking



Questions for Critical Thinking About Mis/Disinformation, Information Disorder, and Fact-Checking

- How can we minimize our exposure to information disorders like misinformation and disinformation?
- How can we avoid spreading those information disorders to others?
- What are the most efficient ways we can reconstruct the necessary context to verify, understand, and interpret sources of information that we encounter in our academic, professional, and personal lives?
- What would be the biggest challenges and biggest benefits of developing making a habit of using fact-checking strategies?

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CHAPTER OVERVIEW

4: Information Social Justice

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4.2.1: Critically Examining Information Ecosystems
4.2.2: Information Privilege
4.2.3: Information Power and Privilege in Academia
4.2.4: Power and Privilege in Information Creation
4.2.5: Privilege, Privilege, and the Findability of Information
4.2.6: Power, Privilege, and Access to Information
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4.3.1: Research and Media Bias
4.3.2: Personal Biases
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4.1: Chapter Overview



This chapter will...

- Critique how social hierarchies and power dynamics impact information creation, distribution, value, organization, access, and findability, including inequities in access to information
- Examine bias, representation, and marginalization in information ecosystems
- Explore diverse knowledge systems and ways of valuing, organizing, and sharing information and promoting information social justice
- Define information justice and identify approaches to promoting it

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SECTION OVERVIEW

4.2: How Social Hierarchies and Power Dynamics Affect Information

4.2.1: Critically Examining Information Ecosystems

4.2.2: Information Privilege

4.2.3: Information Power and Privilege in Academia

4.2.4: Power and Privilege in Information Creation

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4.2.6: Power, Privilege, and Access to Information

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4.2.1: Critically Examining Information Ecosystems



Information Literacy as a Human Right

In the current information age, both access to information and the ability to evaluate it and use it effectively are necessary to fully function in society.

> In order to promote inclusion and eradicate discrimination, librarians and other information workers ensure that the right of accessing information is not denied and that equitable services are provided for everyone whatever their age, citizenship, political belief, physical or mental ability, gender identity, heritage, education, income, immigration and asylum-seeking status, marital status, origin, race, religion or sexual orientation.
>
> -- *IFLA Code of Ethics of Librarians and Other Information Workers* (Garcia-Febo et al, 2012, p. 3)

The International Federation of Library Associations and Institutions' *IFLA Code of Ethics of Librarians and Other Information Workers* articulates the importance of things such as: access to information; organization of information in ways that enable people to find it on their own; the rights of people to access information in their own language; information literacy; ethical use of information; protection of individual privacy; and transparency regarding the workings of information ecosystems (Garcia-Febo et al, 2012).

Scholars emphasize the distinction between the right to *access* information and the right to *information literacy*, because access alone does not equip us to navigate complex information ecosystems successfully (Saunders, 2017).

Context Matters

One of the media and information literacy competencies identified by the Observatory on Information and Democracy is "situating the sociocultural context of information and digital content in relation but not exclusive to gender equality dialogue, disinformation, privacy and eradicating hate, discrimination and racism" (Mansell et al, 2025, p. 104).

To critically examine and understand an information ecosystem, we must examine these aspects of the broader society in which that ecosystem exists. Information is created within existing societal power structures that impact the ways that information is published, shared, valued, organized, and accessed. These power structures may distort, suppress, or misrepresent information. They may elevate some voices or perspectives and marginalize others.

For example, in a country without freedom of the press, all of the news media might be run by the government and present only information that is favorable to the government, while suppressing other information. Even in a country with freedom of the press and freedom of speech, the information that is created and made available reflects the sociocultural, economic, and political power structures and biases present in that society.

In Chapter 3 we explored how algorithms reflect and amplify bias. In this chapter we will expand our exploration to examine bias, power, and privilege in other aspects of the information ecosystems we engage with in the United States.

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Image: *This store sells banned books to support access* by Jon Tyson from Unsplash is in the Public Domain CC0

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4.2.2: Information Privilege

What is Information Privilege?

Definition: Information privilege

"The affordance or opportunity to access information that others cannot" (Hare & Evanson, 2018)

How do you decide what information has value? Like material items, information has value that depends on social contexts. That value can be economic, political, social, or cultural. The value of information can change, depending on where it comes from and what is done with it. When things have value, access to them is often restricted based on some type of privilege. Access to information might be restricted directly, such by cost or required credentials, or indirectly, such as by the need for reliable internet access. Like economic privilege, the information privilege of those who have access to information gives them advantages over those who do not.

Information privilege also affects who is able to create and share information and whose voices are the loudest, reach the farthest, and/or are the most respected. Information privilege is related to socioeconomic status, and also to historical privileges and biases related to racism, sexism, ableism, gender bias, transphobia, homophobia, religious bias, xenophobia, and more.

Identifying Our Information Privilege

All college students and faculty have some information privilege because our college libraries provide access to information that would be too expensive for most of us pay for ourselves. But academic library resources budgets vary widely, especially when comparing community colleges to research universities, and many other factors also affect the degree of information privilege each of us has.

In 1989, Peggy McIntosh introduced the “invisible knapsack” to describe what white privilege looks like in everyday situations (McIntosh, 1989). The image below adapts her ideas about white privilege, and Char Booth's work on information privilege (Booth, 2014), to present examples of what information privilege might look like.

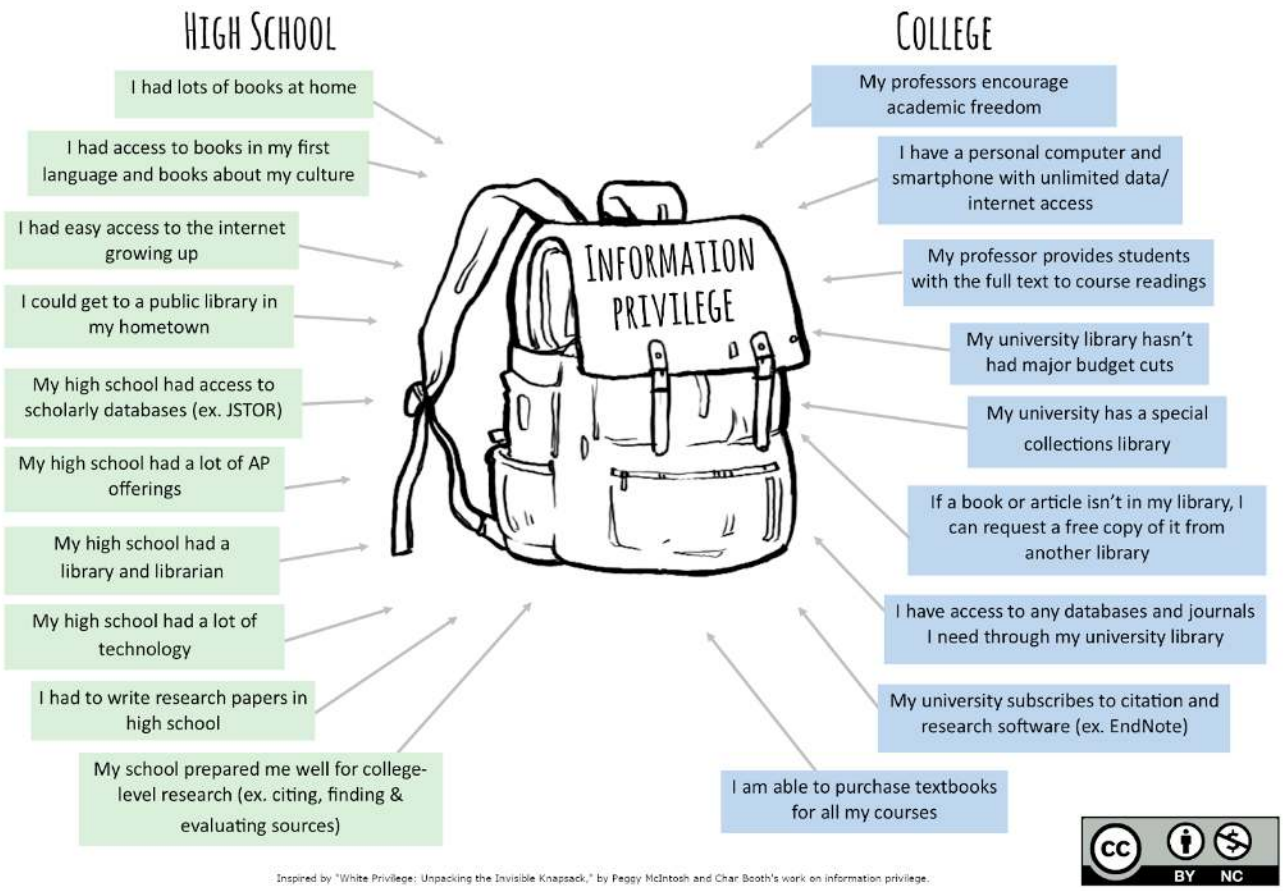


Figure **4.2.2.1**: Information Privilege Backpack (Information privilege, n.d.)

Machine-readable text version of the above infographic

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4.2.3: Information Power and Privilege in Academia

Academic Information Ecosystems



Throughout this book, we will explore many different aspects of information ecosystems in academia, including topics such as the cost of academic resources, academic integrity, definitions of expertise, scholarly communication and knowledge building, and scholarly publishing. In academic settings, some of us have more information privilege (as well as other types of privilege) than others. As with other information ecosystems, some voices are elevated and others are marginalized.

Consider what you have observed as a student. Whose voices are the loudest? What voices aren't being heard? Why? How does this affect you personally? Is your voice heard by the people with the most power at your college?

Demographics of Students, Faculty, and Administrators

> "The representation of racially and ethnically minoritized faculty is embarrassingly low, particularly in comparison to the racial composition of the student body."
>
> -- Estela Mara Bensimon, Ed.D. University Professor Emerita and Founder, Center for Urban Education, University of Southern California (Reddy, 2024, p. 4)

The Campaign for College Opportunity is a non profit organization "with a mission to ensure that all eligible and motivated students in California have an opportunity to go to college and succeed" (*Our history*, n.d.). Their research on the makeup of students, faculty, and administrators at California's public colleges and universities shows that the proportions of BIPOC (Black, Indigenous, and People of Color) students are not reflected in faculty, administrators, or campus leadership. "Although Latinx students make up the biggest proportion of the student population at community college campuses (47%), only 20% of campus leaders and 18% of tenured/tenure-track faculty are Latinx" (Reddy & Siqueiros, 2024, p. 31).

California Community Colleges Populations by Race/Ethnicity (2021-2022)

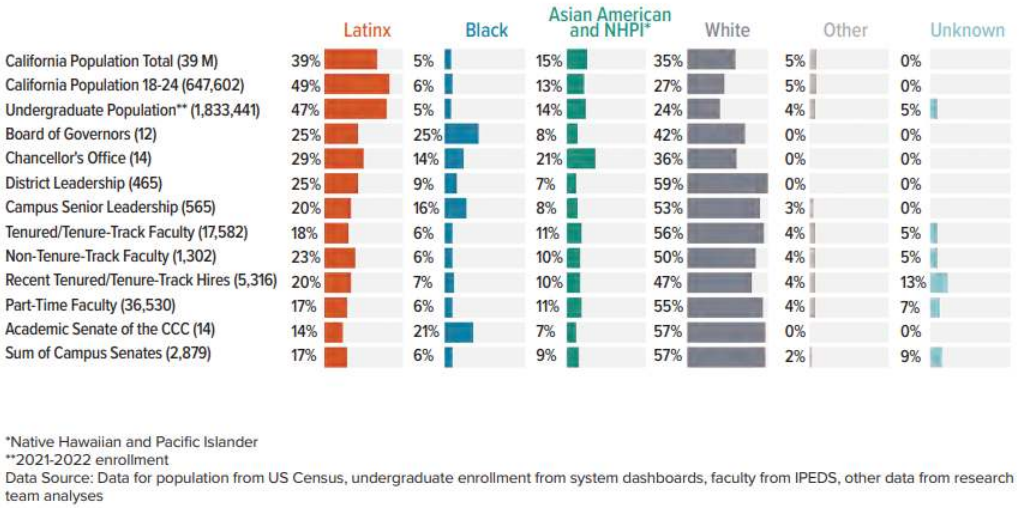


Figure **4.2.3.1**: Data compiled by The Campaign for College Opportunity (Reddy & Siqueiros, 2024, p. 31)

Machine-readable version of the above chart

Why Do Demographics Matter?

The authors of The Campaign for College Opportunity's study discuss why the current demographics of California community college employees are problematic:

"Diversity—both racial/ethnic and gender related—is critical to ensuring the values of equity and inclusion permeate a campus. Leadership that includes diverse faculty and leaders are better positioned to ensure diversity and inclusion are campus goals for hiring faculty and staff, in addition to student enrollment and student success. They are also well-placed to provide leadership development opportunities and a clear pathway to leadership for individuals from historically excluded groups. They can set a tone for the institution that challenges deficit mindsets, question assumptions, and counter the implicit bias that often pervades discussions of diversity, equity, and inclusion" (Reddy & Siqueiros, 2024, p. 51).

Whiteness in Library and Information Science

> “For students from a nondominant culture, knowing how to use library resources is not merely about finding information but also about navigating culture.” (Adkins and Hussey, 2006)

Like college faculty and administrators, the vast majority of librarians in U.S. public and academic libraries are white. As of 2022, only 14% of employed librarians were BIPOC and 86% were white (Hulbert & Kendrick, 2023). Those demographics have changed very little over time, despite efforts to diversity the library and information science (LIS) profession (Hathcock, 2015; Kendrick, 2023).

Many studies have found that the dominance of white culture in libraries affects students' experiences using academic libraries, and students of color often find libraries and/or library employees to be less welcoming (Adkins & Hussey, 2006; Bucy, 2022; Kendrick, 2023). In some cases, the content included in library collections, and the ways library materials are categorized and organized on library shelves, can alienate BIPOC library users. For example, library collections often include books and other materials in which Indigenous peoples are viewed "as subjects of research rather than as researchers themselves," and don't include materials from Indigenous perspectives, so "Native American students encounter problematic and even racist terminology and organization" (Bucy, 2022). We will address some specific examples of bias in library organization schemes later in this chapter, as well as approaches some librarians are taking to diversify the cultures of library spaces, programs, terminology, and collections.

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Image: Student sitting on chairs in front of chalkboard by Shubham Sharan is in the Public Domain CC0

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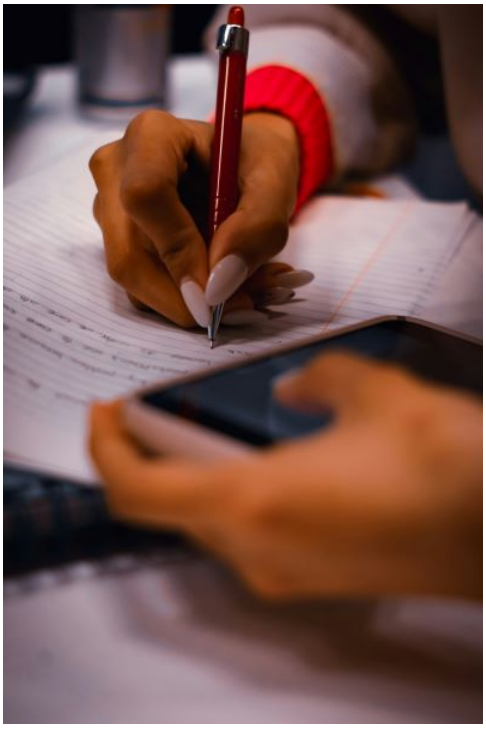
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4.2.4: Power and Privilege in Information Creation

Who Creates Information?



Anyone with internet access and a computer, tablet, or smartphone can create information and publish it online through social media, or even through a platform for self-publishing entire books. You might also create and share information offline. For example, if you go on a hike, notice that the trail is overgrown with a lot of poison oak right now, and then warn a friend about the status of that trail as they plan a hike for tomorrow, you have turned your own observation into useful information for your friend.

Access to other forms of information creation and publishing is more restricted. For example, journalistic credentials and the oversight of an editor are generally required to publish an article in a well-respected newspaper, and specific academic and/or professional credentials are required to publish an article in a medical journal. In other words, some types of information creation require specific kinds of expertise.

Who Do We Consider Experts?

Creators of information may have different types of expertise and authority, such as a high level of education in a particular field, professional experience with a topic, or personally witnessing or participating in a historic event. Individuals without advanced education or professional experience may have developed personal expertise through participating in formal or informal information ecosystems or communities, such as through playing a sport or pursuing a hobby or craft. While it is useful to consider the value of expertise in the form of education or professional experience, it is also important to consider the ways in which other forms of expertise may be devalued.

We will examine different types of information sources, and their characteristics and creation processes, in more detail in Chapter 7. We will examine different types of expertise and authority in more detail in Chapter 9. For now, we will explore some examples of how bias affects whose voices are heard, and how even expert voices can be marginalized.

Whose Voices and Perspectives are Heard and Who Gets Credit?

Some experts are more likely to be able publish and share information, while others are more likely to encounter barriers to publishing and sharing their expertise. The publishing process, the published sources available, and the voices represented in those sources, reflect the biases of the society that produces the sources. For example, many researchers have noted a gender bias in academic publishing (Lundine et al, 2018, Yong, 2019) that results in women being underrepresented as editors, reviewers, and authors of scholarly journal articles. And "studies authored by women tend to be cited less frequently than those authored by men" (Yong, 2019). For example, research conducted by Dung et al (2019) found that female "acknowledged programmers" who were instrumental in the field of theoretical population genetics were mentioned by authors of research studies, but were not named as authors themselves. As the field of computer programming became more male dominated, programmers were more likely to be credited as authors (Dung et al, 2019). In another infamous example, "James Watson and Francis Crick's hypothesis about the structure of DNA was based on key evidence collected by Rosalind Franklin. Franklin was not given credit for that evidence when Watson and Crick published their hypothesis" (Understanding science).

> "Black women have been producing knowledge since we blessed this earth. We theorize, we innovate, we revolutionize the world. We do not need mediators. We do not need interpreters. It is time to disrupt the canon. It is time to upturn the erasures of history. Cite Black Women."
>
> --Dr. Christen A. Smith, Dr. Erica L. Williams, Dr. Imani A. Wadud, Dr. Whitney N.L. Pirtle, & The Cite Black Women Collective (Smith et al, 2021)

Asare (2021) provides many examples of the contributions of Black women being ignored or credited to someone else, including the important contributions of Black women to movements such as women's suffrage, civil rights, LGBTQIA liberation, Black Lives Matter, and Me Too. In one recent example of media bias, the TV news show *60 Minutes* ran a story in 2021 about research on racial bias in facial recognition software but failed to even mention "the three Black women, Joy Buolamwini, Timnit Gebru, and Inioluwa Deborah Raji, who spearheaded the most seminal research in the field" (Asare, 2021). Movements such as Cite Black Women seek to "reconfigure the politics of knowledge production" (Our principles, n.d.) by acknowledging the intellectual contributions of those whose work has been dismissed or exploited historically.

Representation and Misrepresentation

> "If you want the history of a white man, you go to the library" (Bowers et al, 2017).

In addition to marginalizing of the work of BIPOC (Black, Indigenous, and People of Color), women, LGBTQIA+ people, people with disabilities, and members of other minoritized groups, systems of information creation have also spoken for them, often misrepresenting their ideas, knowledge, and experience. Historically, the information sources included in library collections have reflected dominant perspectives about marginalized groups rather than the voices, experiences, and perspectives of those groups themselves. While many librarians are working to correct these omissions and distortions, they are still pervasive, especially when it comes to the nature of information in libraries about Indigenous peoples and the lack of materials by Indigenous peoples.

Many depictions of Indigenous peoples are written by non-Indigenous people (including some who are writing as if they are Indigenous), are stereotypical, and are influenced by "the role(s) that the concept of 'Indian' plays in European and American mythology" (Hurley et al, 2017). These misrepresentations raise "questions about who has the moral right to share a culture's stories, who is considered an authority, and what are the ethical considerations when publishing cross culturally" (Hurley et al, 2017).

Wikipedia’s Bias Problems

Societal biases, power dynamics, and inequities are reflected in less formal publishing processes as well. For example, anyone with internet access can write and/or edit Wikipedia articles. But multiple studies have shown that Wikipedia has a problem with gender, racial, and Western bias (Boboltz, 2017; Carroll & Nicosia, 2021; Noor, 2018; Paling, 2015). Research demonstrates that “Wikipedia underrepresents content on women” (Carroll & Nicosia, 2021), with women making up only 17% of the biographies of notable people (Noor, 2018). Wikipedia's concept of "notability" (*Notability*, n.d.) is problematic in itself, in that it can perpetuate and amplify the gender bias that led many important women to be left out of history books and other publishing in the first place. Wikipedia's editors determine notability, and women are also underrepresented among the editors, at only 16% (Noor, 2018) of that group. Furthermore, there have been several reports of male Wikipedia editors harassing female editors (Paling, 2015).

Wikipedia’s content reflects other types of bias as well. For example, European editors write most of the pages about European countries, but 84% of the entries about sub-Saharan Africa are written by people outside of that region (Noor, 2018).

Wikipedia Edit-A-Thons

One way people are working to correct the Wikipedia’s content problems is through Wikipedia edit-a-thons during which people work to create or improve content in a supportive social setting (Guo, 2018).



Note: Turn on subtitles with the closed captions (CC) button

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Image: A person writing on a piece of paper with a pen by Bugra Burak Akmanoglu is in the Public Domain CC0

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4.2.5: Privilege, Privilege, and the Findability of Information

Finding What You're Looking For



Privilege, social hierarchies, and biases influence the findability of information as well as its creation.

Think of the experience of grocery shopping. When you shop at a particular grocery store for the first time, how easy is it to find the items you're looking for? How might the availability of certain items and the way they are arranged on the shelves be influenced by what is most popular? Or by what the grocery store owner most wants you to buy? Or by the target population the grocery store is trying to reach? How might your shopping experience change if you couldn't read the language(s) on the labels? How does the experience differ when foods from your culture are or are not available?

Whether and where you can find the items you need in a particular grocery store may be influenced by the marketing strategies of the store owner, incentives from other companies to feature their items in particular places, and requests from customers for specific items. These factors benefit some people more than others. For example, if you need an item that is not popular with most of the store's other customers, or is not very profitable for the store to sell, it may not be available, or may not be featured in a prominent location, regardless of the quality of the item or its importance to you.

Information Findability on the Internet

Just as a variety of factors contribute to how items are arranged on grocery store shelves, several factors contribute to where a particular website will appear in the results list of a Google search. Many of these factors have less to do with the quality and relevance of the information than with the marketing strategies used by website owners, search terms used by searchers, and the bias built into the search engine's algorithm.

Information Findability in Libraries

Both on the internet and in libraries, information sources that include a lot of complicated language or jargon may be difficult to find if we use more common terms in our search. Knowing and understanding this jargon is one form of information privilege because it allows us to construct more accurate and/or flexible searches, and may allow us to find more scholarly information.

The ways that libraries are organized and internet search algorithms are constructed also reflect biases that make some information more difficult to find. For example, library classification schemes, which determine where books are put on shelves and how they are found through libraries' online catalogs, are "constructed from a European worldview, tend to silence the Native voices ... or marginalize them with implicit value judgements, such as classifying Native creation stories as folklore rather than religion" (Hurley, 2017).

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Image: Assorted food packs on shelf by Ravi Sharma is in the Public Domain CC0

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4.2.6: Power, Privilege, and Access to Information



Access to Information

In addition to the inequities that exist in terms of whose stories and voices are more likely to be amplified and whose stories and voices are more likely to be suppressed in information sources, there are also inequities in terms of who has access to the information that is produced.

Accessibility, or the ability of people to be able to view and/or use something, is a key concern with information. Common barriers to information access include cost, technology access, technology proficiency, and whether the format of the information is accessible to people with disabilities.

Libraries's and tribal standards also differ regarding what information should be publicly available and what information should only be shared only within the tribal group, so some libraries include Indigenous knowledge and/or artifacts that was never approved by tribal authorities for public sharing (Hurley, 2017).

Library Databases

As a student, you have access to subscription databases provided by your campus library. These databases provide free, online to access information sources such as ebooks, news sources, peer-reviewed articles, and videos that are not available for free to the general public. But when you are no longer a student at your college, your access to these resources ends.

Open Information Movements

Definition: Open access

Free online availability of academic research sources with the rights to use or share them without financial, legal, or technical barriers.

Definition: Open education

Free online availability of educational resources that students would otherwise have to purchase, such textbooks.

Definition: Open data

Free online availability of research data, allowing anyone to download and use it without financial, legal, or technical barriers.

Open information movements make scholarly and educational information widely available to the general public, including those who don't have access to expensive library databases through an affiliation with an academic institution. Scholars from every academic field are working to make their research more freely accessible. Open access journals exist to publish scholarly journals and share that research more freely. Open research also helps to diversify the voices that are heard in academic research.

The open access movement improves access to scholarly research by making it freely available to the public online. The Directory of Open Access Journals, for example, provides information about about over 12,000 open access journals, including over 9,000 that are searchable at the article level.

Similarly, the open educational resources (OER) movement addresses the problem expensive textbooks by developing free materials and resources for teaching and learning. This textbook is one example of the thousands of OER resources that are available to students at no cost. At California Community Colleges, many courses are labeled as ZTC (Zero Textbook Cost) to show students that they have been designed so students won't have to pay for textbooks or other course materials.

Creating open information resources presents challenges related to cost and licensing, which we will explore in Chapter 5.

It is also important to note that access to open information requires accessible formatting for people with disabilities (such as screen-readable materials) and reliable internet access, both of which present technical barriers for many people, as discussed further below.

Public Libraries

Public libraries also serve an important role in providing the general public with access to information and the technology to access it, as well as literacy programs and many other services. But public libraries often get the majority of their funding from local property taxes, which leads to a dramatic disparity in public library funding between rich and poor communities.

Some library policies themselves, such as charging overdue fines, can contribute to inequities in access to information. The video below explores some access and equity issues related to public libraries, and makes a case against fines.



Note: Turn on subtitles with the closed captions (CC) button

Incarceration and Access to Information

The American Library Association advocates for the right of prisoners to access information (ALA Council, 2025). While many prisons and jails have some form of library, most people incarcerated in the United States do not have access to the internet, which presents a significant barrier in an increasingly online era.

Access to Information for People with Disabilities

The format of information sources on the internet and in libraries often presents access barriers for people with visual and other disabilities. In one case, the University of California, Berkeley faced legal action under Title II of the Americans with Disabilities Act (ADA) regarding the accessibility of its online content, particularly its library resources and free online courses. The Department of Justice (DOJ) investigated and reached a consent decree with UC Berkeley, requiring the university to make its online materials accessible to individuals with disabilities (*Landmark agreement*, 2013). This case highlights the importance of accessibility and equitable access to online content for all students, regardless of disability.

Net Neutrality

Net neutrality is the idea that internet service providers should be regulated as a public utility, like water or electricity, and should treat all internet traffic identically, regardless of the person using the service, the technologies they are using, or the information being transmitted.

On January 2, 2025, a federal appeal's court struck down the Federal Communication Commission (FCC) rules regarding net neutrality (Bowman, 2025), allowing allowing internet service providers (ISPs) to channel some content into “slow lanes” and some content into “fast lanes,” to charge more for access to certain content, or to block content altogether. Since the original revocation of the FCC's rules in 2018, the throttling of data speeds has had a serious consequences, such as in August 2018 when Verizon slowed wireless data speeds for California firefighters during the Mendocino Complex Fire (Brodkin, 2018). In that case, following public outcry Verizon promised to stop throttling data speeds for first responders (Carman, 2018).

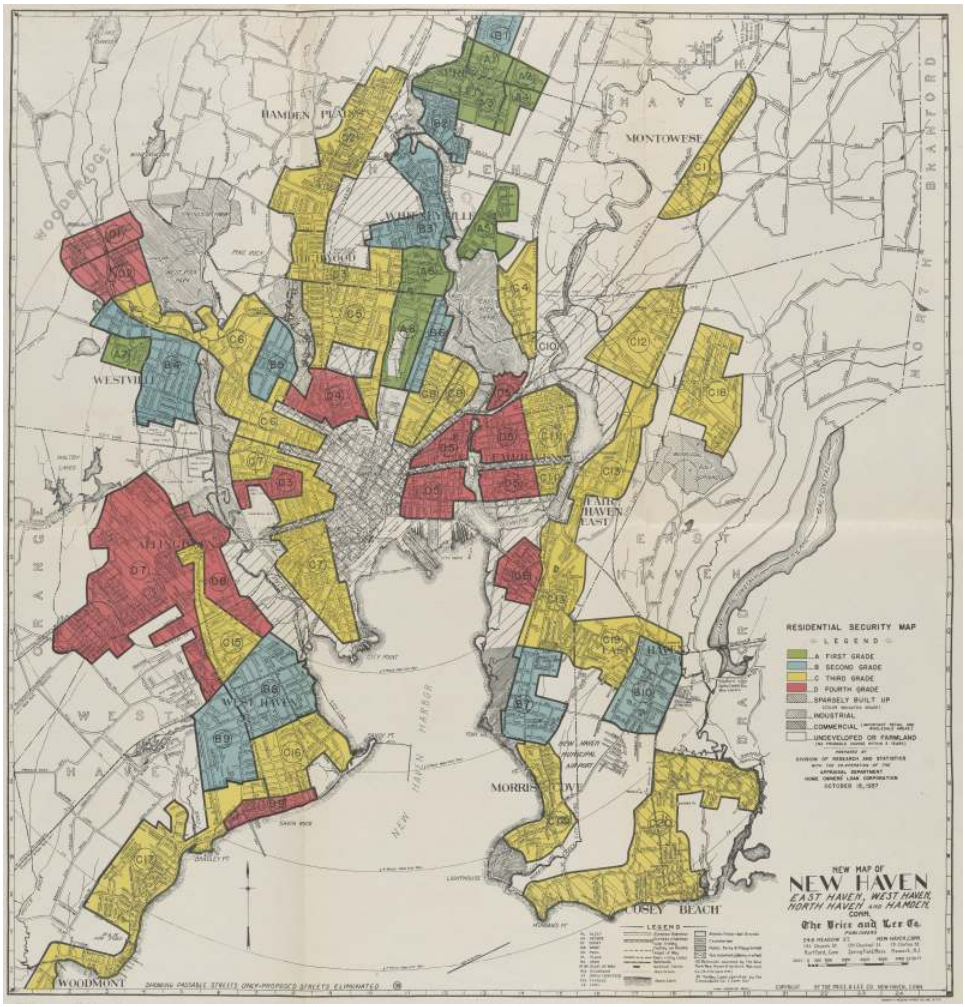
The video below provides specific examples of how the internet -- and your access to it -- is likely to change without net neutrality.



Note: Turn on subtitles with the closed captions (CC) button

Digital Redlining

The elimination of net neutrality allows internet service providers to prioritize the transmission of certain types of information over the internet. Inequities also exist in the availability, quality, and cost of internet service itself in different neighborhoods.



The term *digital redlining* comes from the broader term *redlining*, which refers to the discriminatory practice of systematically denying or increasing the cost of services such as mortgage loans, insurance, health care, and supermarkets to residents of certain neighborhoods based on the racial, ethnic, and/or socio-economic makeup of those neighborhoods.

Digital redlining includes practices such as:

- internet service providers choosing not to provide adequate service in low income neighborhoods and communities of color, or charging more for service in those areas; and
- online advertising platforms allowing advertisers to choose to share, or not share, housing-related ads based on the viewer's gender, race, religion, national origin, marital status, location, or disability.

"Digital redlining particularly affects marginalized groups such as Black, Indigenous, and Latino communities, individuals with low income, and those living in rural areas" (Wang, 2024).

Artificial Intelligence

Like the end of net neutrality and the problem of digital redlining, the growing prominence of generative artificial intelligence also poses equity challenges. AI can be used to adjust lessons to meet specific student needs, to improve the accessibility of class materials for people with disabilities, and to translate materials into other languages. However, most AI tools are not free, which creates a gap between those who can and cannot afford to use these tools. AI systems are also prone to algorithmic bias.

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SECTION OVERVIEW

4.3: Bias, Representation, and Marginalization in Information Ecosystems

4.3.1: Research and Media Bias

4.3.2: Personal Biases

4.3.3: Censorship, Free Speech, and Intellectual Freedom

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4.3.1: Research and Media Bias

We have begun to explore some examples of systemic bias such as algorithmic bias, gender bias in academic publishing, media bias in which Black women's work was omitted, and bias in how library materials are categorized. Other types of bias in the scholarly research process, and the media, as well as personal bias, also influence information ecosystems and how we interact with them.

Bias in the Research Process

We have already seen that gender and racial bias can influence which research studies are published. Bias can also influence how, and whether, research studies are conducted in the first place, as well as which studies get published based on their subjects rather than their quality. Bias can skew the presentation and interpretation of facts, leading to misinformation and a distorted understanding of a topic. Some examples of bias in the research process include:

Definition: Funding bias

When a scientific study is funded by a group that supports a specific outcome for the research

Example: A study on the effects of a particular medication is paid for by the drug company that produces that medication

Definition: Selection bias

When a researcher sets up an experiment and chooses samples or groups that aren't representative of the population they are studying

Example: A researcher is investigating the effects of a drug on the general population but does not include many women in the study

Definition: Observer bias

The tendency of research participants to see what they expect or want to see

Example: A researcher who is sexist is observing women's behavior and interprets their behavior through the lens of their sexism

Definition: Publication bias

When certain types of studies are published over others

Examples: Racial bias leads a publisher to approve more white-authored papers than those from people of color; a publisher of a medical journal tends to reject studies about women's health in favor of studies about men's health.

Media Bias

As we saw in Chapter 3, trust in previously-trusted sources of information has declined and facts themselves have become contentious (Head et al, 2020; Kavanagh & Rich, 2018; Mitchell et al, 2018; RAND, 2020). Experts debate how to assess and address the political polarization of media outlets. Groups such as Ad Fontes Media have categorized news media based on their level of reliability and where their political bias (Interactive media bias chart). Other experts have criticized this work, arguing that such categorizations of media outlets "portray the political center 'unbiased' [and implying that] the status quo power structure is the only system that can feasibly exist, and even the thought of alternative systems is seen as *inherently* radical" (Benjes-Small, 2021).

Regardless of political bias, other types of media bias can also distort how information is presented. Below are some examples.

Definition: False balance

The public should be able to get information on all sides of an issue but that doesn't mean that all sides of the issue deserve equal weight. Media sources create false balance when they give equal airtime to both sides of an issue, even if 99% of experts agree with one side.



Image: *Balanced reporting (1 of 2)* by University of California Museum of Paleontology from Understanding science 101 has a CC BY-NC-SA 4.0 license.

Definition: Questionable "experts"

In untangling conflicting viewpoints in the media, it pays to investigate each person's area of expertise. For example, a PhD in physics does not make you an expert in medicine, or vice versa.



Image: *Balanced reporting (2 of 2)* by University of California Museum of Paleontology from Understanding science 101 has a CC BY-NC-SA 4.0 license.

Definition: Oversimplification

Science and social science research is often presented in the news in very oversimplified ways. Omitting important details might misrepresent the findings of the original research.

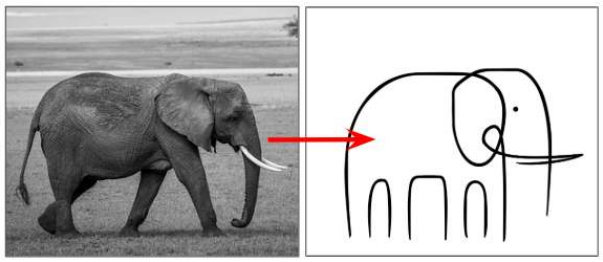


Image: *Elephant Africa nature* by Thomas Zbinden from Pixabay
Image: *Line drawing of an elephant* by Alvaro Montoro from Unsplash is in the Public Domain CC0

Definition: Mistaking correlation for causation

Correlation (two occurring at the same time) doesn't necessarily mean that one *caused* the other, but the media might imply a causal relationship when the original research shows no evidence of one.

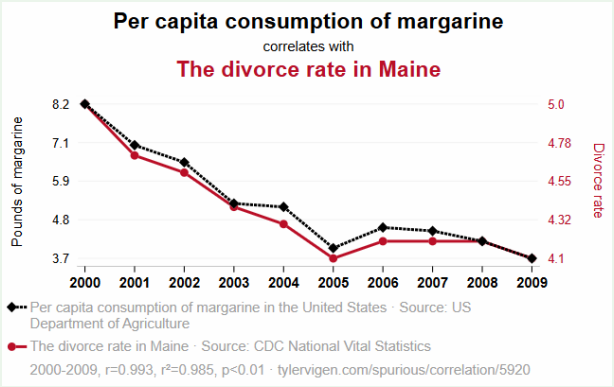


Image: *Per capita consumption of margarine correlates with the divorce rate in Maine* by Tyler Vigen has a CC BY 4.0 license.

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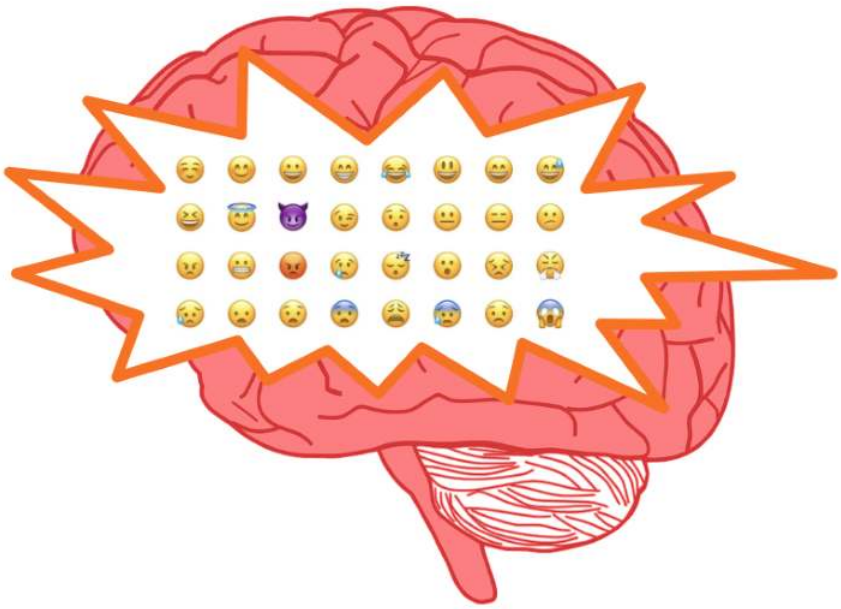
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4.3.2: Personal Biases



Everyone, including scholars and journalists, has personal or cognitive biases. Biases are attitudes, assumptions, or stereotypes that affect how we engage with the world, from our perceptions, to decisions and actions. Examining our own biases is an important part of thinking critically about information and how we engage with it.

Explicit vs. Implicit Bias

Some of our personal biases or prejudices are explicit, meaning that we are consciously aware of them. For example, if you think cats are better than dogs, and you aware of thinking it, you have an explicit bias in favor of cats. Extreme examples of explicit bias include consciously holding racist, homophobic, or xenophobic beliefs.

Implicit biases are a type of cognitive bias that we are not aware of, but that still affect how we think and behave. Project Implicit, created by researchers at University of Washington, Harvard University, and University of Virginia, studies implicit bias and helps people understand how our unconscious thinking affects our behavior. If you want to test your own implicit biases regarding particular race, gender, sexual orientation, disability, exercise, anxiety, alcohol, eating, artificial intelligence, and more, you can take Project Implicit's tests online.

Types of Cognitive Bias

Social scientists have identified dozens of cognitive biases. Below are some examples that affect how we think about and evaluate the information we encounter:

- **Illusory Truth Effect**
  The illusory truth effect is the tendency to believe things that are easy to process, or that have been repeated multiple times, regardless of whether or not they are actually accurate. For example, if you have repeatedly heard that vitamin C prevents the common cold, you might believe that it does, even though there is no evidence that it does. The illusory truth effect occurs even when people know better. One study found that people demonstrated “knowledge neglect,” meaning that they failed to rely on their prior knowledge in favor of the false information they repeatedly encountered (Fazio et al, 2015).
- **WYSIATI (What You See Is All There Is)**
  The WYSIATI bias leads to making decisions based on what is known while ignoring the existence of what is unknown, or assuming that what is unknown doesn't exist in the first place. For example, if you assume that your Google search results are representative of *all* of the information on a topic and you don't think critically about what might be missing, you are exhibiting WYSIATI bias.
- **Confirmation Bias**
  Confirmation bias is the tendency to seek, notice, retain, and use information that supports or confirms your pre-existing views and beliefs, and/or to (mis)interpret information as confirming those views and beliefs even when it does not. For example, if you believe that a particular dietary supplement will make you live longer, you might overlook or misinterpret research studies demonstrating that these claims are false.

- **Availability Cascade**
  The availability cascade is the tendency to favor information that you remember easily over more reliable information that is less easily remembered.
- **Communal Reinforcement**
  Communal reinforcement bias is the perpetuation of beliefs, concepts, or ideas within a group, regardless of the existence of empirical evidence supporting them. For example, if your roommate believes that your apartment is haunted, you and your friends start sharing this belief with other people in the neighborhood, you are likely to continue reinforcing the belief in each other until people begin to see it as a fact.
- **Ingroup Bias**
  Ingroup bias is the tendency for people to trust, believe, or favor members of their own group.
- **Dunning-Kruger Effect**
  The Dunning-Kruger Effect is the tendency for those with low ability in something to overestimate their ability and fail to recognize their lack of ability. For example, someone who plays the guitar badly might overestimate their performance on the guitar.
- **Bias Blind Spot**
  Bias blind spot is the tendency to recognize more cognitive biases in other people than in ourselves, and/or to see ourselves as less biased than others.

Challenging Our Biases

In the video below, weather and climate expert Dr. J. Marshall Shepherd describes how we can use knowledge to counter confirmation bias, the Dunning-Kruger effect, and cognitive dissonance.



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4.3.3: Censorship, Free Speech, and Intellectual Freedom

Censorship

Definition: Censorship

The suppression of ideas and information that some individuals, groups, or government officials find objectionable or dangerous (*First Amendment and censorship*, 2021)



Censorship involves some members of a society imposing their beliefs and opinions on others regarding what information and ideas are acceptable or objectionable.

Most librarians are opponents of censorship and advocates for free speech and intellectual freedom. The American Library Associations Library Bill of Rights, originally published in 1939, states that "libraries should challenge censorship in the fulfillment of their responsibility to provide information and enlightenment" (*Library bill of rights*, 2019). We will explore different types of censorship below. First, it is important to understand the concepts of free speech, freedom of the press, and intellectual and academic freedom.

Free Speech and Expression

> "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances."
>
> -- First Amendment of the United States Constitution
>
> "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers."
>
> -- United Nations (*Universal declaration*, 1948).

The First Amendment of the U.S. Constitution was passed by Congress September 25, 1789 and ratified December 15, 1791. Since its ratification, legal cases have addressed the scope and limitations of the First Amendment. For example, in 1969 "the Supreme Court held that inciting a crowd to violence was not protected speech" (*The First Amendment*). In other cases, courts determined that free speech can protect some behavior, including burning an American flag or wearing an arm band to protest a war (*The First Amendment*). On a global level, the United Nations articulated the right to freedom of expression and information sharing in it's 1948 *Universal Declaration of Human Rights* (*Universal declaration*, 1948).

Hate Speech

The First Amendment protects forms of speech that many people find offensive, such as hate speech. There is no official legal definition of hate speech, but it is generally described as "any form of expression through which speakers intend to vilify, humiliate, or incite hatred against a group or a class of persons on the basis of race, religion, skin color, sexual identity, gender identity, ethnicity, disability, or national origin" (*Hate speech and hate crime*). Hate speech is only a crime when it includes specific threats of violence or incites criminal behavior, but hate crimes are not protected by the First Amendment. The FBI's definition of hate crime is "a criminal offense against a person or property motivated in whole or in part by an offender’s bias against race, religion, disability, sexual orientation, ethnicity, gender, or gender identity" (*Hate crimes*).

In 2019, the United Nations launched the *United Nations Strategy and Plan of Action on Hate Speech* "in response to current alarming trends of growing xenophobia, racism and intolerance, violent misogyny, anti-Semitism and anti-Muslim hatred around

the world....[and recognizing] that over the past 75 years, hate speech has been a precursor to atrocity crimes, including genocide." (*United Nations Strategy).* They emphasize that "the strategy and its implementation [must] be in line with the right to freedom of opinion and expression. The United Nations supports more speech, not less, as the key means to address hate speech" (*United Nations Strategy).*

Freedom of the Press

> "The freedom of the press, protected by the First Amendment, is critical to a democracy in which the government is accountable to the people. A free media functions as a watchdog that can investigate and report on government wrongdoing. It is also a vibrant marketplace of ideas, a vehicle for ordinary citizens to express themselves and gain exposure to a wide range of information and opinions."
>
> -- American Civil Libraries Union (*Freedom of the press*)

The First Amendment also protects the right of journalists and media outlets to publish and distribute information and opinions without control, censorship, or retaliation by the government. Freedom of the press allows informed public engagement in the democratic process by ensuring that the public has access to a wide range of information and multiple perspectives -- including those that are critical of the government.

Intellectual and Academic Freedom

> "Intellectual freedom is a core value of the library profession, and a basic right in our democratic society."
>
> -- American Library Association (*Intellectual freedom*)
>
> "The common good depends upon the free search for truth and its free exposition."
>
> -- American Association of University Professors (*Protecting academic freedom*)

Intellectual freedom refers to the right of all people to read and seek information and to exercise free speech. Academic freedom refers to right of college and university faculty to teach and conduct research, and the right of students to learn, without government or other restrictions or censorship. The American Association of University Professors (AAUP), whose mission is to protect academic freedom, says "freedom in research is fundamental to the advancement of truth. Academic freedom in its teaching aspect is fundamental for the protection of the rights of the teacher in teaching and of the student to freedom in learning" (*1940 statement*).

Types of Censorship

Definition: Direct censorship

Explicit and overt suppression of information, ideas, or artistic expression, often involving a clear and identifiable act of suppression by a specific authority.

Examples:

- Book bans
- Blocking of websites
- Government restrictions on media outlets
- Arresting or otherwise retaliating against journalists
- Criminalizing certain types of speech
- Withholding or destroying information

Definition: Soft censorship

Discouraging or limiting access to information without directly banning it. Soft censorship often operates through indirect pressure, social punishment, or economic disincentives.

Examples:

- Self-censorship by journalists to avoid government scrutiny
- Librarians removing books from shelves or restricting access due to fear of challenges
- Professors avoiding certain research topics due to potential career repercussions
- Social media platforms removing or demonetizing content based on vague or subjective guidelines

Direct censorship is the explicit and overt suppression of information, while soft censorship is a more subtle form that involves discouraging or limiting access to information without outright banning it. Direct censorship includes actions like banning books, blocking websites, or arresting journalists. Soft censorship can manifest as self-censorship, where individuals or institutions avoid certain topics or perspectives to avoid potential criticism or backlash. Because direct censorship involves explicit suppression, it is visible and identifiable. Soft censorship, on the other hand, relies on indirect pressure and disincentives and can be difficult to identify and combat because it often occurs without a clear mandate or a public record. While both direct and soft censorship have the effect of limiting information, direct censorship is often motivated by a desire to control information and narratives, while soft censorship can arise from fear, self-preservation, or a desire to avoid conflict.

Restriction of access to information for children may or may not be seen as censorship. For example, many people support restricting children's access to adult materials such as explicit pornography, but restricting children's access to all information about sexuality in general is a matter of more debate. Even more controversial are attempts by parents or others to restrict access to specific information for *all* children.

Internet Censorship

Internet censorship may comprise restriction of information on individual internet domains, such as a company or school filtering certain websites on networked computers that are used for work at the company or for K-12 education; it may cover suppression of content that comes from outside of a particular jurisdiction, such as a nation-state blocking access to online content that doesn’t align with its government’s values, or blocking content on a topic that is highly problematic within a local social context.

Use of and support for online censorship varies widely across the globe. China has one of the most restrictive internet policies, limiting the information Chinese citizens are able to access. The Russian government has used the Russian-Ukrainian war as a rationale to increase its restrictions and censorship of online content. Freedom House’s Freedom in the World data ranks Iceland highest on "Freedom on the Net," with a score of 94 out of 100. Canada earned a score of 88/100, the United States earned 76/100, Mexico earned 61/100, Russia earned 20/100, and China earned 9/100 (Countries and Territories).

Is Restricting Mis/Disinformation Censorship?

Research conducted by the Pew Research Center found that most Americans support tech company and U.S. government restrictions on false and/or extremely violent information online (St. Aubin & Liedke, 2023). The study found that:

- 65% of Americans support tech companies moderating false information online and 55% support the U.S. government taking these steps. These shares have increased since 2018.
- Americans are even more supportive of tech companies (71%) and the U.S. government (60%) restricting extremely violent content online.
- Democrats are more supportive than Republicans of tech companies and the U.S. government restricting extremely violent content and false information online. The partisan gap in support for restricting false information has grown substantially since 2018 (St. Aubin & Liedke, 2023).

While tech companies have reduced or eliminated restrictions on mis/disinformation in recent years, Americans "were more inclined to prioritize freedom of information over restricting false information" in 2023 than in 2018 (St. Aubin & Liedke, 2023).

Are Library Selection Decisions Censorship?

Library budgets, patron needs, and other factors limit the number of books and other materials librarians can include in library collections. Generally, librarians seek to develop balanced collections that include multiple voices and points of view. But librarians, like all people, are influenced by personal and other biases. Also, soft censorship can play a part in librarians' decisions regarding which materials to purchase for library collections, particularly in libraries that have experienced book challenges.

Threats to Freedom of Speech, Intellectual and Academic Freedom, and Freedom of the Press

Below are some examples of direct censorship that reflect recent increases in censorship in the United States.

Book Bans

American Library Association data show that "the number of titles targeted for censorship surged 65 percent in 2023 compared to 2022, reaching the highest levels ever documented by the American Library Association (ALA)" and that "titles representing the voices and lived experiences of LGBTQIA+ and BIPOC individuals made up 47 percent of those targeted in censorship attempts" (*American Library Association reports*, 2024). In 2024, almost three quarters of censorship attempts were initiated by pressure groups and decision makers such as elected officials, while only 16% were initiated by parents and only 4% by library patrons. (*The state of America's libraries*, 2025, p. 10).

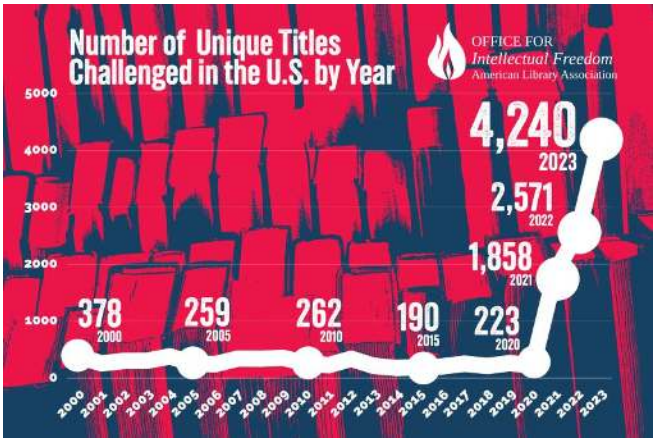


Figure **4.3.3.1**: The number of book challenged in libraries has increased dramatically since 2020. (*American Library Association reports*, 2024)

> "Each demand to ban a book is a demand to deny each person's constitutionally protected right to choose and read books that raise important issues and lift up the voices of those who are often silenced."
> -- Deborah Caldwell-Stone, director of ALA's Office for Intellectual Freedom (*American Library Association reports*, 2024)

Some famous historical examples of book bans and censorship of other creative works come from the Nazi suppression and destruction of ideas, works, and information in the 1930s. Works that didn't align with Nazi values were considered "un-German," and works by Jewish, leftist, liberal, American, Black, LGBTQIA+ authors, artists, and more were confiscated and often destroyed. In May 1933, Nazis and their sympathizers burned over 25,000 books is multiple cities throughout Germany, prompting international outcry (Book burning).

Banned Words and Other Censorship of Government Websites

> "In my lifetime, in the United States I don't know of another situation where researchers have been this concerned about losing access to data that they've had access to their whole career. It's dire."
>
> -- Jonathan Gilmour, T.H. Chan School of Public Health, Harvard University (Miller, 2025)
>
> "While every president aims to use language that reflects its priorities in its communications, the widespread restrictions on specific words represent a dystopian effort to control what Americans think and say, despite President Trump's lip service to '"freedom of speech and ending federal censorship."'
>
> -- AJ Connelly, PEN America (Connelly, 2025)

Since Donald Trump took office in January 2025, the federal government has made sweeping changes to the content shared on government websites, prompting scientists, archivists, advocacy groups, and employees of government agencies themselves to work to preserve existing publicly-available information about climate change, healthcare, LGBTQIA+ history, and more before it was removed (Miller, 2025; Disappearing data, 2025; Smith, 2025). As of May 2025, the federal government has flagged over 350 words for review and/or removal from government websites, including words related to race, gender, sexual orientation,identity, immigrants, diversity, affordable housing, alternative energy, social justice, bias, equity, climate change, vaccines, health, and many other topics (Connelly, 2025).

According to the free expression advocacy group PEN America, "no federal administration has moved as swiftly to exert broad new controls over what people can say, read, learn, research, and think. The heavy-handed imposition of government ideology and efforts to instill a culture of fear echo the tactics of repressive regimes, and they are having the intended effect. Across not just government agencies, but schools and universities, corporations, libraries, museums, and the media, there is already a pervasive sense that one must watch what one says in order to avoid government retaliation" (Lopez et al, 2025). Many of the administrations actions have been challenged in court for violating the First Amendment. But experts such as legal scholar Gregory P. Magarian note that the administrations actions have an impact on free expression even if they do not violate the First Amendment: "in theory, then, every new federal administration could sweepingly turn government institutions' speech into narrow propaganda. That hasn't happened before, perhaps because most governments realize they are just temporary custodians of an abiding republic. The Trump administration has broken this norm. The administration has ordered the purging of ideologically disfavored content from the Smithsonian museums, implemented book bans in military libraries and installed political supporters to run cultural institutions. None of those actions likely violates the First Amendment. All of them, however, have significant implications for free speech" (Magarian, 2025).

Restrictions on Teaching Black History, Racial Justice, and LGBTQIA+ Topics

> "The American Library Association has joined other educational institutions and civil liberties organizations in opposing any legislative proposal or local initiative intended to ban instruction, consideration, or discussion about the role of racism in the history of the United States or how systemic racism manifests itself in our schools, workplaces, and government agencies" (ALA statement on censorship, 2021).

In a 2023 Columbia University poll, over 80% of voters "agreed that public school students should learn about the history of racism and slavery in the United States and how it continues to affect us today" and nearly 80% "agree with the idea that teaching critical thinking skills requires that teachers challenge students with alternative points of view, even those that aren't popular and might make some uncomfortable" (Najarro, 2023). Despite public opinion, more than half of U.S. states have adopted legislation to restrict whether or how teachers can address "divisive concepts" such as race, racism, gender, gender identity and sexual orientation in their teaching. This legislation directly affects 20 million students and 1.3 million teachers (approximately 25% of U.S. teachers), but many more teachers self-censor as a result (Diliberti et al, 2024).

In 2022, Florida legislators passed HB 1557, commonly known as the "Don't Say Gay" law, "whose purpose was to 'prohibit[] classroom discussion about sexual orientation or gender identity in certain grade levels or in a specified manner" (FEA et al, 2023, p. 2). North Carolina, Iowa, Indiana, and Arkansas passed similar laws in 2023 (LaFrance, 2023). Also in 2023, Florida passed HB 1069, known as the "Don't Say They" law, which "expands on the classroom instruction provisions of the 2022 law and adds sweeping new provisions prohibiting the use of pronouns consistent with one's gender identity, expands book banning procedures, and censors health curriculum and instruction" (FEA et al, 2023, p. 2).

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4.3.4: Diverse Information Ecosystems and Knowledge Systems

Cultures around the world vary in how they perceive, interpret, and value information. These differences often stem from distinct cultural norms and values that shape how individuals within a culture think and share information. By considering the ways that social dynamics and values may vary, we can gain a better appreciation of the means of information creation and sharing around the world.



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Cultural Influences and Practices

Masuda and Nisbett (2001), note that individual behavior differs when you compare people from notably different cultures. For example, Hall (1976) describes the United States and some Western European countries as low-context cultures using articulated messages (such as a descriptive sentence) and Korea, Japan, and Taiwan as high-context cultures preferring indirect and ambiguous messages (such as an image and mood). It should be noted, however, that one criticism of some of these types of studies is that they do not account for cultural change over time. A number of studies have found that Hispanic and Latine peoples are prone to seeking information from their local community before other sources, but newer research shows an increasing reliance on the internet (Lee, et. al).

There are many societal and cultural elements that may influence how someone perceives information, the authority of its source, and the correctness of their choices. Pornpitakpan and Francis (2000) note a number of elements that can be considered including that:

- People living in high power distance (notably unequal) cultures tend to rely more on information from people in high status positions.
- People in high uncertainty avoidance cultures (those that rely on set rules and ways of doing things) seek absolute truths and have more difficulty with relativism (or the view that knowledge and morality are not absolute).
- People in collectivism-focused societies (those highly valuing social harmony and group needs) may value the opinions of others more highly.

Cultural practices and preferences can also shape the methods of communication as well. While many forms of information sharing take a written form, there are cultures that value and prioritize oral traditions. These sorts of traditions often rely on speech and generational knowledge-sharing to share and preserve their knowledge. While we may each be most familiar with our own cultural customs and beliefs, it is important to note that the ethical and social standards of each culture will vary.

> Consider This!
>
> If someone's culture places a higher value on the opinions of others and on the needs of the group, how might that affect how they evaluate the quality of an information source?

Global Examples

Below, we have some examples of cultural differences observed in research. It should be noted that study findings of this sort are often contested, leading to discussions among scholars about the findings. As with all research, this type of scholarship exists as on ongoing conversation. Rather than establishing 'fact', it often leads to groups of scholars discussing and creating a common consensus or agreement about the world. It should also be noted that many cultures and their perspectives change over time. And yet, these serve as reasonable examples of how certain cultures might vary in sharing information and in the types of information they value.

Collectivist vs. Individualist Societies

- **Example: Japan vs. the United States**

Japan is often viewed as a collectivist society, where sharing of information is viewed through a lens of group harmony and consensus. Japanese culture is noted as valuing group cohesion and an avoidance of confrontation. The United States, on the other hand, is portrayed as a more individualistic society where information is often direct and individual-centered. People are encouraged to speak their minds and share personal opinions openly. (Kavanagh, 65, 67-69)

High-Context vs. Low-Context Communication

- **Example: China vs. Germany**

China is generally described as a high-context culture, meaning that they rely heavily on non-verbal cues and context in their communication. This can lead to needing to read between the lines or understanding gestures and tone to get the full-context of what is being communicated. Low-context cultures, like Germany, prefer explicit and clear communication. Information is often shared directly with an emphasis on clarity (Ming-Jer).

Indigenous Knowledge Systems and Western Scientific Knowledge

> Definition: Indigenous Knowledge (or Traditional Knowledge)
>
> The "environmental, socio-economic, cultural, and other elements of overall knowledge held by Indigenous peoples and practiced within Indigenous communities" ("TEK and Indigenous Knowledge Systems")

> Definition: Scientific Method
>
> "The process of observing, asking questions, and seeking answers through tests and experiments" (Encyclopedia Britannica).

The Scientific Method is an approach to knowing that emphasizes asking questions, making observations, and running tests and experiments. The dominance of Western knowledge and the scientific method has often marginalized other ways of knowing, such as Indigenous Knowledge. Indigenous Knowledge refers to "environmental, socio-economic, cultural, and other elements of overall knowledge held by Indigenous peoples and practiced within Indigenous communities" ("TEK and Indigenous Knowledge Systems"). Western science, generally through what is called the Scientific Method, tries to establish understanding by simplifying complex issues. Values or issues that might create bias or interfere with the results of research are purposefully removed from the process in an attempt to get accurate, repeatable results. While this is the predominant approach for scientific approaches and western knowledge-building, that does not mean it is the only valid means for pursuing knowledge.

Ezeanya-Esiobu (2019) discusses how colonialism imposed Western scientific paradigms on African societies, viewing their indigenous knowledge as inferior. This suppression led to the loss of cultural knowledge and practices. This "acceptable knowledge" has often been dictated by those who prevail through military or economic domination. There are many different Indigenous Knowledge Systems with varying views. Some examples include that:

- All aspects of life are interconnected (including spirituality, history, language, etc.)

- Collective knowledge is intergenerational and passed along orally
- Time, patterns, and migrations are cyclical
- Much knowledge is based on observation

> "Existing copyright law, steeped in Western concepts and values, does not adequately protect Indigenous traditional cultural expressions, nor does it sufficiently reflect or account for Indigenous cultural values." (Vezina)

As we'll discuss in more detail in the next chapter, there are flaws built into the U.S. system of copyright laws that favors western means of expression and knowledge-building.

Examples of Indigenous Knowledge Sharing

Corridos

Celestino Fernández, provides a good example of indigenous knowledge and oral tradition, in explaining the Corridos of Mexico. A Corrido is "a way of documenting the experiences of people who often have no other voice". According to Fernández, they are songs written from the perspective of the everyday person. This tradition originally became popular in central Mexico in the 1830s. Many of these original songs were passed along verbally and had unknown authors. As such, existing U.S. copyright law does not cover a great many of these historic, cultural methods of knowing.

Sankofa

Sankofa is a concept based out of West Africa. Sankofa theory is an approach based in oral traditions and cultural practices that has been shaped into an academic theory at "highlights the importance of learning from the past to build the future" (Stanley & Chukwuorji). This approach emphasizes the importance of elders and the value of their memory as a source of knowledge. Akalimat talks about the importance of this principle to Black intellectual work in the world today and how respecting all forms of knowledge is important to modern life and humanity.

Critical Thinking

Consider how western practices such as the scientific method and U.S. copyright law can exclude contributions from other cultures. How might this impact the information and research sources you're able to find online?

When it comes to doing research there are many things that you have to consider. What types of information do you need? Where is that information located? Is that information authoritative and unbiased? How can you retrieve a good representation of different perspectives? A part of this is also considering how you will communicate that information. Are you collecting it solely for your own growth, or do you need to share that with classmates, a teacher, or an employer? When trying to convey information, are there things about your intended audience's background or culture that you should consider to make sure you communicate effectively?

Throughout this book we have learned about how specific information sources can be biased. However, this chapter seeks to demonstrate that even the systems we use to create, find, and share information can be biased. The only way to address this is to be purposeful in how we seek out, interpret, and communicate information. You can't be expected to consider *every* factor, but being informed and knowing which biases and challenges might arise to hamper your research can help you to consider new perspectives and new ways of seeking out alternative viewpoints!

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4.4: Information Justice

We have already seen some examples of information justice, such as open access and open education movements, Wikipedia Edit-a-thons and Cite Black Women's work to promote the acknowledgement of the intellectual contributions of Black women (Our principles, n.d.). Throughout the rest of this book, we will explore more information justice efforts, including those related to data justice, privacy, and representation of diverse voices, and authors' rights. In Chapter 5 we will examine the different ways information is valued, and how that value relates to access, data privacy, copyright, and the ethical use of information.

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4.5: Questions for Critical Thinking



Questions for Critical Thinking About Information Social Justice

- What factors influence which information gets published, how widely it is shared and at what cost, and whose voices are represented in it? How does this affect the ways we judge different types of information and/or different voices in general?
- How and why might powerful people, institutions, or governments distort or suppress information, and/or spread misinformation? How can we know when information has been suppressed or when certain voices have been silenced? What can we do about it?
- How might power structures influence factors that affect the findability of information, such as how search tools are organized or which sources appear at the top of a Google results list?
- How have power structures impacted your access to information? For example, how do power structures impact the information in your textbooks, and the affordability of those textbooks?

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CHAPTER OVERVIEW

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5.1: Chapter Overview



This chapter will...

- Analyze the different types of value various kinds of information may have information may have and the ways it can be used to inform, persuade, promote, misinform, or coerce
- Investigate the commodification of personal data
- Distinguish between copyright, fair use, open access, and the public domain
- Identify the rights and responsibilities of information use and creation, including ethical and unethical uses of generative AI
- Examine citation and academic integrity

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SECTION OVERVIEW

5.2: The Value of Information

5.2.1: Types of Value

5.2.2: Privacy and Personal Information

5.2.3: The Value of Open Education

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5.2.1: Types of Value

The Value of Information

Information has different types of value including as:

- as a commodity
- as a means of education
- as a means to influence
- as a means of understanding the world

Legal, ethical, and socioeconomic concerns influence the production, dissemination, and use of information in different settings, including academia.

The Monetary Value of Academic Publishing

Academic publishing is big business and commercial academic publishers make billions of dollars. You've undoubtedly been directly impacted by this; you've likely faced decisions on whether to buy a $100+ textbook that is required for a course.

The Value of Your Attention and Data

As we learned in our examination of the attention economy, your engagement with online content is valuable in itself. Data about you, such as your interests and political leanings, where you live, what you buy, and how much money are valuable to political parties, social media companies, retailers, and other corporations.

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5.2.2: Privacy and Personal Information

In the following video Dr. Maria Dubovitskaya of IBM Research Zurich discusses the value of our personal data and how cryptographic protocols could ensure our privacy while allowing us to share only the information that is necessary.



The following video describes how to be a good digital citizen:



Sources

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5.2.3: The Value of Open Education

Open education refers to educational practices and resources that are openly available for anyone to use, access, modify, and share. It encompasses a variety of initiatives aimed at making education more accessible, affordable, and inclusive. In the context of college students, open education can manifest in several ways:

1. **Open Educational Resources (OER)**: These are freely accessible, openly licensed materials that can be used for teaching, learning, research, and other educational purposes. OER include textbooks, lecture notes, videos, and other educational materials that are typically available online at no cost.[1]
    - At California Community Colleges, these are often reflected in courses labeled as 'ZTC' or Zero Textbook Cost. However, ZTC can be achieved through non-OER means as well including providing class textbook sets at the library or designing courses without textbooks.
2. **Open Access Journals**: These are scholarly journals that make their articles freely available online to the public. This allows students to access the latest research and academic publications without any financial barriers.
3. **Open Pedagogy**: This approach involves engaging students in the creation of open educational resources as part of their learning experience. It promotes collaboration, creativity, and critical thinking skills among students.

By embracing open education practices, college students can benefit from a more flexible and diverse learning environment while reducing the financial burden associated with traditional educational resources. Additionally, open education promotes knowledge sharing and collaboration on a global scale.

What is "Open"?

Open Educational Resources are accessible and open. This means that, in an ideal world, anyone can use and even edit them. However, in reality, there are different types of licenses that permit different types of use. While all open resources will be available and accessible to anyone, they may have limits on how someone can use them beyond just reading the materials. Most commonly, Open resources are licensed under some version of the Creative Commons license.

Zero Textbook Cost (ZTC)

The California Community College systems have lowered the cost of education through their ZTC initiative. This program encourages faculty to develop courses that have no textbook cost. It also requires that ZTC courses be labeled in the class schedule of each college. This enables students to find and enroll in these Zero Textbook Cost courses.

Enrolling in ZTC courses can help students save money, but it also provides more flexibility in how students can access their course resources, encourages the use of more diverse learning materials, and may even improve student performance.[2]

Challenges to Open Access of Information

There are a number of challenges to providing information that people can freely access. First and foremost is the cost! We can assume that most people have, at some point, accessed information on the internet; but is it really free?

Cost

Websites and videos are created by people. That work takes up time and often that work is performed as a part of their job as a part of an organization of some sort. Hosting websites and content also costs money. The amount of data you need to host online and the amount of people visiting your website increases the cost to host that resource. So where does the money for this come from?

- Ad revenue
- Donations
- Subscriptions

These are a few examples of how people afford to provide information on the internet. Creating and hosting a video on YouTube is free for the creator and for the user, but then the viewers have to watch ads.

This causes a very similar problem for open education. Educators and researchers generally do not want to use advertisements, as it makes their content seem less reputable. So websites hosting open content have to find money elsewhere. This is often through donations or through requiring the researchers themselves to pay for publishing their articles!

Quality Control

- **Lack of Standardization:** Open educational resources (OER) may vary widely in quality and accuracy since they are created by different individuals or organizations without a standardized review process.
- **Outdated Content:** OER may not always be updated regularly, leading to the dissemination of outdated information.

Sustainability

- **Funding:** The sustainability of open education initiatives can be a concern due to the lack of a clear funding model. Without sustainable funding, projects may struggle to maintain resources and support.
- **Long-term Maintenance:** Ensuring the long-term maintenance and updating of OER can be challenging without a dedicated team or organization overseeing the content.

Accessibility

- **ADA Accessibility:** Without the resources of big companies paying for resources to be created, it can be challenging to ensure that the information we put out there is accessible to people with disabilities, such as those who use screen readers.
- **Digital Divide:** Not all learners have equal access to technology or the internet, which can create barriers to accessing open educational resources for some individuals or communities.

Findability

A big part of accessibility is finding the resources in the first place! If you cannot discover a new source of information then you certainly can't access it. Tools like Google tend to prioritize certain types of results, often favoring large publishers and creators that already have a big audience. Open content creators and publishers are essentially small, indie creators. It's a challenge for them to compete for visibility!

- **Search Expertise:** Many college faculty are not experienced with searching for open education resources. This can make it difficult to locate suitable resources.
- **Lack of Centralization:** OERs are located across many different websites, making them more difficult to find.

Licensing

In order for a work to be "open", it must be properly licensed or in the public domain (a state in which a work belongs to the public and is not protected by copyright law). An open resource is one that someone can share, edit, and even use to create a totally new work. Whenever you create something in a tangible form (such as recording a song, taking a photograph, painting a picture, or writing a book), you immediately have author's rights to that work. Those rights include control over the distribution (sharing and access) of your work, use and reuse of your work (whether someone can use it or reuse it in their own projects), and the right to be acknowledged and credited for your work (this is part of why we cite sources!).

In order for someone else to be able to use your content, you have to agree to let them. This usually involves a licensing agreement of some sort. This is also why social media platforms like TikTok have user agreements that require you to give up some of your author rights. They literally could not legally share your videos if you didn't. In the next section we'll talk more about author's rights and licensing. The ability to license works in a way that makes them "open" is vital to open education, as it allows educators to customize and create free educational resources such as textbooks.

Instructional Concerns

- **Lack of Resources:** Many courses use textbooks that include videos, case studies, online homework, and other types of tools that enrich the classroom but are not easily replicated by OERs.

While open education has the potential to democratize access to education and resources, addressing these concerns is crucial to ensure its effectiveness and sustainability in the long run.[3]

How Do We Address These Challenges?

Colleges and scholars are doing many things to simplify the use of OERs:

- Creating central repositories for finding and accessing OERs.
- Developing more robust training in using and licensing OERs.
- Providing grants and other financial incentives to develop OERs.
- Hiring librarians and other staff specialized in Open Education.

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SECTION OVERVIEW

5.3: Legal Use of Information

5.3.1: Copyright and Licensing

5.3.2: Is it Covered By Copyright?

5.3.3: Copyright and AI

5.3.4: Creative Commons Copyright

5.3.5: Public Domain

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5.3.1: Copyright and Licensing

Definition: Copyright Law

"[T]he body of laws and regulations that govern the exclusive rights of an author or creator to make copies, license, and otherwise exploit their literary, musical, or artistic work." (dictionary.com)

Creator's Rights and Copyright

Copyright is a legal protection that gives creators control over how their works are used. This can include writing, art, music, and more! From the moment that a "work" is created in a tangible form (that is written, recorded, painted, etc.), they automatically own the copyright to that work.

Copyright protects a creator's right to:

- Make copies of their work
- Sell or distribute copies
- Create new works based on the original (like a song remix)
- Perform or display their work in public

For example, if a musician writes a song, only they can legally sell that song, make new versions of it, or perform it publicly. However, they can give other people permission to do those things.

Unless they are given away for some reason, copyright usually lasts for a long time (usually the creator's life plus several decades). While copyright does a lot, there are certain uses that it does not prohibit.

Chiefly, you are generally allowed to use works for the purpose of criticism, parody, and to provide access for the visually impaired. An example of using works for parody, is Weird Al Yankovic, who has parodied many popular songs.



[Man Mixing Tracks as DJ for the Party (External Link) by @Darren2 (External Link), Licensed CC0 (External Link)]

When a work that has at least a small degree of creativity to it is created in tangible form, it automatically gains copyright protection. This work does need to be fixed into a permanent medium/form of some kind (like a digital image or written paper).

Typically, in the United States, copyright protection lasts for the life of the author plus seventy years after their death. After copyright expires, the work is put in the public domain and anyone may use it however they like (U.S. Copyright Office).

Global Aspects of Copyright

Copyright laws vary between countries; however, there are international agreements that help to standardize the laws. So what does that mean for you when you share your works on the internet? Fortunately, copyright law is locally implemented by each country - meaning that you normally only have to worry about your own country's copyright laws.

What is the Public Domain?

The public domain refers to all creative works that are no longer protected by copyright or never had copyright protection. This means that anyone could use these works without needing the permission of their original creator. Works enter into the public domain in a few ways:

- The copyright has expired (In the United States, copyright typically lasts for either 95 years after publication [for works by a corporation] or 70 years after the death of the creator).
- The creator chooses to give up their copyright (which can be done using Creative Commons licensing).
- The work was never protected by copyright (This includes things like government publications).

The public domain allows for anyone to use these works and this can be great for creativity, allowing for new artists, writers, and performers to take inspiration from public works. Even some of the most well-known stories (and some that have been immensely profitable in modern times) come from public domain works. Disney, in particular, has made many movies based on works in the public domain including The Hunchback of Notre Dame, Peter Pan, Alice in Wonderland, and The Princess and the Frog.

What is Fair Use?

Fair Use is (in the United States) an exception to copyright law. It allows you to use creative works in specific ways. This is primarily meant to allow use for education, criticism, news reporting, and parody. Generally, fair use allows for the use of small portions of a work. However, there are four specific factors that determine whether or not fair use is allowed:

1. The purpose and character of use. Are you using it for a commercial/for-profit use, or a non-commercial use such as education? Education and other non-commercial uses are more likely to be allowed.
2. Nature of the original material. Is the original work published or unpublished? Is it fact or fiction? Highly creative works are less likely to be allowable for fair use.
3. The amount of the original work used. Are you only using a small part of it? The larger portion that you use, the less likely it is to be allowed.
4. Effect on the original work's value. Is your use going to have a financial impact on the work's creator? If it harms the market value of the work, your use is less likely to be allowed.

It should be noted that while parody and criticism are allowable for fair use, satire is not. Parody is a comedic commentary about a work. By its nature, it requires that you imitate the work. While satire is sometimes comedic, it is used to offer commentary or criticism about the world rather than about a specific work.

Common examples of projects where fair use is generally allowed:

- A student project
- Using short sound or video clips for teaching
- A library creating a digital copy of a work for the purpose of research
- Citing other's research in scholarly articles
- Providing access for the disabled

U.S. courts have recently placed more emphasis on the concept of transformation. Transformation refers to whether or not your use of someone's work builds on the original work in a different manner or for a different purpose. In order to rule in favor of it being fair use, the courts look to see if your use is significantly differently than the other work's original use. For example, such a transformation could include making changes to a work to use it for an entirely new purpose (such as combining clips of movies for social commentary or teaching) (Lowry).

Fair Use in Different Cultures

It is important to note that many of the laws and practices mentioned in this chapter are based on United States law. Other cultures have their own ways of viewing copyright. Goodyear (2022) suggests that the Copyright Act of 1976 is a western creation strongly influenced by the forces of racism and nationalism. In particular, Goodyear notes that until the 1960s, copyright law often failed to properly recognize and compensate Black and non-western artists and creators. They also note how U.S. Copyright Law centers the tangible form of a creation in determining copyright, a requirement that favors written over oral music; neglecting tribal music that was often not written down. Hathcock (2017) agrees that even in modern times, the continued focus of U.S. copyright on the written word excludes the "cultural production of many non-white, non-Western groups" (p. 13).

To show an example of difference in copyright, India's copyright law includes thirty very specific exceptions. For example, it specifically allows for temporary electronic storage. They have allowances similar to fair use, but they are restricted to more specific use cases (Goodyear). As we consider our own rights to protect and share our works, it's also important to consider how our own cultural laws may limit or exclude certain types of cultural expression.

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5.3.2: Is it Covered By Copyright?

Copyright covers original work that is fixed in a tangible medium of expression.

Several types of works can be protected including:

- Literary works
- Musical works, including any accompanying words
- Dramatic works, including any accompanying music
- Pantomimes and choreography
- Pictorial, graphic, and sculptural works
- Motion pictures and other audiovisual works
- Sound recordings
- Architectural works

What Isn't Covered by Copyright?

Not all works are covered by copyright. Those not covered include:

Works already in the public domain

- *Moby Dick*
- Shakespeare's plays
- Beethoven's works

Works not fixed in a tangible medium

- A song in your head, but not recorded or written down

Ideas

- Boy meets girl, they fall in love and live happily ever after
- Hero protagonist saves the world with the help of wacky sidekick

Facts

- 1+1=2
- King George IV died in 1830
- Copenhagen is the capital of Denmark

Works of the U.S. government produced by government employees

- Federal government reports
- Acts/Bills of Congress
- The White House website

Copyright in Cases of a Work Made for Hire

If you create something as part of your job duties, it is likely a work made for hire. In these cases, your employer is considered the author and rights holder of a work made for hire rather than the employee. Read the United States Copyright Office's Works Made for Hire circular for a more nuanced discussion.

Exercises: Copyrightable?

An interactive H5P element has been excluded from this version of the text. You can view it online here:
https://minnstate.pressbooks.pub/ctar/?p=211#h5p-31

5.3.2: Is it Covered By Copyright? is shared under a CC BY-NC-SA 4.0 license and was authored, remixed, and/or curated by Ohio State University Libraries & Ellen Carey.

- **11.2: What Copyright Covers** by Ohio State University Libraries is licensed CC BY-SA 4.0. Original source: https://minnstate.pressbooks.pub/ctar.

5.3.3: Copyright and AI

Copyright law can’t keep pace with rapid advancements in the use of AI to create works of visual art and music, making some ownership rights and infringements unclear.

What does it mean when artificial intelligence produces what could be argued to be original works, in relation to copyright? This short article by attorney Lloyd J. Jassin discusses exactly that question: Generative AI vs. Copyright: An attorney examines what artificial intelligence will mean for the publishing industry.

Keep in mind that as technology develops and alters the information landscape, copyright law needs to adapt as well.

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5.3.4: Creative Commons Copyright

Creative Commons Licensing

Origins of Creative Commons

Creative Commons came out of legal challenges after the Sonny Bono Copyright Term Extension Act (commonly also called the Mikey Mouse Protection Act due to it occurring right before Mickey Mouse entered the public domain) extended copyright terms from the life of the author plus 50 years to the life of the author plus 75 years; or 100 years after creation for works under corporate authorship. This legal action was seen by many to be an effort made to benefit large corporations. While legal challenges by Stanford Law Profession Lawrence Lessig and web publisher Eric Eldred failed, the two went on to create Creative Commons licensing (Creative Commons).

Creative Commons (CC) is a type of license that works within copyright law so that creators can provide more customizable access and use of their works. It is vital to providing open access to information. Many different works on the internet are able to be accessed because they use a Creative Commons or a similar type of license. For example, YouTube allows creators to apply their own default license or a Creative Commons license. Without one of those agreements, they wouldn't be able to host and share other people's videos!

Many agreements allowing others to use your content are built into the user agreements when you create an account or upload content onto a social website. Creative Commons is notable because it is widely recognized and used. It serves as a simple and reliable way to identify what uses are allowed for a given work. Using Creative Commons (external link), you can do any combination of the following:

- Allow others to share your work publicly
- Allow others to create and edit new copies of your work
- Allows others to create altogether new creations using your work
- Prohibit others from altering your work
- Prohibit others from making money on your work
- Require that others give you credit for your work
- Require that people using your work, use the same type of Creative Commons license that you did

Video: What are Creative Commons Licenses?

This video "What are Creative Commons Licenses" (external link) by the University of Guelph McLaughlin Library explains some of the basics of Creative Commons licenses.

Creative Commons includes the licenses most commonly used for making open educational resources (OERs). However, not every CC license includes all of the rights needed to create a truly open work. In order for a work to be open, users must be able to freely access, distribute, and edit that work. Creative Commons licenses including ND (nonderivative) or SA (share alike) license terms are not considered Open, because they greatly limit how you are allowed to edit or share the work.

Creative Commons is the most commonly used license for making resources open. "Creative Commons licenses give everyone from individual creators to large institutions a standardized way to grant the public permission to use their creative work under copyright law."[1] Creative Commons actually includes six different licenses that vary in the amount of permissions that they grant to other people for using and/or editing that resource.

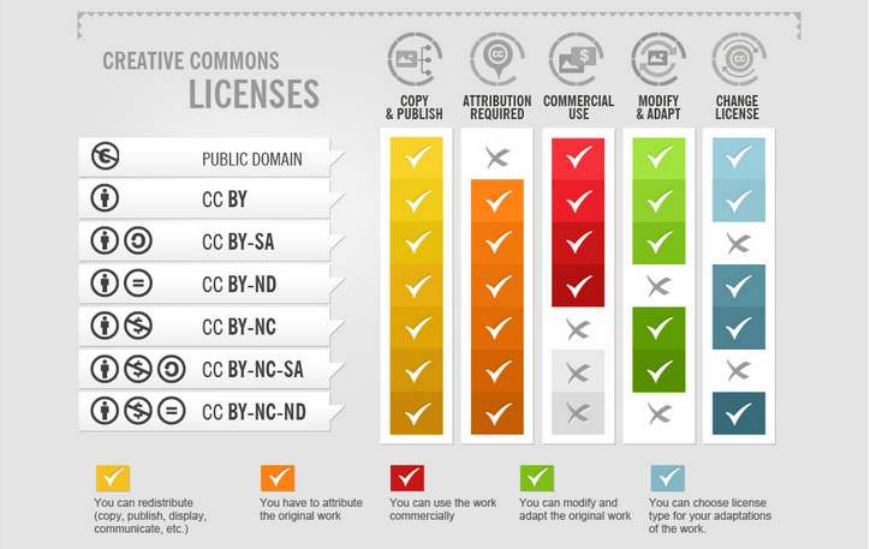
In these different licenses CC refers to Creative Commons, which is then followed by other acronyms that have different meanings. These acronyms are SA (Share Alike), NC (Non Commercial), and ND (No Derivatives).

What is a Derivative?

A derivative is something created using another work. This goes beyond simple quoting or paraphrasing some information from that work, but means you are taking the original work and transforming it into something else. It implies that you are using a substantial amount of the original work.CC Licenses

- CC BY allows any use but requires that you provide attribution (usually as a citation) if creating a new version of their work.
- CC BY-SA allows any use but requires that you provide attribution AND use the CC BY-SA license if creating a new version of their work.
- CC BY-NC allows any use to create a new (derivative) work so long as it is non-commercial, meaning that you will not make a profit off of it. You must also provide attribution to the original author.
- CC BY-NC-SA has the same allowances and conditions of CC BY-NC but also requires that any derivative works use the CC BY-NC-SA license.
- CC BY-ND allows people to read and copy the work but not to create any derivatives from it. It cannot be edited or transformed.
- CC BY-NC-ND is the same as CC-BY-ND except it also prevents any use that would generate a profit for people other than the original creator.[1]

There is also a special CC0 license, which means that the creator gives up any rights to the work. Anyone may do anything they like with it.



[Creative Commons Licenses (External Link) by Foter.com (External Link), Licensed CC BY-SA (External Link)].

Description: This image displays Creative Commons licenses from most to least free, with CC BY being the most free and CC BY-NC-ND being the least free. It is the least free because the Non-Commercial term is limiting and the No Derivatives term is very limiting. Non-Commercial means that people cannot use the work to make a profit. No Derivatives means that people cannot edit or alter the work in any way. The image also describes the allowances for each license, already described above under the Creative Commons Licensing heading.

Sources

1. Creative Commons. (2019). *About CC licenses.* CreativeCommons.org. https://creativecommons.org/share-your-work/cclicenses/(opens in new window)

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5.3.5: Public Domain

Public domain refers to creative works that are not protected by intellectual property laws, such as copyright, and are therefore free for anyone to use without permission or payment. These works can include literature, music, art, and scientific discoveries that are considered part of the public heritage. Once a work enters the public domain, it can be freely accessed, shared, and built upon by anyone. Works in the public domain play a crucial role in education, research, and creativity by providing a foundation of knowledge and inspiration for new creations.

Isn't that just CC0?

Basically, yes! CC0 is a license option that enables people to willingly put their works in the public domain.

Copyright laws vary by country. In the United States, works primarily end up in the public domain when either its author releases all copyright claims to it (such as with CC0 or with government authors), or when the copyright for the work expires. For many works, it can take 70-95 years from the date of publication for the work to go into the public domain. However, the exact length of time varies greatly depending on when the work was published, who it was published by, and where it was published.[1]

Sources

1. Copyright services: Copyright term and the public domain. (2024, January 16). Cornell University Library. https://guides.library.cornell.edu/copyright/publicdomain(opens in new window)

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SECTION OVERVIEW

5.4: Academic Integrity

5.4.1: Contributing to the Conversation

5.4.2: Why We Cite Sources

5.4.3: Ethics of Information Use

5.4.4: Degrees of Plagiarism

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5.4.1: Contributing to the Conversation



As a college student, whenever you complete an academic assignment, be it a research paper, a speech, or any other assignment in which you gather and synthesize information on a topic, you are participating in what is called a scholarly conversation or scholarly communication. The term **scholarly conversation** describes the process through which the body of knowledge about a topic has developed over time. This body of knowledge may include published books, presentations, research articles, conferences, discussions, online resources, and more. Your assignments are a way to add your own voice to the scholarly conversation—by reviewing what research has been done, drawing connections and conclusions from published information, and adding your own experiences, opinions, and ideas about what previous research has shown.

We will explore scholarly communication in more depth in Chapter 10.

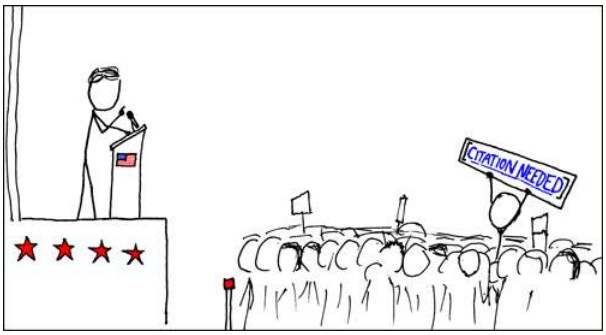
Sources

Image: "Speech Bubble" by Freepik, adapted by Aloha Sargent, from Flaticon.com

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5.4.2: Why We Cite Sources

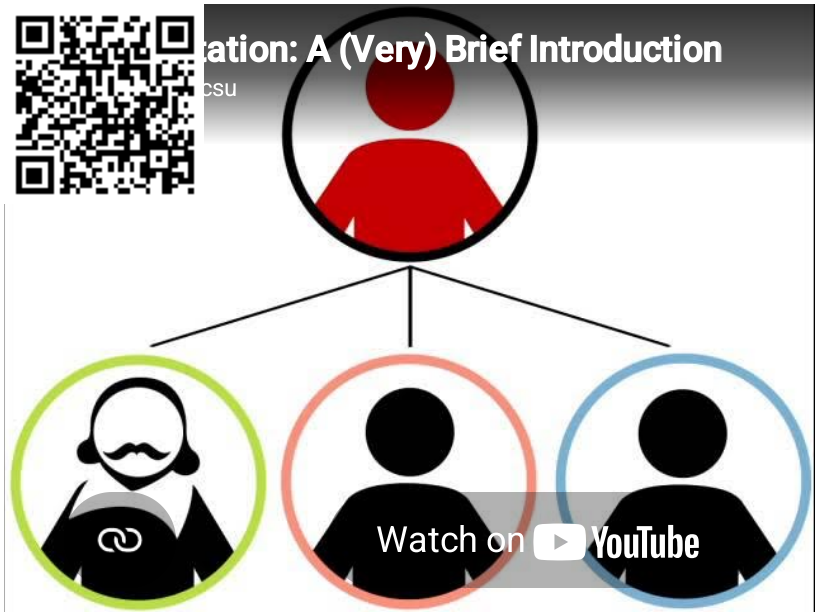


> "Academic research leads us to the insight that comes from gaining perspectives and understandings from other people through what we read, watch, and hear. In academic work we must tell our readers who and what led us to our conclusions" ("Ethical Use & Citing Sources").

When we engage in conversations with other people, we often say things like, "I heard on the news today that…" or "The cashier at the store said…" When we do this, we not only back up and further support the point we are trying to make, but we also give more credibility to what we are saying by letting others know the origin of the information. It is also a good idea to let others know where our information came from when engaging in a scholarly conversation. A citation is a mention to another source and the phrase "citing your sources" means you've communicated the sources of information that you've used in your own work.

It is unethical to use somebody else's information in your own work and not cite where you got that information (see section on Plagiarism and Academic Integrity, next). As long as you give credit where credit is due, using information from others to support your own thoughts, opinions, and research findings is good practice. Not only does it acknowledge the hard work of others, but it also shows that you did your research on the topic, you know what information exists about it, and you can integrate your knowledge into the existing research and contribute to the scholarly conversation.

The following video [1:54] by NC State University Libraries has a great summary of what citations are and why we use them:



Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Sources

"Citation: A (Very) Brief Introduction." *YouTube*, uploaded by NCSU Libraries, 23 July 2014.

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5.4.3: Ethics of Information Use

Plagiarism



The Merriam-Webster dictionary defines the word plagiarize as “to steal and pass off (the ideas or words of another) as one’s own: use (another’s production) without crediting the source.” When you use the words and ideas of others in your own work without citing where you got that information from, this is considered plagiarism. Whether a student purposely tries to pass off information as their own (i.e., copying and pasting text or paraphrasing another source without giving credit) or does so unintentionally (i.e., not knowing how to cite sources), plagiarism goes against the moral and ethical code for students called academic integrity. Academic integrity is the expectation that all students will be honest and responsible and will not plagiarize or cheat and that they will be motivated by more than just getting good grades. Most colleges have consequences for violating academic integrity, which may include suspension or expulsion from the institution.

> “As a student, you will be both using other’s knowledge as well as your own insights to create new scholarship. To do this in a way that meets academic integrity standards, you must acknowledge the part of your work that develops from others’ efforts. You do this by citing the work of others. You plagiarize when you fail to acknowledge the work of others and do not follow appropriate citation guidelines” (“Ethical Use & Citing Sources”).

Intellectual Property



When you avoid plagiarism by citing your sources, you are respecting the time and energy other people put into creating their intellectual property. Just like physical property that you can call your own, intellectual property describes an expression of the human mind that can be owned and protected. Once somebody puts their creative ideas into a fixed and tangible format, like in the form of a book, movie, or song, that becomes intellectual property and can be protected. Intellectual property comes in many forms, but the most popular are copyright, patents, and trademarks. Copyright is the most common form of intellectual property that has relevance for college-level research.

Copyright



Copyright is a type of protection for intellectual property that is automatically applied to any creative work that is placed in a fixed, tangible format. That means the email that you wrote to your instructor this morning or the doodle you drew in your notes during English are all protected by copyright because they are both in a tangible format and are creative and original (in other words, nothing exactly like them has ever existed until you created them). Though works can be registered through the U.S. Copyright Office, that is not mandatory and even things you see without the copyright symbol (©) or a copyright notice can be (and should be assumed to be) protected by copyright. Copyright gives you exclusive rights to whatever you created, meaning others cannot legally copy, distribute, display, modify, or perform (e.g., a play or piece of music) without getting your permission to do so. Copyright in the United States lasts the life of the creator plus an additional 70 years.

Fair Use



Fair use is an exception to copyright in which you can use a copyright-protected work without getting permission from the creator. There is no hard and fast way to determine whether or not a use of a copyrighted work is a fair use, but there is a four-factor test that can help measure how "fair" the fair use is and whether or not the use is an infringement of copyright. These factors are:

1. The purpose and character of your use
2. The nature of the copyrighted work
3. The amount and substantiality of the portion taken
4. The effect of the use upon the potential market.

Fair use weighs heavily in favor of educational uses. So in most cases, using images and/or videos you've found online for your presentation for class is not going to land you in hot water. Why is this? Using an image or video that belongs to somebody else without permission for an educational use is not likely to impact the potential market, it is only being shared with the people in your class, and it is being used to educate yourself and others. It is still always good practice to cite where the content came from and try to use openly licensed content that allows people to use it without seeking permission first (see "Creative Commons" section below) whenever possible.

Creative Commons



The world's first copyright law was enacted in the 1700s, way before the invention of the internet. The internet allows people to share information with the touch of a virtual button, yet our current copyright law restricts this type of sharing unless you get permission from the creator first. While copyright means that the picture of your cat that you took and uploaded online cannot be redistributed by anybody else without your permission, it also means that we can't use copyrighted music in a slideshow of 50 cat pictures you want to put together and share with friends online.

In 2001, a non-profit organization called Creative Commons saw the need for an improvement upon copyright in the digital age. We needed something that enabled the sharing and remixing of knowledge and creativity, which we are able to do so easily online. They developed tools called Creative Commons licenses that allow creators to define what they want others to be able to do and not do with their work. Creative Commons licenses free everyone from needing to track down creators and ask for permission before using their works, and encourage creativity by permitting adaptations and remixes of Creative Commons licensed works.

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Sources

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Image: "Creative Commons Logo" is in the Public Domain

Image: "Fair Use Logo" by Óðinn at English Wikipedia is in the Public Domain

Image: “Files” by Smashicons, adapted by Kelsey Smith, from Flaticon.com

Image: “Gears In Bald Head Side View” by Freepik, adapted by Kelsey Smith, from Flaticon.com

“Plagiarize.” *Merriam-Webster*, 1 Nov. 2020.

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5.4.4: Degrees of Plagiarism

Some types of plagiarism are more severe, such as having another person or an AI tool write your paper. Other types are less severe, such as accidentally omitting the page number from a quote that you cited.

You can use this handy infographic to check your work for plagiarism (click the image to access the original):

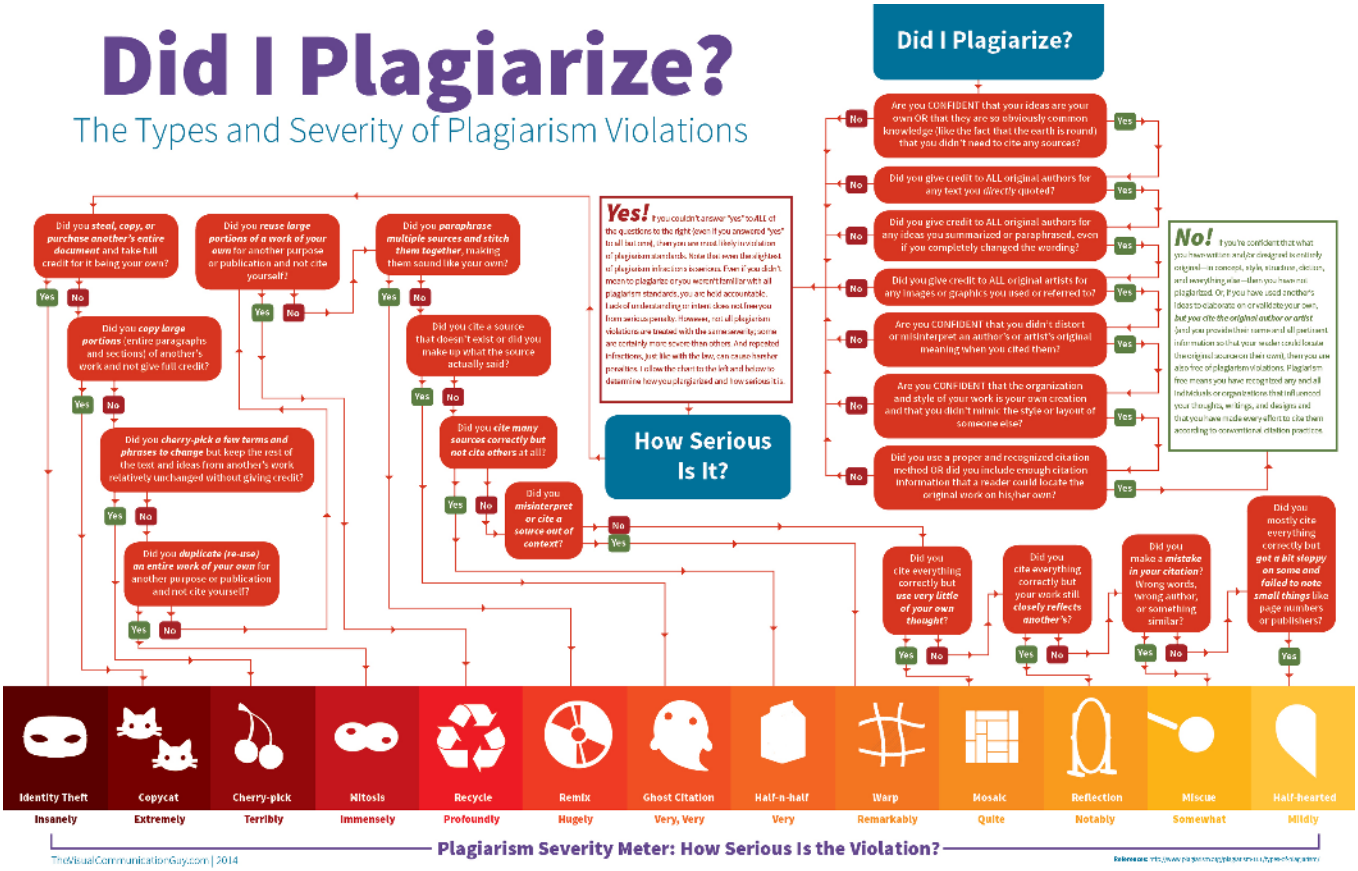


Figure **5.4.4.1**: Did I Plagiarize? (Copyright TheVisualCommunicationGuy)

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SECTION OVERVIEW

5.5: Citing Sources

5.5.1: When to Cite Sources

5.5.2: Citation and Citation Styles

5.5.3: MLA Style

5.5.4: APA Style

5.5.5: Citation Steps for Any Style

5.5.6: Citation Generators

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5.5.1: When to Cite Sources

Overview

As you learned in the section on Academic Integrity, it is necessary to give credit to others when you use their information in your assignment. Using other people's information may come in the form of a direct quote, or summarizing or paraphrasing somebody else's words. Paraphrasing means you restate what an author said in your own words; summarizing is when you talk about the main concepts or points. When you include someone else's ideas whether that's word-for-word (a direct quote), or summarizing or paraphrasing the words of somebody else—you need to include an in-text citation to let others know that the information is not your own, and to allow your reader to go and find the same source you used. Since in-text citations are only brief notations, they will all need a full citation at the end of the assignment or paper. See the each of the MLA and APA chapter for information on creating these full citations.

> "Good writers understand why they create citations. The reasons include demonstrating the thoroughness of the writer's research, giving credit to original sources, and ensuring that readers can find the sources consulted in order to draw their own conclusions about the writer's argument. Writers achieve the goals of documentation by providing sufficient information in a comprehensible, consistent structure" (*MLA Handbook* 4).

MLA In-Text Examples:

- Direct Quote: According to Susan Cain, "excessive stimulation seems to impede learning: a recent study found that people learn better after a quiet stroll through the woods than after a noisy walk down a city street" (85).
  Note: 85 is the page number.
- Paraphrasing: A recent study found that people tend to learn better after they took a quiet walk in the woods as opposed to a noisy walk down a city street (Cain 85).
  Note: Cain is the author's last name, and 85 is the page number.
- For a source with no author, cite the title, abbreviated: "The Cooper-Molera garden represents the methods and plantings available in 1860's California" ("Secret Gardens").
  Note: This direct quote comes from a publication called "The Secret Gardens of Old Monterey" that does not mention who the author is.

APA In-Text Examples:

- Direct quote: According to a study on social pain, "acetaminophen reduces behavioral and neural responses associated with the pain of social rejection, demonstrating substantial overlap between social and physical pain." (DeWall et al., 2010, p. 14)
  Note: DeWall is the author's last name, and "et al." means there are additional authors. 2010 is the year of publication, and 14 is the page number.
- Paraphrasing: In one study by DeWall et al. (2010), it was discovered that over-the-counter painkillers, like Acetaminophen, reduced social pain.
- For a source with no author and/or no date, use the title and n.d. for "no date": An online poll found that the more time students spent in the library, the higher their overall GPA ("Student Success Poll," n.d.).

Sources

MLA Handbook. 8th ed., Modern Language Association of America, 2016.

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5.5.2: Citation and Citation Styles

The Academic Integrity section of this chapter covered why you need to cite, and how citations allow you to use other people's ideas in an ethical way. As the video in that section discussed, there are many different citation styles and the one you will use depends on your specific course, instructor, and assignment instructions.

Two Connected Parts

All citation styles include two parts that work together:

1. An **in-text citation**, which is a brief notation (usually within a paragraph, at the end of a sentence) acknowledging that information came from another source. In MLA and APA style, an in-text citation is contained inside parentheses (and sometimes called a "parenthetical citation"). Citation styles that use footnotes or endnotes (such as Chicago or Turabian) may use a superscript in the same way.
2. **At the end of the paper** or assignment, there will be a list of more detailed bibliographic information that enables the reader to find the sources that were used. Every in-text citation must have a matching entry in this list. Depending on what citation style you are using, his list may be called "works cited," "references," or "bibliography." Different citation styles will require you to format these citations in different ways, but they all include similar information, like the author's name, title of the publication, date, URL, and/or page numbers.

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

Let's look at an example.

✔ ✔ Example: Citations in Academic Writing

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

Studies have shown that compared to passive learning, which occurs when students observe a lecture, students will learn more and will retain that learning longer if more active methods of teaching and learning are used (Bonwell & Eison 1991; Fink 2003).

The information in parentheses coordinates with a list of full citations at the end of the paper. At the end of the paper, these bibliographic entries appear in a reference list:

> Bonwell, C.C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom* (Report No. 1). ASHE-ERIC Higher Education. https://files.eric.ed.gov/fulltext/ED336049.pdf
>
> Fink, L. D. (2003). *Creating significant learning experiences.* Wiley.

Citation Styles

Style guides set the specific rules for how to create both in-text citations and their full bibliographic citations. There are over a dozen kinds of citation styles. While each style requires much of the same publication information to be included in a citation, the styles differ from each other in formatting details such as capitalization, punctuation, the order of publication information, and whether the author's name is given in full or abbreviated.

Example: Differences in Citation Styles

Below are bibliographic citations for the same article in four common styles. Notice they contain information about who the author is, article title, journal title, publication year, and information about volume, issue, and pages. Notice the small difference in punctuation, order of the elements, and formatting that **do make a difference**.

APA:

> Rosenhan, D. L. (1973). On being sane in insane places. *Science, 179*(4070), 250-258. doi.org/10.1126/science.179.4070.250

Chicago:

Rosenhan, D. L. 1973. "On Being Sane in Insane Places." *Science* 179, no. 4070: 250-258. doi.org/10.1126/science.179.4070.250.

MLA:

Rosenhan, D. L. "On Being Sane in Insane Places." *Science*, vol. 179, no. 4070: 250-258, 1973, doi.org/10.1126/science.179.4070.250.

AMA:

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

Compare citation elements including punctuation and spacing to see how each style handles each element.

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5.5.3: MLA Style

Overview

The Modern Language Association (MLA) is a professional association for scholars of literature and language. Among other things, the MLA publishes a style manual (sometimes called a “style guide”) for writing and citing sources, used primarily in the humanities, including most English classes. MLA is one of several types of citation styles. As an undergraduate student, some professors or courses may require you to use APA (details below), Chicago, or Turabian style.

It’s not necessary (or advisable) to memorize formatting rules for any citation style. Getting used to checking formatting examples and published guidance (for example, in books or on websites) will help you proofread citations and move more easily between citation styles. There are helpful reference books you can keep on hand (such as the MLA Handbook, which is the style manual mentioned above), and many great online tools through your college library or tutoring websites, or found with a quick online search. Every so often, MLA style (or any citation style), will undergo some changes, and a new edition of the style manual will be released. All citation styles have different formats for citing various information types (e.g., websites, books, podcasts, emails), and as technology advances and information becomes available in new formats, citation styles need to be added and updated.

Works Cited

In MLA style, the list of detailed bibliographic information at the end of the paper or assignment is called “Works Cited.” The core elements of an MLA citation are as follows (be sure to pay attention to the punctuation that follows each element):

MLA Core Elements

1. Author.
2. Title of source.
3. Title of container,
4. Other contributors,
5. Version,
6. Number,
7. Publisher,
8. Publication date,
9. Location.

Author

- A single author should be written: Last name, First name Middle name
- For two authors, only invert the first author’s name. List the names in the order in which they appear on the source.
- For three or more authors, use et al. (which means, ‘and others’).
- When citing an edited book, add a descriptive label (“editor”) after the name.
  Example: Smith, John M.
  Example: Smith, John M., and Terence Duvall.

Title of Source

- Include both the title and subtitle separated by a colon [:].
- Capitalize the first word of the title and subtitle, plus all other important words.
- Enclose in “quotation marks:”
  - If the title is part of a larger work, such as a story in an anthology, an article in a journal, or a Web page from a Web site
- Place in italics:
  - If the title is a for an entire book, journal, or Web site

Title of Container

- When a source is part of a larger work, the larger work is called the “container.”
- The container is italicized and followed by a comma.
- Containers can be:

- Periodicals (magazines, journals, newspapers)
- Anthologies (books which contain short stories, essays, poetry, etc.)
- Entire Web sites (which contain individual web pages)
- Library or other online databases (which contain articles, books, etc.)

Other Contributors

- Contributors other than the author are named in the entry if they are important to your research or the identification of the source (i.e. editors and translators).
- When citing a source with both an author and editor, list the author first and the editor after the title of the source.

Version

If a source carries a notation that it is a work in more than one form (i.e. book edition), identify the version.

- 7th ed.
- Expanded ed.

Number

- Journals are typically numbered with volume (vol.) and issue numbers (no.).
- If you are using a multi-volume set, include the volume (vol.) number.

Publisher

- Only include the first publisher listed, unless the source was published by multiple independent organizations. Separate independent publishers with a forward slash [/].
- Abbreviate publisher names in the following cases:
  - Omit business words like Company, Corporation, Incorporated, and Limited
  - Replace University Press with UP (i.e. Oxford UP, U of California P, MIT P).
- A publisher's name may be completely omitted for the following types of sources:
  - Web page whose publisher is the same as the name of the overall website
  - Periodical (journal, magazine, newspaper)
  - Work published by the author

Publication Date

- Dates should be given as fully as they appear in your sources.
- If multiple dates are listed, cite the date most meaningful to your use of the source.
- Format as: Day Month Year. Abbreviate the names of months longer than 4 letters

Location

- In print sources, a page number (preceded by p.) or a range of page numbers (preceded by pp.) specifies the location.
- In online sources, location is indicated by the URL, DOI, or Permalink.
  - URL: Copy in full from your Web browser, but omit http:// or https://
  - DOI: Journal articles are often assigned "Digital Object Identifiers". When possible, cite a DOI (preceded by doi:) instead of the URL.
  - Permalink: Web sources (especially Library databases) often provide stable URLs, called "permalinks". When possible, use these instead of the URL.

Compiling & Formatting

Once you have constructed your citations according to MLA rules, there are a few more steps to complete the Works Cited list.

- Center the words "Works Cited" at the top of the page.
- Alphabetize the citations by author's last name, or by the first main word of the title if there is no author. (When alphabetizing, ignore A, An, and The at the beginning of citations.)
- Make sure all lines are double-spaced.

- Apply “hanging” indents to all citations: The first line of the citation is not indented. All subsequent lines are indented 0.5 inch.

Examples

Print Book:

Mancini, Candice. *Racism in Harper Lee’s To Kill a Mockingbird*. Greenhaven Press, 2008.

Electronic Book:

Schreiber, Brad. *Music Is Power : Popular Songs, Social Justice, and the Will to Change*. Rutgers UP, 2019. *EBSCOhost*, search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=2293722&site=ehost-live&scope=site.

Web page:

Hollmichel, Stephanie. “The Reading Brain: Differences between Digital and Print.” *So Many Books*, 25 Apr. 2013, somanybooksblog.com/2013/04/25/the-reading-brain-differences-between-digital-and-print/.

Academic Journal Article:

Grauer, Jens, et al. “Strategic Spatiotemporal Vaccine Distribution Increases the Survival Rate in an Infectious Disease like Covid-19.” *Scientific Reports*, vol. 10, no. 1, Dec. 2020, pp. 1–10. *EBSCOhost*, doi:10.1038/s41598-020-78447-3.

For more MLA style citation examples, visit Excelsior OWL.

Sources

MLA Handbook. 8th ed., Modern Language Association of America, 2016.

Works Cited section adapted from “Library 10” by Cabrillo College Library, licensed under CC BY 4.0

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5.5.4: APA Style

Overview

The American Psychological Association (APA) is a professional association that represents those working in the field of psychology in the United States. Just like the Modern Language Association (MLA) is often used in the humanities subjects, the APA has their own citation guidelines that are often used to cite sources within the social sciences. Publication Manual of the American Psychological Association is the official reference book, or style guide, for all the details of APA style format, though you can find plenty of helpful guides for free online.

References

In APA style, the list of detailed bibliographic information at the end of the paper or assignment is called "References" and generally, your professors may use the word "references" instead of the word "citations". The core elements of a APA style citation are as follows (be sure to pay attention to the punctuation used at the end of each element):

APA Core Elements

- Author.
- (Date).
- Title.
- Source.

Author

- List the last name first and the first and middle names as initials.
  - Example: Smith, J. M.
- If there are two authors, use the ampersand (&) instead of the word "and."
- When there are three to 20 authors, list all of the authors by last name and initials and use an ampersand before listing the last author.
- If there are more than twenty authors, list the first 19 authors then use an ellipsis (…) before listing the last author's name. Do not use an ampersand before the last author and do not list more than 20 authors' names total.

Date

- Use a complete date (YYYY, Month DD), if given, otherwise use what is given.
- Use "n.d." if there is no date given.

Title

- Capitalize only the first letter of the first word of the title and subtitle, the first word after a colon or a dash in the title, and proper nouns (except for journal articles, in which you will capitalize all major words in the title.
- Italicize titles of longer works, like books, collections, websites, or journals. Do not put smaller titles in quotation marks or underline (e.g., chapters, articles, web pages).
- For more details and clarification, read this page on the Excelsior OWL website.

Source

- This is where one can retrieve the cited information, like in a book, on a website, or in a journal article. The format of this section depends on the type of information resource it is. Check out this helpful guide for more information on formatting sources.

Compiling & Formatting

The rules for formatting a list of APA references is similar to MLA format, with some small but important differences:

- Center and bold the word "References" at the top of a separate page

- Alphabetize the citations by author's last name, or by the first main word of the title if there is no author. (When alphabetizing, ignore A, An, and The at the beginning of citations.).
- If you have multiple citations by the same author(s), list the citations in chronological order, from earliest to most recent.
- Make sure all lines are double-spaced.
- Apply "hanging" indents to all citations: The first line of the citation is not indented. All subsequent lines are indented 0.5 inch.

Examples

Print Book:

Mancini, C. (2008). *Racism in Harper Lee's To kill a mockingbird*. Greenhaven Press.

Electronic Book:

Schreiber, B. (2019). *Music is power : Popular songs, social Justice, and the will to change*. Rutgers University Press.

Web page:

Hollmichel, S. (2013, April 25). *The reading brain: Differences between digital and print*. So Many Books. https://somanybooksblog.com/2013/04/...tal-and-print/

Academic Journal Article:

Grauer, J., Löwen, H., & Liebchen, B. (2020). Strategic spatiotemporal vaccine distribution increases the survival rate in an infectious disease like Covid-19. *Scientific Reports*, *10*(1), 1–10. https://doi-org.whccd.idm.oclc.org/1...98-020-78447-3

For more examples of APA style citations, visit Excelsior OWL.

Sources

Publication Manual of the American Psychological Association : The Official Guide to APA Style. 7th ed., American Psychological Association, 2021.

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5.5.5: Citation Steps for Any Style

1. Determine the citation style required for your paper or project and refresh your memory on the formatting rules using that citation styles handbook (your college library should have a copy for you to use) or using an online guide, like Excelsior OWL or Citation and Writing Guides from Penn State University Libraries.
2. Remember to include your in-text citations as you are writing your paper or pulling your project together. If you don't include them as you go, it is easy to forget to go back and cite the source, which could lead to accidental plagiarism! See the section on When to Cite Sources at the end of this chapter to learn when you will and will not need to include an in-text citation.
3. Identify the information source type you are creating a full bibliographic citation for, since the citation format looks different for different types of information sources. Sometimes, especially online, it can be hard to tell! If you aren't sure what type of source something is or how to format your citation, ask a librarian or writing tutor.
4. Compile your cited sources at the end of your paper or project, being sure to follow the formatting rules of the citation style you are using throughout the assignment. See the section on Citation Generators, next, for information about helpful tools for this task.

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5.5.6: Citation Generators

There are now many online tools available that will automatically create citations for many different types of information sources. Citation generators are tools that allow users to type, paste, or import certain information (like a source's type, title, author, and date), and then create a citation in whatever format is needed (e.g., APA, MLA, Chicago).

Some citation generators are more reliable for creating accurate citations than others, so you should always double-check automatically generated citations using a citation guide.

Library Databases

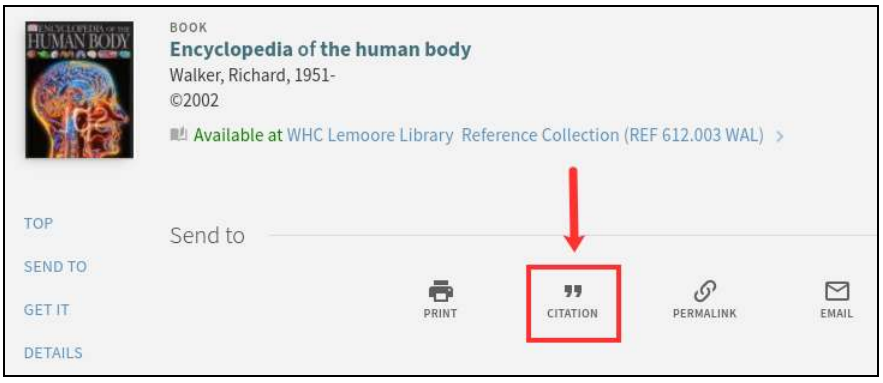
Almost all of your college library's databases will have a convenient citation generator built right into them. In most cases, when you are reading an ebook, academic journal article, or another resource coming from a library database, there will be an icon somewhere on the page for a citation generator. These often offer a list of citation styles to choose from; they provide a citation for that particular source in whatever format is needed, so you can easily copy and paste the full citation into your assignment. The citation generator is not always located in the same spot, and does not always appear the same way in all library databases, but will often say "cite" or have quotation mark icons to indicate that it is a citation tool.

While these citation generators are incredibly helpful and convenient, they do sometimes make mistakes! Always be sure to double-check the citation generated for you—do not assume that all citations generated by a citation tool will be 100% correct.



OneSearch

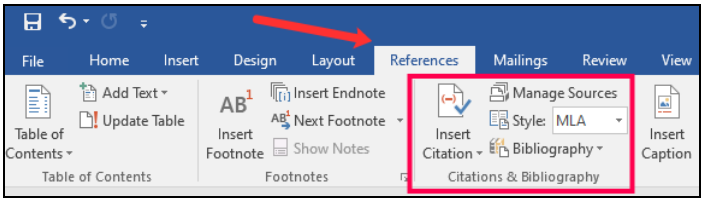
OneSearch also has its own convenient tool located within the record of every item record. The tool is located in the "Send to" section of the record and looks like one set of quotation marks with the word "CITATION" underneath. The citation style can be selected on the left-hand side (but please note, some colleges may list these formats differently from what is shown in the image below). Clicking on "COPY CITATION TO CLIPBOARD" will copy the citation so you can easily paste it into your bibliography (in Microsoft Word, Google Docs, or elsewhere). Besides checking the citation for accuracy, it is also important to check the formatting of your pasted text. Some formatting, like italics, may be lost when copying and pasting. Citation generators are fantastic tools that save a lot of time, but are not always 100% accurate!



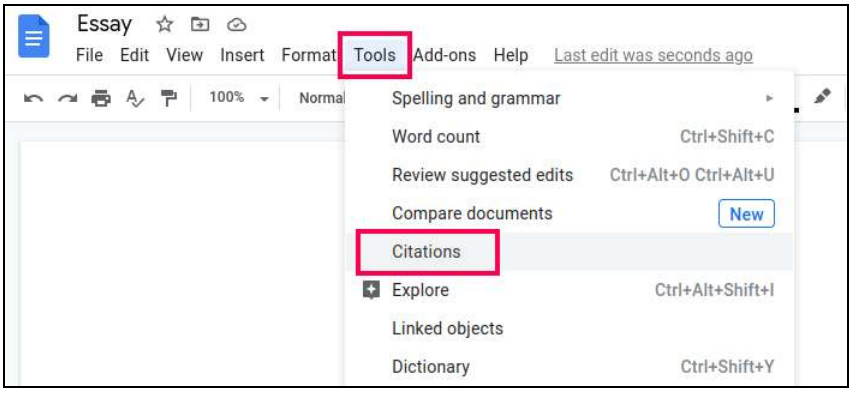
Word Processors

Two commonly used word processors—Microsoft Word and Google Docs—both have citation tools built into the software that make inserting in-text citations and compiling full citations quick and simple.

Microsoft Word's citation generator is found under the toolbar section called "References," and the "Insert Citation" tool allows users to plug in bibliographic information about each source used in their paper. The software will keep a running list of the sources, and allows for easy insertion of an in-text citation and a quick combination of citations into a bibliography in the appropriate citation style. An important thing to note is that Microsoft Word may not have the latest citation style format edition; for instance, it may only have the option to create citations in MLA 7th edition, but (as of the time this book was published) MLA 8th edition is the most up-to-date style.



The citation generator in Google Docs is located under the "Tools" menu item on the toolbar. Though this citation tool is much less robust than Microsoft Word's, only having three citation styles to choose from, it still allows for quick insertion of both in-text citations and a bibliography at the end of the paper. As mentioned previously, the citation styles may not be the latest edition and it is important to always review any citation generated for you.



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5.6: Questions for Critical Thinking



Questions for Critical Thinking About Information Ethics and Value

- What kinds of value have you placed on different types of information in your life? How have you demonstrated that value?
- What does it mean to have information integrity or academic integrity? What are the similarities and differences between plagiarism and copyright violations?
- How might the use or absence of citations impact the sharing of research and information? In what ways does giving credit to other sources of information help to make your own claims stronger?
- How would you feel if someone else copied your own work without giving you credit?
- How and why might socioeconomic factors influence the information available and the voices that are heard? How might they influence who has access to various types of information?
- How could something like open access (information sources that are available for free) change information creation, publishing, and education?

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CHAPTER OVERVIEW

6: Research as a Process of Inquiry

6.1: Chapter Overview
6.2: The Research Process
6.3: Types of Research
6.4: Getting Started With Your Research
6.5: Choosing a Topic
6.6: Conducting Background Research
6.7: Research Questions
6.8: Identifying the Main Concepts in Your Research Question
6.9: Avoiding Confirmation Bias
6.10: Brainstorming Related Terms
6.11: Creating a Search Statement
6.12: Conclusion
6.13: Questions for Critical Thinking

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6.1: Chapter Overview



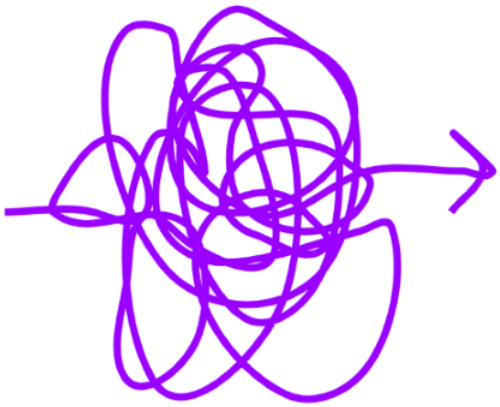
This chapter will...

- Examine the elements and characteristics of the research process
- Examine the value of evidence
- Analyze the development of meaningful research topics and questions
- Explore the purpose of background research

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6.2: The Research Process

The Research Process is Messy!



Research is a process of developing knowledge by asking increasingly complex questions whose answers lead to new questions. If we already know exactly what we think on a topic and what we are going to say in our paper or presentation, we are not doing research -- we are just expressing our own thoughts and opinions. Conducting research requires curiously engaging with information we don't already know. Writing the paper and *then* finding sources that will support the arguments we've already made does not allow us to engage deeply with the topic, learn from experts through a variety of sources, challenge our previous assumptions, and develop our knowledge and analysis of a topic.

Research and Scholarly Conversation

As multiple scholars examine the same topic, asking their own questions and seeking answers, they enter a "conversation" with other scholars who have explored the same topic. We'll explore scholarly conversation in more depth in Chapter 10. As we explore how to approach research assignments in this chapter, imagine yourself joining a conversation that has been going on since before you arrived, and will continue after you finish your assignment and move on. Consider what each source you use contributes to the conversation, what your sources have to say to each other, and what your own voice adds to the conversation.

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6.3: Types of Research

In research, there are different ways to gather information and answer questions. Each type of research has its own methods, strengths, and purposes. This section will explain some of the main types of research and how they differ.

Types of Research

Definition: Variable

A characteristic, number, or quantity that can be observed.

1. **Descriptive Research**: Descriptive research aims to describe something as it is. It tried to explain the characteristics of a population or situation. It doesn't try to find out why something happens but instead focuses on what is happening. For example, a researcher might use surveys to find out how many students prefer online learning versus in-person classes.
2. **Experimental Research**: Experimental research focuses on controlling certain factors in order to observe how changes affect the results of the experiment. This is a key approach to the Scientific Method, a research method highly valued by Western society. For instance, a researcher might change the amount of light in a room to see if it affects people's ability to focus. Experimental research often happens in labs, where variables can be carefully controlled.
3. **Correlational Research**: Correlational Research looks for connections or relationships between two things. For example, a study might find a correlation between the number of hours students study and their grades. However, proving that a relationship exists does not necessarily prove that one variable directly causes the other to occur or change.
4. **Exploratory Research**: Often used when little is known about a topic, exploratory research helps researchers gather more information to better understand the subject. It's less structured and can involve open-ended questions or observations, making it useful for new areas of study.
5. **Case Study Research**: This approach focuses on a single subject, group, or event to get a deep understanding of it. For example, a case study on a specific high school might examine its policies, culture, and student outcomes in great detail.

The Goal of Research: Fact vs Evidence

The goal of research is not often to establish fact. Unquestionable facts are quite uncommon in research. Instead, research focuses on developing a hypothesis of what is happening and why, then seeking out evidence that supports or refutes those hypotheses. In the aforementioned example measuring student study hours and its potential impact on their grades, even if the researchers found that grades improved with an increase in hours studied, it does not prove that the hours studied improved their grade. Instead, it provides evidence supporting the theory that increased study hours improves grades. There could still be errors in the research methods used or other variables affecting the outcome.

Quantitative vs. Qualitative Research

Research methods are the approaches used in doing a specific research study. One important difference in research methods is between **quantitative** and **qualitative** research.

Quantitative Research

Quantitative research is all about numbers. Quantitative research seeks out measurable data. This type of research often involves statistics, charts, and graphs to present findings. For example, if researchers want to know how many people prefer online learning, they might survey a large group, count the responses, and create a percentage.

- **Strengths**: Quantitative data is clear and precise, making it easier to measure and compare. It can also help with testing theories and finding patterns.
- **Weaknesses**: It doesn't provide much detail about people's feelings, motivations, or personal experiences. Numbers can show trends but might miss the deeper reasons behind them.

Qualitative Research

Qualitative research is more about words and ideas than numbers. It aims to understand deeper thoughts, feelings, and behaviors. Common research methods include interviews, open-ended survey questions, or observations. For example, to understand why

students prefer online learning, a researcher might conduct interviews with students to hear their personal reasons.

- **Strengths**: Qualitative data provides depth and detail. It captures personal experiences and emotions, helping researchers understand the "why" behind behaviors and choices.
- **Weaknesses**: Qualitative data is harder to measure or compare because it isn't based on numbers. It can also be more time-consuming, as it often involves collecting and analyzing long responses.

Comparing Quantitative and Qualitative Research

Feature	Quantitative	Qualitative
Data Type	Numbers and statistics	Words and descriptions
Purpose	To measure and compare	To understand experiences and meanings
Methods	Surveys, experiments, statistical analysis	Interviews, observations, case studies
Strengths	Precise, measurable, good for large groups	In-depth, captures personal experiences
Weaknesses	Lacks detail on feelings and reasons	Harder to compare and analyze statistically

Both types of research are valuable, and often, researchers use them together. For example, a study on student learning might start with a quantitative survey to gather general data, then follow up with qualitative interviews to explore students' experiences in more depth. By combining these methods, researchers can gain a fuller, more accurate picture of the topic they're studying.

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6.4: Getting Started With Your Research

Identifying your research need (also called your information need) is one of the first steps to doing effective research. Your research need is a specific gap in knowledge or understanding required to address a problem or answer a question. It represents the questions you need to answer to complete an assignment, write a paper, etc. Defining your research need helps clarify your problem and what you need to do. In a classroom, your research need is often defined by your assignment instructions and your own current level of knowledge about the related topic.

Understanding Your Assignment's Expectations

While the research process is non-linear, there is one important first step: understanding the expectations of your assignment.

Define Your Research Need

To identify your research need, start with the following steps:

- Read over your assignment requirements.
- Choose a research topic that interests you.
- Ask yourself
  - What am I trying to learn or demonstrate?
  - What problem am I solving?
  - What specific questions do I have about this topic?

For example, if you're assigned a project on climate change, your research need might be to understand the causes and effects of climate change, or it might be to learn about solutions that have been proposed. The more specific you can be with your question, the easier it will be to find useful information.

Once you have considered the questions that you have, you can consider what types of information you need to find first. If you don't have in-depth knowledge of your topic, you may need to start by gathering background information.

Seeking Background Information

It's difficult to conduct more in-depth, detailed research when you don't know much about your topic. Background information helps you to learn general information about your topic, such as its history. This background information will then help you identify related topics that you can use to narrow your topic down. Selecting a more narrow and specific research topic will make the research process easier.

Identifying What to Search For

Your research need will help you identify the information you need to find. Different source formats are useful for finding different types of information:

- **Books** – Great for broad topics and overviews. Good for historical information, background, or well-established information.
- **Websites** – Useful for a wide assortment of information, but mostly general information and news. However, you have to be careful to find reliable websites. In particular, websites with URLs ending in .edu or .gov tend to be more trustworthy.
- **Academic Journals** – Good for scientific studies, new research, or technical information. These articles are often written by experts in the field and are a vital source for research information.
- **Newspapers and Magazines** – Useful for recent events, opinions, and interviews. Magazines are often easier to read, while newspapers provide up-to-date information.
- **Videos, Podcasts, and Documentaries** – Good for visual learners or those looking for opinions and interviews. Useful when you want to hear or see information rather than just read it.

When we say "information format," we mean the form that information comes in, like books, articles, or videos. Choosing the right format depends on your research need:

- **If you need an overview or background:** Books or reliable websites work well.
- **If you need specific, detailed information:** Academic articles or primary sources are often best.

- **If you need current information:** Look for recent news articles.

The Research Information Lifecycle

Information goes through a lifecycle. In the largest, macro level, this includes passing through various forms from Primary Source, to Secondary Source, to Tertiary Souce. The information is created, then it is collected and stored, then it is analyzed, and finally it is used to create.

- Phase 1: Information is created and acquired (Primary Sources)
- Phase 2: Information is stored and maintained so that it can be accessed
- Phase 3: Information is processed, analyzed, and studied.
- Phase 4: Information is used to create, educate, and inform.

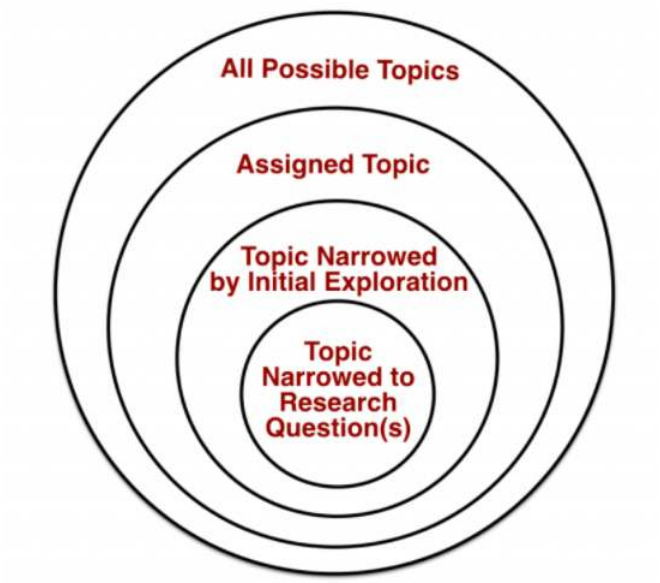
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6.5: Choosing a Topic

Things to Consider

When it comes to academic research, choosing a topic is often the hardest part of the process! In many instances, college instructors will provide guidelines or a broad topic for the assignment, but it's your job to choose a narrower topic within those guidelines. Here are some questions to ask yourself before you decide on a topic to research:

- Have I been assigned a specific topic or can I choose my own?
- Is there a particular current event that interests me or an issue I feel strongly about?
- Can I select a topic that is closely related to my college major?
- Did the instructor specify what types of information sources I need to use?

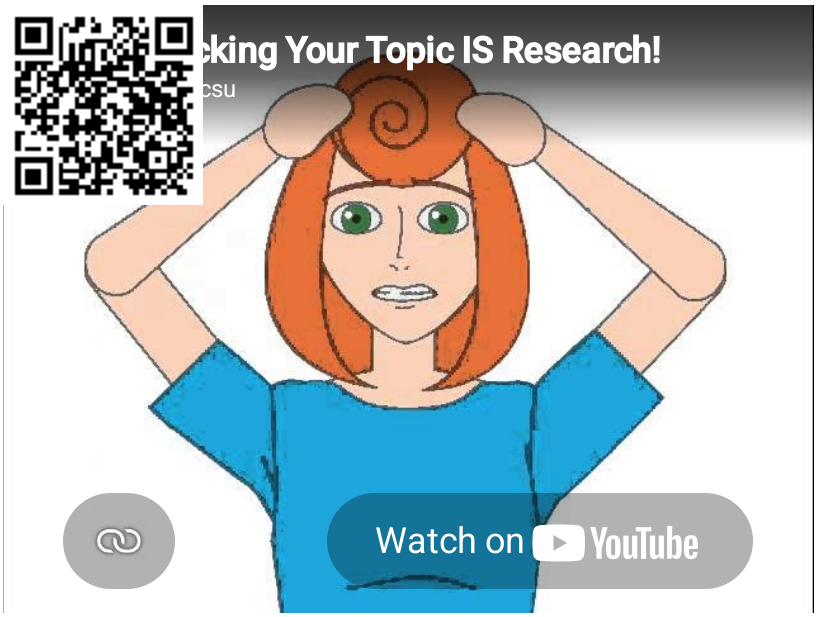


Visualize narrowing a topic as starting with all possible topics and choosing narrower and narrower subsets until you have a specific enough topic to form a research question.

Narrowing Your Topic

It is important to select a topic that not only interests you or sparks your curiosity, but also one that is neither too broad or too narrow in scope. For example, if you are interested in climate change and wanted to choose that as a topic for your research paper, you would quickly find yourself overwhelmed with search results and information. You may find millions of search results about all different aspects of climate change, like policy, history, and the environment, and feel lost about where to begin.

An important step in the research process is narrowing down your larger topic into a smaller, more researchable topic. What is it about climate change that is most interesting to you? Is there something in particular that you've learned in class that relates to this topic that you could explore with your research? Watch the following video [3:10] to see how to recognize if your topic is too broad or too specific, and to learn some tips on what to do:

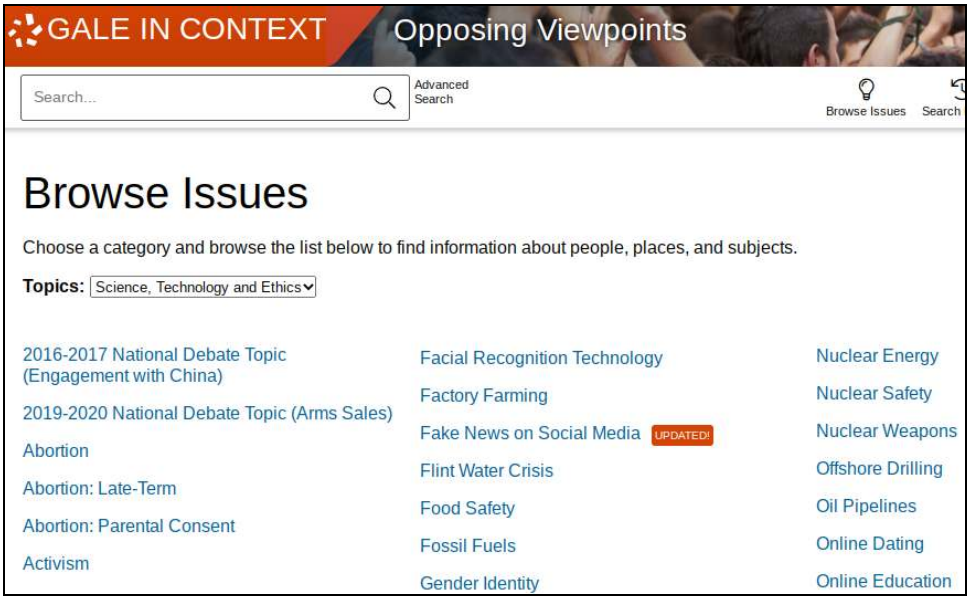


Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

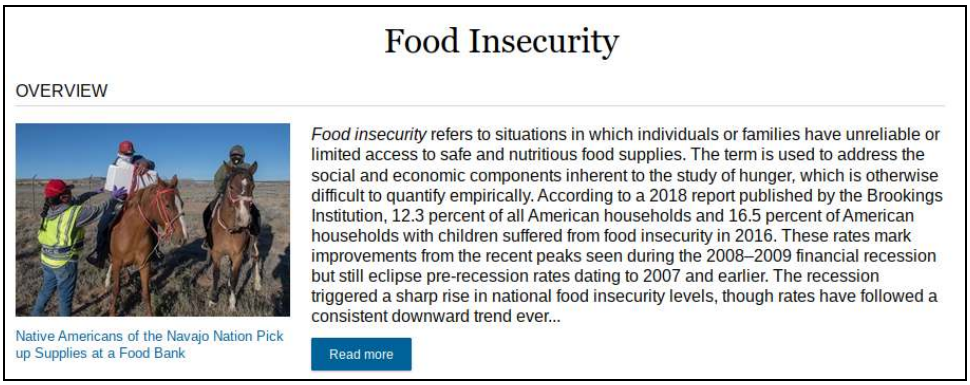
More Strategies

If you are having trouble selecting a topic or narrowing down your topic, here are some strategies that can help:

- Scan your course textbook for ideas
- Browse some magazines or newspapers for current events
- Dive into Wikipedia, or another encyclopedia, and see what sparks your interest
- Talk to your instructor, a librarian, or classmates, for ideas and guidance
- Browse the "issues" and "topic" pages in library databases that include reference sources, like *Opposing Viewpoints*. These topic pages are similar to Wikipedia and give general background information on a topic and link to more specific information, which is helpful when narrowing down your topic. Some library databases have great features for getting your research started, like pro/con viewpoints, background information, timelines, and bibliographies for further reading. If you are unfamiliar with what library databases your college has a subscription to, ask a librarian for help!



The Opposing Viewpoints database has a "Browse Issues" page you can use to help choose a research topic.



A topic page provides background information on “Food Insecurity” in the Opposing Viewpoints database.

Sources

Image: “Narrowing a Topic” by Teaching & Learning, Ohio State University Libraries is licensed under CC BY 4.0

“Picking Your Topic IS Research.” *YouTube*, uploaded by NC State University Libraries, 1 May 2014.

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6.6: Conducting Background Research

Gathering some general information on your research topic by doing background research and reading is always a great way to begin the research process. Background reading involves reading works related to your topic, in order to get a bigger picture before diving into the deeper research. Similar to how you may consult Google Maps for a general idea of the streets and stores in a new city you plan to visit, background reading can help you feel more informed about the broader "neighborhood" of your research topic and where you are going with your research.

The Case for Wikipedia



Many people start their research these days with a preliminary Google search, which often leads them to Wikipedia. Why? Wikipedia and reference sources in general (e.g., encyclopedias, atlases, handbooks) are excellent sources of background information. This is especially helpful if you are assigned or select a topic you are not yet very familiar with. Though Wikipedia is not considered a scholarly or academic source, it can be a great starting point for your research, allowing you to gather general information on your area of interest, and giving you ideas for narrow areas of focus. The “content” box on the left-hand side of Wikipedia pages can help you quickly scan for potentially relevant and interesting subtopics.

Wikipedia use is often discouraged by college professors because anybody can edit information on almost any Wikipedia page (though some pages that are more prone to vandalism have restrictions on who can and cannot edit them). Though the fear of inaccurate information being portrayed on Wikipedia is a legitimate concern, it is also true that Wikipedia is used by millions of people daily and errors are often corrected as soon as they are found. This is especially true on the pages that are used by many, like those for famous people, landmarks, or current events. While many professors will not accept Wikipedia as a source cited in the research assignment you ultimately turn in, it can be a useful tool in the early stages of research when you are seeking background information.

Most Wikipedia articles cite a variety of other sources, making Wikipedia a helpful jumping off point for more in-depth research using more academic sources. Use the References list at the bottom of a Wikipedia article to go "upstream" to original sources, like professional fact-checkers do.

For more information on using Wikipedia to start out your research, and how professional fact-checkers use Wikipedia, refer to the page on Using Wikipedia Effectively.

Sources

Image: “Wikipedia Logotype of Earth Puzzle” by Freepik, adapted by Aloha Sargent, from Flaticon.com

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6.7: Research Questions

Identifying What You Know & Don't Know

Once you have narrowed down your research topic and done some preliminary background reading on your topic, it's time to start thinking about—and writing down—what you already know about your topic and what you are interested in finding out. Identifying the gaps in your knowledge will help you to create research questions that will guide your research. For instance, if you have decided to research the effects of divorce on children, you'd want to first think about what knowledge you already have on that topic. Next, write down what you do not know but are curious to find out.

For example...

What I Know

- Divorce is common in the United States
- Sometimes children are negatively affected by their parents getting divorced

What I Don't Know

- Is there a certain age that children are more prone to the negative effects of divorce?
- Can children carry negative effects of divorce with them into adulthood?
- How can divorce impact academic performance?
- How can the effects of divorce be mitigated?

Though you may not be aware of it, you are mentally engaging in this process many times throughout the day. The process of seeking information for everyday questions is a bit different than for research questions, however. While everyday questions such as "when does the last bus leave my college campus?" are easily answered by a quick online search (e.g., Google), research questions take more exploration.

What Makes a Good Research Question?

- **Clear**: It's specific and easy to understand.
- **Focused**: Each question focuses on a single main idea or problem.
- **Researchable**: It can be answered through research. It's based on evidence.
- **Complex**: It should be complex enough to require research. Good research questions often stimulate deeper thinking. Different experts with access to the same information might approach and/or answer the question differently.
- **Relevant**: It needs to be related to your research topic.

Writing a Good Research Question

Once you have some good ideas, you can follow these basic practices to write a good research question:

- Begin with a broad research topic.
- Do some background research to identify related topics and questions you might explore.
- Narrow your topic to something interesting and manageable.
- Ask open-ended questions about your topic. Think about questions starting with "how", "why", or "what". For example: "How do nurses prepare to assist people from different cultures?" Avoid closed questions that could be answered with a "yes," "no," or simple factual information. For example: "Do nurses assist people from different cultures?" or "When does my bus arrive on campus?"
- Check if your question is researchable. Do a couple test searches to make sure you can find relevant information.

Choosing the Right Question

Once you have a list of several aspects of your topic that you are curious about, choose one that interests you most and create a research question from it. Be sure to choose something that aligns with the parameters of your assignment and that you believe is feasible to research given the amount of time and resources you have access to. Research questions that are too vague will leave

you swimming in a sea of irrelevant information, while a research question that is too specific will make it very difficult to find enough information sources to support your research.

Too broad: What is the impact of divorce on academic performance?

Too narrow: What is the impact of divorce on female student's grades during fifth grade in the United States?

Just right: How can divorce affect a student's GPA in high school?

Examples of Research Questions

Poor Research Question	Improved Research Question
Does social media affect people?	How does social media usage influence teenagers' mental health?
Is climate change real?	What are the most significant ways that climate change impacts coastal cities?
What is systemic racism?	How does systemic racism impact Black people's access to education?
Why do some animals go extinct?	Why are certain species more vulnerable to extinction?
Do pilots get tired on long flights?	How do flights more than 16 hours long affect the reflexes of commercial jet pilots?
How many children in the U.S. have allergies?	How does where a child was born affect their chances of developing asthma?
Can citizens register to vote at public libraries?	How do public libraries in the United States support democracy?

Sources

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6.8: Identifying the Main Concepts in Your Research Question

Keywords

Your research question will be the foundation for your research process. The next step is to identify the main concepts within the research question that you created. Though many people type full questions word-for-word into online search engines, the algorithms of the search engines are programmed to pull out the most important keywords in what is typed into the search bar—some of the words in your research question are irrelevant when it comes to finding information sources. Main concepts, also sometimes called keywords, key terms, and/or key phrases, are almost always nouns. Words in your research question that are not likely to relate to the main concept are words like: the, is, affect, what, why, when, how, and are. When trying to identify the main concepts, think about what ideas and topics would need to be present in an information source for it to be relevant to you and your research.

> How can divorce affect a student's GPA in high school?
>
> How can **divorce** affect a **student's GPA** in **high school**?

In the example above, the main concepts, or keywords, in the research question are divorce, student's GPA, and high school. These are the main concepts that will be the focus of your research; if an information source includes **all** of these concepts, then it is very likely to be relevant and useful to you. It is your job as a researcher to determine what is relevant to your research. Be aware that the main concepts from your research question serve as a base to launch your search for information and the keywords selected to describe your main concepts are likely to evolve during the process.

> Searching is an iterative process: We try keywords, take a look at what we found and, if the results weren't good enough, edit our keywords and search again – often multiple times. Most of the time, the first keywords we try are not the best, even though Google may give us many results. It pays to search further for the sources that will help you the most. Be picky.

Sources

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6.9: Avoiding Confirmation Bias

What is confirmation bias? Here is a quick definition from the *Encyclopaedia Britannica*: “The tendency to process information by looking for, or interpreting, information that is consistent with one’s existing beliefs.” Although confirmation bias is typically unintentional, it is strong and widespread, with many significant effects and real-world implications.

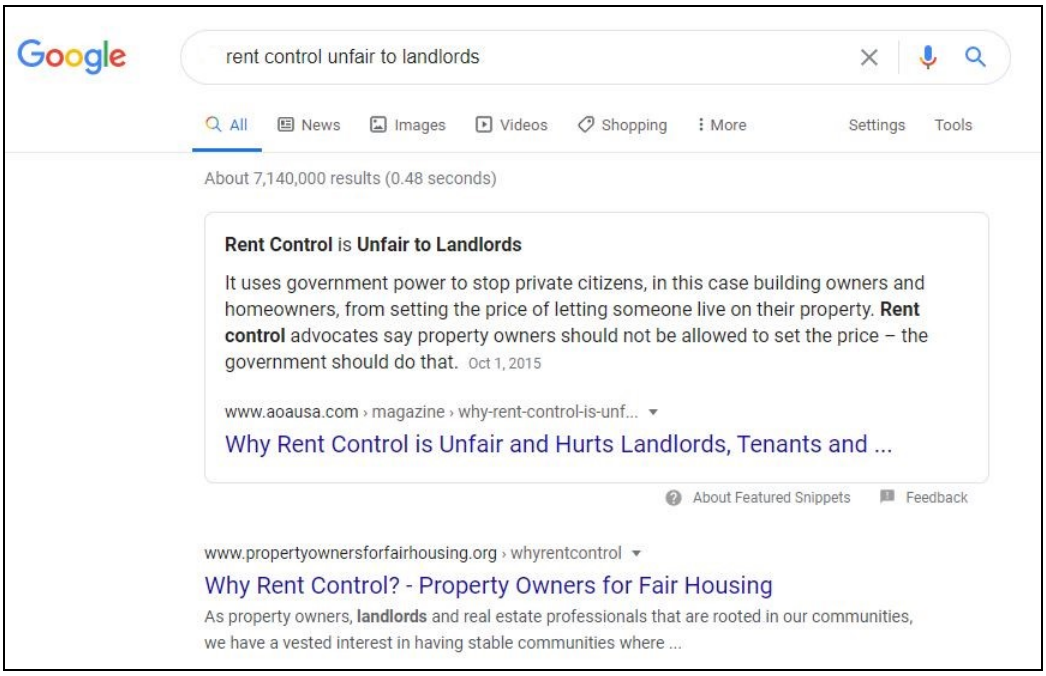
Impact on Searching

Some psychologists describe confirmation bias as the selective collection of evidence that supports what one already believes, while ignoring or rejecting evidence that supports a different conclusion. Experiments have found repeatedly that people tend to test hypotheses in a one-sided way, by searching for evidence consistent with their current beliefs. Rather than searching through all the relevant evidence, they phrase questions to receive an answer that supports their theory.

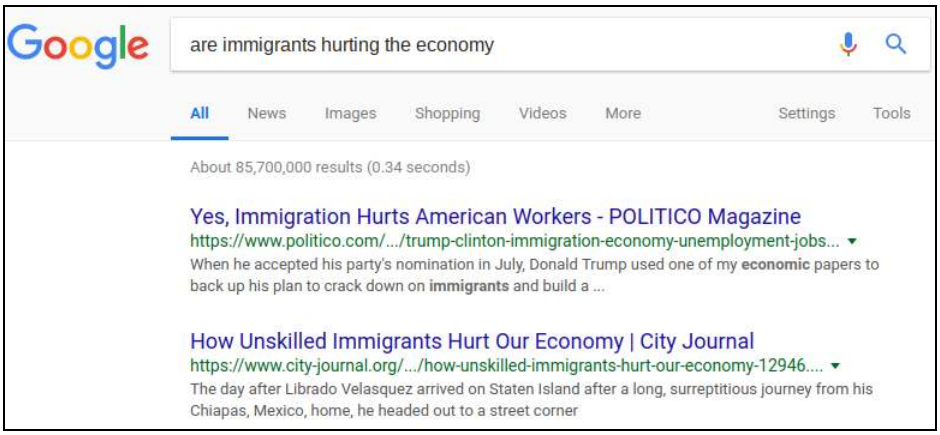
One of the primary types of confirmation bias is the biased search for information. When you type a search or a question into Google, you will want to be careful that your choice of keywords does not unintentionally reflect a bias towards preexisting beliefs, or towards a particular preconceived answer.

Examples

A search for “is rent control unfair to landlords” is likely to get results that describe rent control as unfair to landlords. A better search might be something like “rent control landlords”



A search for “are immigrants hurting the economy” is likely to get results that argue that immigrants hurt the economy. A better search might be something like “economic effects of immigration”



Sources

Casad, Bettina J. "Confirmation Bias." *Encyclopaedia Britannica*, 1 Aug. 2016.

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6.10: Brainstorming Related Terms

Describing Main Concepts

In many instances, there are various ways that a main concept can be described. Not every information source will use the same term to describe the same thing! Take the topic of genetically modified food, for example. Though “genetically modified food” is commonly used, terms like “GMO,” “genetically modified organism,” “genetic engineering,” and “genetic modification” are often used by scientists to describe the same thing.

This is also a good time to look at your main concepts and decide if the keywords you’ve selected to describe them are too broad or too narrow. In the previous example, using the key phrase genetic engineering when looking for information about specific types of organisms that have been genetically modified, may be too broad of a term that yields irrelevant results. Also keep in mind the type of information you are searching for: If you need scholarly research articles, scientific terminology is more likely to be used in those resources; if you are searching for information that may appear in popular periodicals (like magazines and newspapers), more general, everyday language is likely to be used (e.g., myocardial infarction versus heart attack).

Brainstorming Alternatives

It can be helpful to list your keywords and any alternative or related keywords or phrases that may be helpful to your search. You may want to return to those reference sources you used for finding background information on your topic to see what terms and phrases were used. You may also try searching in a thesaurus for some synonyms, and you may even come back to this step later in the research process once you have completed some initial searches and discovered some helpful new alternative terms. Some databases will also list “related terms,” which can be helpful for modifying your search. On the other hand, some keywords are unique, and have no other terms that could be used in their place.

Main Concept/ Keyword	Alternative/Related	Alternative/Related	Alternative/Related
divorce	separation	split up	parental conflict
student’s GPA	grade point average	academic performance	academic achievement
high school	school	secondary school	—

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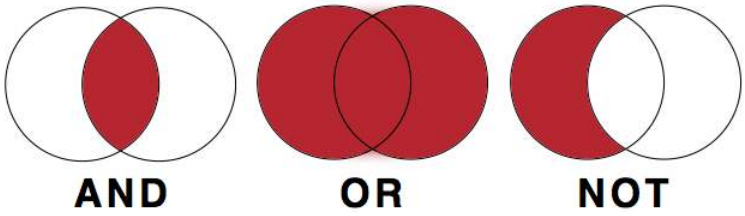
6.11: Creating a Search Statement

Combining Your Keywords

Once you have dissected your research question, found the main concepts, and listed several keywords to describe these concepts (e.g., synonyms, narrower terms, broader terms), it is time to combine those keywords in meaningful ways in order to perform a search for information resources. The combination of terms using various search strategies, called a **search statement**, will help you get more precise results than typing in a whole research question or just a few words into a search bar. Search statements are almost like a set of instructions given to whatever search option you are using (e.g., library catalog, library database) that describe what you want to find.

Boolean Operators

Named after the mathematician, George Boole, **Boolean operators** are used as conjunctions that combine or exclude certain keywords in your search. Though Boolean operators are used in logic, mathematics, and computer science, there are three common Boolean operators used by search engines (e.g., library catalogs, academic databases, and some online search engines). Think of Boolean operators as instructions that tell a search engine what to do with your keywords. Some search tools need Boolean operators to be typed in all capital letters in order for them to work, so it is a good idea to always type them in all caps whenever you are using them.

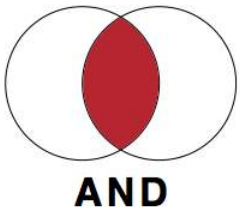


AND

The Boolean operator AND is used between all the keywords and phrases that you want to include in your search. When creating a search statement to find information on the effects of divorce on high school students' GPA, the Boolean AND operator would go between our three keywords/phrases:

Divorce AND grade point average AND high school

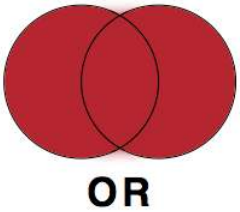
By doing this, the information sources that will be returned in the results will all contain all three of these keywords/phrases somewhere within them.



OR

The Boolean operator OR is used to search for alternative keywords. Remember, there are many words that one could use to describe the same concept and OR gives you the option to search for multiple, synonymous terms at once. Instead of searching for various alternative keywords in different searches, OR allows you to search for multiple alternative keywords in the same search.

grade point average OR academic achievement



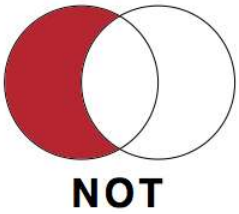
NOT

The Boolean NOT excludes certain keywords from your search. This Boolean operator is not a commonly used one, but can be very helpful if you are getting many irrelevant results. Boolean NOT is best used when using keywords that have associations with multiple things. For instance, if you were trying to search for information on the animal Jaguar and kept getting too many results about the car brand Jaguar, you could use the NOT operator to exclude the word "car" from your search. Jaguar NOT car would exclude any information sources that contained the word car. Be aware that using NOT can exclude relevant results, as well. If an article or website that had some great information on the animal Jaguar, but just so happened to mention the word "car" in the text somewhere, it would be excluded from your results.

Washington NOT George
(when trying to find information on Washington the state, not George Washington)

Mexico NOT city
(when trying to find information on the entire country of Mexico not Mexico City)

Apple NOT fruit
(when trying to find information on Apple the computer company and not apples the fruit)



Phrase Searching

Phrase searching allows you to narrow down your search by specifying the exact order you want certain keywords to appear. Quotation marks around two or more keywords (also known as a "phrase") will keep those words in that exact order during your search. For example, searching for the two keywords computer monitor without the quotation marks may find information sources that have nothing to do with computer monitors, but still contain the two words "computer" and "monitor" (e.g., an article about monitoring computer usage). Searching for "computer monitor" instead locks those keywords together as a unit and will only return results with that phrase "computer monitor." Unless you are searching for a single keyword on its own, it's a good idea to use phrase searching to make sure you are getting the most relevant results.

"Grade point average" OR "academic achievement"

Nesting

Just like Boolean, nesting is another concept taken from mathematics that is useful during information searches. When you are using more than one type of Boolean operator in your search statement, **nesting**—using parentheses around portions of your search statement—will help to organize what Boolean operators go with what keywords. Without nesting, most search engines and library databases will read your search statement from left to right, applying the Boolean operators in that sequence.

Let's look at two examples:

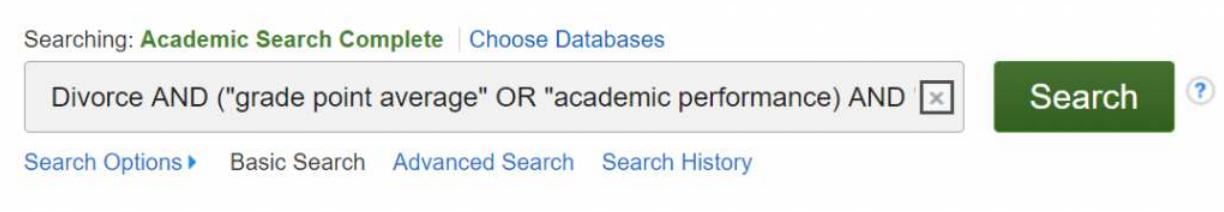
Divorce AND ("grade point average" OR "academic achievement") AND "high school"

Divorce AND "grade point average" OR "academic achievement" AND "high school"

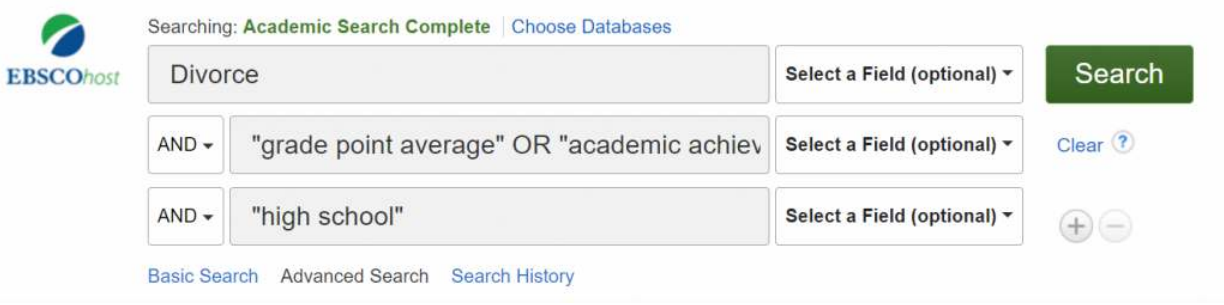
In the first example, the search will yield results that contain either key phrase “grade point average” or “academic achievement,” but in the second example without the parentheses, the search will either look for information sources with both the keyword “divorce” and the key phrase “grade point average” or it will find information sources with the key word “high school” and the key phase “academic achievement.” The use of parentheses in this search statement would ensure that the Boolean OR is applied to the two alternative keywords.

? Example

Library databases will have the option of either a basic or advanced search. A basic search will require that you type out Boolean operators (in all capital letters) and the parentheses used for nesting. The advanced search will offer you drop-down menus for Boolean operators. If your search statement requires nesting, type the portion of the search statement that *would have* gone in parenthesis all on one line. See the screenshots below to view the differences between a basic and advanced search.



EBSCOhost’s basic search with the Boolean operators written out in all caps, phrase searching used, and parentheses used to nest the portion of the search statement that uses Boolean OR.



EBSCOhost’s advanced search option where Boolean AND is selected from the drop-down boxes between the search boxes and the portion of the search statement that uses Boolean OR is written all on one line instead of typing parentheses.

Truncation

There may be times that you want to include all the different word forms of a certain keyword in your search without having to use the Boolean OR and type in each of the different word forms. To use truncation, type in the root word followed by a symbol. In most cases the symbol used for truncating words is the asterisk (*), but this may vary depending on the search engine or library database you are using. For example, searching for child* would return results containing the words child, children, childhood, childish, etc. Watch the following video [3:34] for an explanation of truncation, as well as phrase searching and nesting:



A YouTube element has been excluded from this version of the text. You can view it online here: http://pb.libretexts.org/collegeresearch/?p=183

Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Sources

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6.12: Conclusion

The very first steps in the research process are oftentimes the most important because they set the groundwork for the rest of your research. This chapter covered the importance of narrowing your broader topic down into a more manageable topic that interests you and the importance of performing some general background reading. Background reading can be done using library databases, Wikipedia, or quick online searches on your topic, which can help you find narrower sub-topics to focus on. Background reading at the beginning of your research helps familiarize you with your topic and with the specific vocabulary and keywords often, which can be used in your searches later in the research process.

PROJECT INFORMATION LITERACY

A national study about college students' research habits

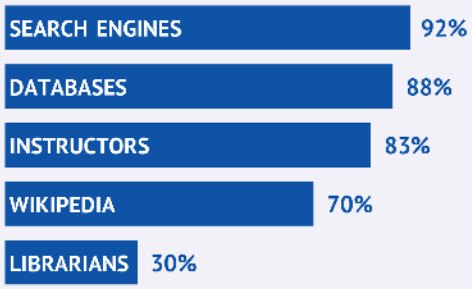


Since 2008, in a series of 10 groundbreaking studies, PIL has surveyed and interviewed more than 22,000 U.S. students at 100 colleges and universities to learn how they find and use information for completing course work and solving information problems in their everyday lives and the workplace.

84%

of students say **getting started** is the **most difficult** part about research

Students use many tools for **course research**, including



What do students do in the library during **CRUNCH TIME?**



81%
check messages



73%
prepare assignments



62%
study and review

Students use **these words**

fear, angst, tired, dread, excited, anxious, annoyed, stressed, disgusted, intrigued, confused, and overwhelmed

to describe how they feel about **research assignments**

Want to learn more? Find more information and media at



Zoom in or read the text version of this infographic

Sources

Image: Head, Alison J., John Wihbey, P. Takis Metaxas, Margy MacMillan, and Dan Cohen. "How Students Engage with the News: Five Takeaways for Educators, Journalists, and Librarians." *Project Information Literacy*, 16 Oct. 2018. Licensed under CC BY-NC-SA 4.0

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6.13: Questions for Critical Thinking



Questions for Critical Thinking About Research as a Process of Inquiry

- When has exploring a question raised further questions for you (for example, consider a time when an internet search led you in unexpected directions)?
- How does making assumptions about the answers to our questions impact the ways we approach the research process? How can uncertainty during the research process help increase our understanding of a topic?
- How can we know what we don't know? How do we go about discovering and analyzing gaps in the information available instead of focusing only on the information that is easily found?
- How do our research questions and goals influence the importance we place on different types of information?

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CHAPTER OVERVIEW

7: Information Sources and Their Creation Processes

7.1: Chapter Overview
7.2: Chapter Scenario
7.3: Primary, Secondary, and Tertiary Sources
7.4: Critical Thinking
7.5: The information lifecycle
7.6: Print Sources
7.7: Visual and Audio Sources
7.8: Online-Only Sources
7.9: Scholarly Articles
7.10: Data as Sources
7.11: Big data
7.12: People as Sources
7.13: Emojis
7.14: Memes
7.15: Graphics and Advertising
7.16: Critical Thinking
7.17: Questions for Critical Thinking

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7.1: Chapter Overview



This chapter will...

- Examine different types of information sources and their creation processes, characteristics, and purposes
- Define primary, secondary, and tertiary sources
- Distinguish between source type and mode of access
- Explore the peer review process and approaches to reading scholarly sources

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7.2: Chapter Scenario

Scenario: Information Sources

It's your first essay assignment of the semester. Your professor says you not only have to find **reliable** sources, but that you have to use a **variety** of resources: books, magazines, newspapers, journal articles, and media resources. There's no explanation why they are requiring this, and you're left scratching your head trying to figure out not just **where** to find these resources, but **why** they make a difference.

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7.3: Primary, Secondary, and Tertiary Sources

Information Creation & Context

We can group information sources into three basic categories: primary, secondary, and tertiary. When we make distinctions between these three categories of sources, we are relating the information itself to the **context in which it was created**. Noting this relationship between creation and context helps us understand the big picture in which information operates, and prompts us to consider whose **voices** we are including in our research, and whose voices may be left out.

Primary Sources

Primary sources are **first-hand** observations or experiences of an event. They can also be the **original** sources of information before they have been analyzed, such as statistical data sets. Examples of primary sources include:

- Eyewitness reports (interviews, photographs)
- Speeches, diaries, memoirs
- Empirical research
- Original documents, historical newspaper articles
- Literary works (novels, plays, poems), artworks
- Tweets

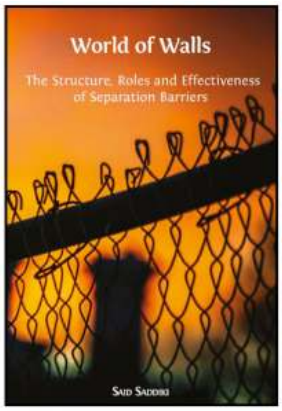


Eyewitness photograph: Protesters speak on the steps of San Francisco City Hall for a “Families Belong Together” rally.

Secondary Sources

Secondary sources are created after an event occurred and offer a **review or an analysis** of the event; they provide an **interpretation** of the primary source or data without offering new data. Examples of secondary sources would be:

- Biographies, nonfiction books
- Editorials
- Literary criticism and reviews
- Periodicals (such as scholarly journals, magazines, or newspapers)
- Retweets



Nonfiction book analyzing the consequences of the construction of physical and virtual walls.

Tertiary Sources

Tertiary sources are **compilations** of information coming from secondary and primary sources; these can be lists or collections, and are generally reference material that can help you find, or direct you to, secondary and primary sources. Examples of tertiary sources include:

- Encyclopedias, dictionaries
- Indexes
- Databases, catalogs
- Most textbooks



Wikipedia, an online encyclopedia, is an example of a reference source (tertiary)

Note: These categories may differ between subject areas. For details, see section on Information Sources: Traditional Formats.

Sources

Creation & Context section adapted from "Primary, Secondary & Tertiary Sources" by Teaching & Learning, Ohio State University Libraries, licensed under CC BY 4.0

Examples adapted from "Library 10" by Cabrillo College Library, licensed under CC BY 4.0

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7.4: Critical Thinking

? Critical Thinking: Source Types

Let's think about these categories a little more. When conducting research, it is often suggested that we begin looking at tertiary sources, then secondary, and finally primary. But when resources are created, it starts with primary, then secondary, and finally tertiary. Why do you think this relationship exists between research and creating resources? Are there any other ways that you can see information sources being created or to conduct research?

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7.5: The information lifecycle

The information cycle follows the creation of information and how it changes over time, as shown in the chart below. "The University of Illinois Library defines it as "the progression of media coverage of a particular newsworthy event."

This is important because the amount of information that is available on a particular topic might be very difficult to find, especially if the topic is a very recent or current event. First-person accounts such as interviews, newspaper articles, videos, or social media posts might be all you are able to find during or immediately after an event. More detailed or analytical accounts such as in-depth reporting or academic articles and books take time to produce, so they will not be available right away.

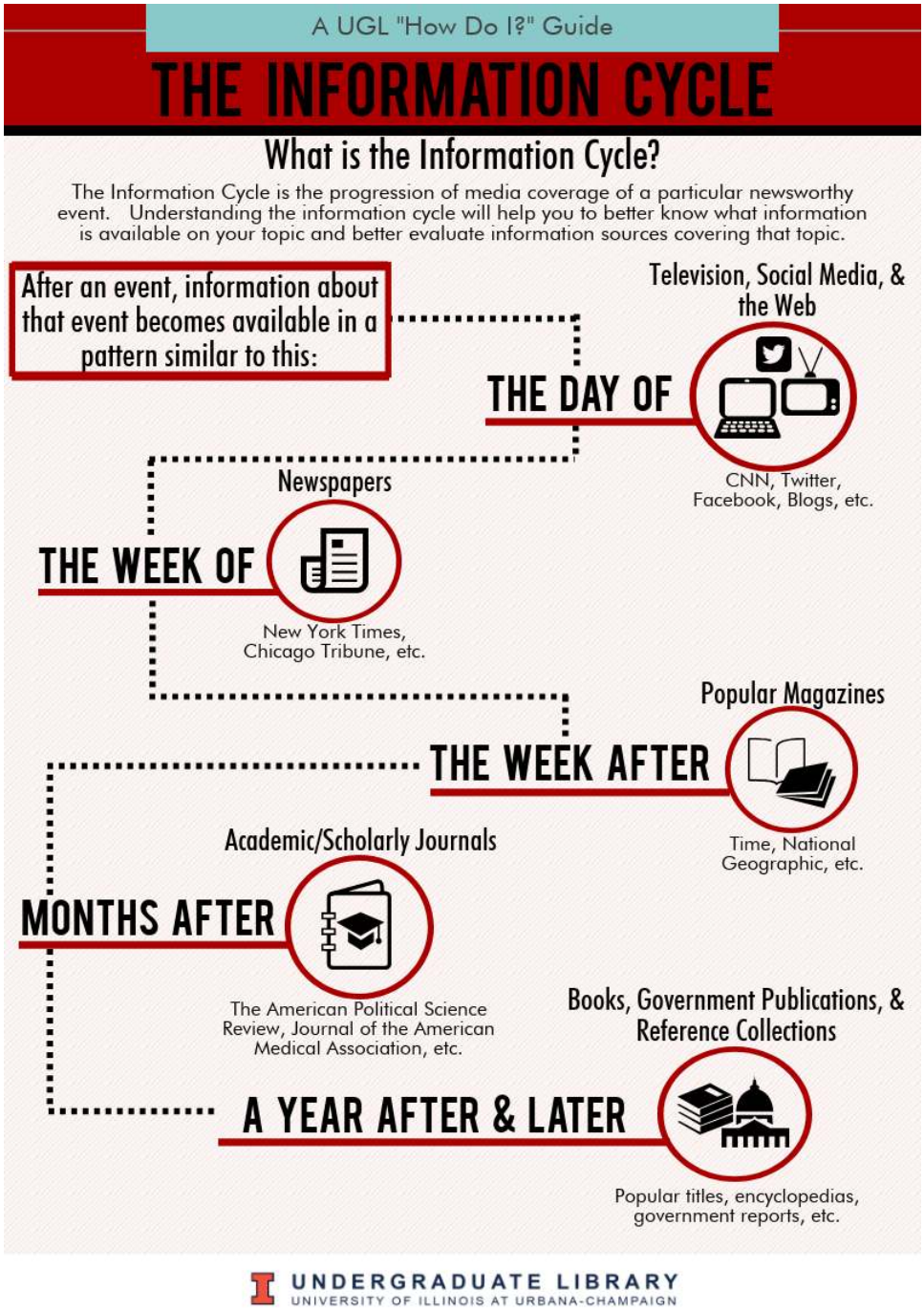


Figure **7.5.1**: The Information Cycle (via Undergraduate Library, University of Illinois at Urbana-Champaign)

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7.6: Print Sources

As we saw in the chapter scenario, information sources are often identified by traditional, text-based formats: is the information found in a book, a scholarly journal article, or a magazine or newspaper article? Outside of these typically being classified as secondary sources (particularly in the humanities), these traditional formats have a few other commonalities: they go through some sort of publication and review process; and they all are fixed formats—that is, they can't be updated without creating a whole new version or edition of the resource. While text-based sources are often referred to as "print sources," they can be available digitally online as well as in physical form (think of a book that you can borrow from your library physically, or can access through the library online as an ebook).

Books



You are probably familiar with this type of information source and it might just be the first kind of resource you think of when you think of libraries. Books are different than the other resources in a few ways: They can explore and present a topic in breadth and depth much easier than a magazine or newspaper. You may find some special magazine issues or journal issues that are devoted to a theme, but the coverage will still be limited compared to a book's possibility. Books can be written by a single author or multiple authors; they can be compiled by an editor to represent different viewpoints or writings from various authors all exploring the same topic from different angles. Because of all of this, though, the information found in books may not be the most current information available.

Academic/Scholarly Journal Articles



Sometimes also called "peer-reviewed" articles, these go through a rigorous review process before they are published. They reflect research that is considered primary or secondary depending on how the research is conducted: In the humanities (such as English or History), these are considered secondary sources, but in the sciences (such as Biology) and social sciences (such as Anthropology), original research articles are considered primary sources. Unlike books, these journal articles tend to focus on specific questions about a topic; they don't explore or present a topic as broadly or deeply as a book, but the information they present can be much more current than a book. Also, because they are so focused, they might be seen as more specialized than a book's coverage, and they will generally be written to an expert audience. This means that they are not written for the average person to read, but for those who are already familiar with the concepts surrounding the topic. Their target audience are others who have some expertise in a specific subject area—even though undergraduates are often required to use them too. Another thing to consider is that access to journal articles can be tricky. If your library doesn't have access to a particular journal, either through a database or direct subscription, getting access on your own could be expensive and complicated (though as a community college student, you're not usually expected to pursue resources beyond your college library).

Magazine Articles



These are a bit different than your academic/scholarly journal articles. Magazines tend to use a lot of colorful images designed to grab a reader's attention, while scholarly journals feature graphs, charts, and tables with very little color, designed to convey information. Magazine articles will be written so that the average person can understand what is being discussed in the article. The articles tend to be much shorter than a scholarly journal article. Magazine articles can feature interviews and will look at current events or trends, but they won't be seeking answers to research-based questions. Instead, their focus is on what might hold popular interest.

Newspaper Articles



Newspaper articles typically describe current events. In contrast to magazine and scholarly journal articles, newspaper articles tend to be very short. Newspapers are typically published daily, and therefore provide the most up-to-date information about an event. Their authors are journalists who may engage in investigative reporting, but they do not conduct original scholarly research. While these articles are often proofread and reviewed for accuracy before publication, they do not go through an extensive peer review process.

Sources

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Image: "Book" by mavadee, adapted by Aloha Sargent, from Flaticon.com

Image: "Magazine" by Freepik, adapted by Aloha Sargent, from Flaticon.com

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7.7: Visual and Audio Sources

Sometimes, we don't realize that visual and audio sources are an option when doing research. Here are a few examples of media resources you might encounter as you conduct your own research projects.

Documentaries



Documentaries are films that provide us with a deep look at a specific topic. Non-fiction in nature, documentaries can advocate for a cause—which means we must be careful to notice any possible bias. They can be journalistic in nature where they report on an event, happening, people, and/or other subjects in detail. They can share an experience someone went through. Documentaries may also be entertaining, so that they are interesting to watch.

Radio Programs



Radio programs can be a strong information source, especially if you're looking for interviews with specific people. They also report out on current events. Transcripts of radio programs are sometimes available through library databases, or you might be able to find transcripts or recordings of them online.

Television Programs



News and educational programming can be useful sources when doing research. News programs provide details about current events, and may also broadcast interviews. Educational programming might include documentary-style delivery of information, but it can also be instructive. In some cases, there may be dedicated channels that provide specialized content such as Discovery, The History Channel, and C-SPAN.

Podcasts



Podcasts continue to grow in popularity, and over half of Americans have listened to at least one podcast (Winn). If you have not experienced a podcast, they are similar to radio programs, except that you don't have to listen to them live to enjoy them—they can be downloaded or streamed at a time convenient to the listener. You can listen to them in your car or from a capable device, like a smartphone. They can be focused on a specific subject area, contain interviews, or be a fictional series show. But just like blogs, podcasts can be hosted by anyone—and can be driven by opinions and biases.

Sources

Image: “Microphone” by Freepik, adapted by Aloha Sargent, from Flaticon.com

Image: “Microphone” by Smashicons, adapted by Aloha Sargent, from Flaticon.com

Image: “Movie” by Freepik, adapted by Aloha Sargent, from Flaticon.com

Image: “Television” by Smashicons, adapted by Aloha Sargent, from Flaticon.com

Winn, Ross. “2020 Podcast Stats & Facts (New Research From Oct 2020).” *Podcast Insights*, Quandary Media, 6 Oct. 2020.

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7.8: Online-Only Sources

Print, visual, and audio sources may be available online or in digital formats, as well as being available through library databases. Other sources exist only online. Below are two examples.

Wikis



Wikis are a type of website that typically allow a community of users to create pages about different topics. The most popular one, and one that you are probably familiar with, is Wikipedia. These websites are usually very simple in appearance and they are unique because they tend to support the idea of a community contributing to sharing information. With this idea, though, is the possibility for information to be shared without review or checked for reliability. Review the Fact-Checking chapter for further information about how to use Wikipedia effectively.

Blogs



Blogs can house primary source material as they are often like online diaries for individuals. In contrast to wikis, blogs are typically written by a single person, and that individual is typically sharing their perspectives or experiences about a specific topic. These can be insightful, but they are usually very opinion driven. And just because someone has a blog about a topic does not make them an expert about that topic.

Sources

Image: “Blog” by Freepik, adapted by Aloha Sargent, from Flaticon.com

Image: “Wikipedia” by xnimrodx, adapted by Aloha Sargent, from Flaticon.com

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7.9: Scholarly Articles

Scholarly Articles as Sources

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

Peer-Reviewed Sources

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

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

This article "Meet Science: What is 'peer review'(opens in new window)?" gives a longer explanation of the peer review process, which concludes that it is good but not perfect.

Parts of a Scholarly Article

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

Video: Guided Tour of a Scholarly Journal Article(opens in new window). Watch this short (2:40) video to see the common parts of a scholarly article. You can enable captions on the video. The common parts of a scholarly article include:

- Title
- Author information (including name and institution/college)
- Abstract
- Introduction
- Literature Review
- Conclusion
- References

Reading a scholarly article usually takes some effort but with practice, you can become a professional at it! This article "How to read and understand a scientific article(opens in new window)" explains how to approach reading a scholarly journal article.

> **Activity: Parts of a Scholarly Article**
>
> Open activity in a web browser.(opens in new window)

Finding Scholarly Articles

Most scholarly articles are housed in specialized databases. Libraries (public, school, or company) often provide access to scholarly databases by paying a subscription fee for patrons. For instance, many college libraries provide access to hundreds of databases that are made freely available to students. You can search for a journal title in these databases and often view a list of databases by subject.

Databases that aren't subject-specific are called general databases. Google Scholar(opens in new window) is a free general scholarly database available to all who have access to the Internet, and it provides some scholarly articles.

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7.10: Data as Sources

Definition: Data

"Units of information observed, collected, or created in the course of research" (Erway, 2013).

How Are Data Useful for Research Assignments?

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

- Learn more background information.
- Answer your research question. The evidence that data provides can help you decide on the best answer for your question.
- Convince your audience that your answer is correct. Data often give you evidence that your answer to your research question is correct or at least a reasonable answer.
- Describe the situation surrounding your research question.
- Report what others have said about your research question.

Data can be numbers, text, images, audio clips, and video clips. But in this section on using data as sources, we're going to concentrate on numerical data. Numerical data can demonstrate things such as:

- More women than men voted in the last presidential election in a majority of states.
- A certain drug shows promising results in the treatment of pancreatic cancer.
- Listening to certain genres of music lowers blood pressure.

Using numeric data in portions of your research project that require evidence can strengthen your argument for your answer to your research question. At other times, even if data are not necessary, numeric data can be particularly persuasive and sharpen the points you want to make in other portions of your final product devoted to, say, describing the situation surrounding your research question.

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

Obtaining Data

There are two ways of obtaining data:

- Obtain data that already has been collected and analyzed. That's what this section will cover.
- Collect data yourself. This can include activities such as taking measurements of a scientific process, conducting surveys or interviews, recording events, or data collection by computers/machines.

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

Numeric data can be found all over the place. It can be found as part of other sources- such as books; articles in journals, newspapers, and magazines; and web pages. In these cases, the data do not stand alone as a distinct element, but instead are part of the larger work.

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

Even without using those search terms, many scholarly sources you find are likely to contain data. Once you find potential sources, skim them for tables, graphs, or charts. These items are displays or illustrations of data gathered by researchers. You can use this data in your work when and only when you provide a complete citation.

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

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

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

Finding Data, Data Depositories, and Directories

Sometimes the numeric data you need may not be in the articles, books, and websites that you've found. But that doesn't mean that it hasn't been collected and packaged in a usable format. Governments (federal and local) and research institutions along with the United Nations and nearly every country in the world, often publish data they have collected in discipline-specific data depositories that make data available online. Here are some examples:

- United States Census Bureau
- U.S. Bureau of Justice Statistics
- National Center for Education Statistics
- GeoData.gov

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

- International Monetary Fund Statistical Databases
- World Health Organization Data
- Envirofacts

Check out a data directory such as the Registry of Research Data Repositories to determine whether a repository contains data in your academic discipline.

Data Visualization

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

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

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

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

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

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

- Data Viz Project
- The Data Visualisation Catalogue

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

Proper Use of Data

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

What if…

…you had a lot of information? Sometimes data can be very complicated and may include thousands (or millions…or billions…or more!) of data points. You may find yourself using special software, such as Excel, SAS, and SPSS, in such situations.

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

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

Sources

Erway, R. (2013). *Starting the conversation: University-wide research data management policy*. OCLC Research.

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7.11: Big data

Researchers don’t agree on an exact definition of the term "big data," partly because it is a relatively new field, and also because it’s evolving so quickly; big data touches every part of our lives and is changing the ways we live. Generally speaking, the term "big data" refers to the information footprints we leave everywhere online, from data about our search habits to personal health information, as well as the underlying technology, machine learning (AI), data collection and processing, economy, and scholarship that is part of it and builds on it.

Like everything else, there are pros and cons related to big data. Ethical production, collection, management, analysis, and use of data are all important aspects of the issue that we should be concerned with, particularly when it comes to how it affects us personally.



Figure **7.11.1**: Big Data word cloud. (Copyright EpicTop10)

Data are everywhere online. Internet cookies are pieces of data that are automatically created when you access a network or site, and that can identify you and record your engagement with online content. Consider all of the times you’ve been asked if you will allow cookies when visiting a new website, or if you would like to save your username on a login page. The digital trail you create with cookies is one of the ways that search engines like Google try to make your browsing experience better and how websites and companies track usage for their own purposes. Essentially, these pieces of information become a commodity in the digital economy, and the basis for the success of technology, organizations, products and media, and more. There are both advantages and disadvantages to this; the most important thing is to be aware of how it affects you, and how you choose to deal with it.

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7.12: People as Sources

When researching, you'll often want to focus on books and articles, but people can be valuable sources of information as well. Speaking to someone with expertise, experience, or unique insight can provide in-depth knowledge, fresh perspectives, or up-to-date information that might not be available elsewhere. In fact, interviews with people is an important avenue for creating primary sources! However, using people as sources requires some special considerations.

Ways to Use People as Sources of Information

1. **Interviews**
   - **Purpose**: Interviews allow students to gather firsthand information from experts, eyewitnesses, or individuals with specific knowledge.
   - **Example**: Interviewing a local historian for a project on community history or speaking to a scientist for insights on a recent scientific development.
   - **Value**: Interviews provide direct quotes, personal anecdotes, and in-depth answers tailored to the student's questions. They can reveal details that might not appear in written sources.
   - **Challenges:** People have their own biases. They also may have an incomplete memory of events or a limited perspective.
2. **Surveys and Questionnaires**
   - **Purpose**: Surveys allow students to collect opinions, experiences, or demographic information from a larger group.
   - **Example**: Surveying classmates or community members about attitudes toward a social issue.
   - **Value**: Surveys can offer statistical data and help students understand public opinion on specific topics. They're particularly useful for identifying trends and patterns.
   - **Challenges:** It can be difficult to get a sufficient number of survey participants. It often requires an expert to write good survey questions. Collecting this type of original research data can involve ethical concerns.
3. **Focus Groups or Group Discussions**
   - **Purpose**: Group discussions allow students to explore how different people view the same topic, often in a setting that encourages conversation and sharing.
   - **Example**: Organizing a discussion with peers on environmental concerns or setting up a focus group with family members on cultural traditions.
   - **Value**: These discussions can uncover diverse viewpoints and give a fuller picture of how a topic is perceived by different people.
   - **Challenges:** It can be difficult to get a sufficient number of participants. It often requires an expert to write good questions and administer an effective focus group. Collecting this type of original research data can involve ethical concerns.

In Summary

Using people as sources of information (through interviews, surveys, consultations, or focus groups) can add unique insights to research. While people can provide valuable perspectives, students should approach these sources thoughtfully by considering reliability and ensuring respectful, ethical practices. With careful planning, information from people can deepen a student's understanding and add a rich dimension to their work.

The Published Research Perspective

People are often used as sources of information for published research. This type of research often requires careful consideration in order to be done ethically. The researcher often needs people's permission and may even need their research to be approved by their own institution or school.

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7.13: Emojis



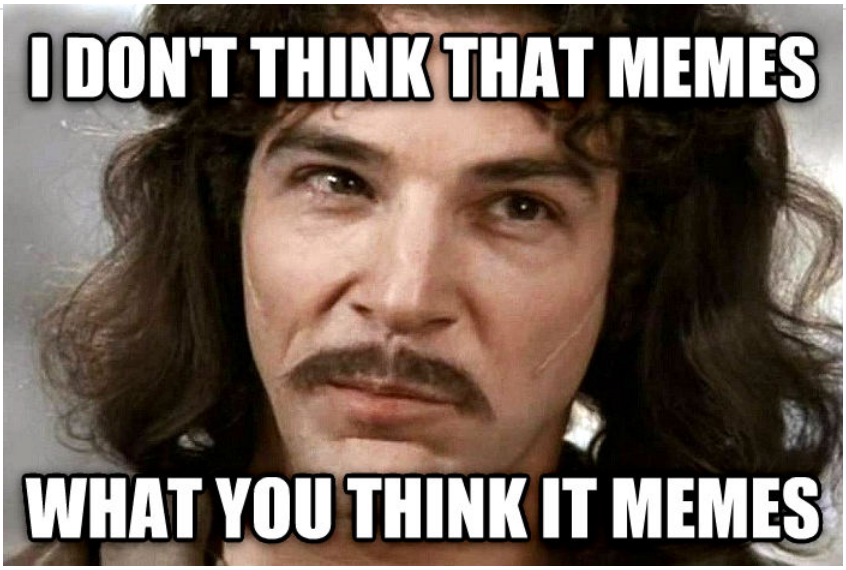
Figure **7.13.1**: Scream emoji. (Copyright Keymap9)

Our common global visual vocabulary has grown exponentially since the speed of communication has increased with use of the Internet and especially the character limits that are necessary for texting and social media posts. With only so many characters allowed for communicating a message, we use pictures in the form of emojis to convey emotional meaning that would otherwise be missing. Emojis were created in and for the digital world, originally appearing in Japanese mobile phones in the late 1990s (Pardes). The term comes from the Japanese words “e” (picture) and “moji” (letter or character), though it coincidentally sounds very much like it has a root word of “emotion” in English.

The scream emoji shown above directly references the figure in the famous composition *The Scream* by Edvard Munch (1893, further demonstrating the pervasiveness of our common visual vocabulary.

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7.14: Memes



Though it is typically used to refer to Internet memes, the term and idea of a “meme” are actually not just recent digital phenomena. The basic definition for “meme” refers to them as cultural artifacts and ideas that are imitated, altered, remixed, or reproduced and passed along; they have been used in communication since the beginnings of writing through pictographic symbols (Benveniste). Similarly to emojis, memes communicate quickly and effectively. According to journalist Alexis Benveniste, “the popular meme creator Saint Hoax, who has three million Instagram followers, defines a meme as a piece of media that is repurposed to deliver a cultural, social or political expression, mainly through humor” (ibid).

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7.15: Graphics and Advertising

Of course visual analysis can be applied in our everyday lives, as well, in terms of how we understand elements of our common visual vocabulary. Below are “examples of broadly understood International symbols used to represent basic facilities, amenities, or instructions," which you are certainly familiar with (Reynolds 28).



Figure 7.15.1: From Universal Symbols: The Pre-Cursors To Emojis? [Photograph] by the International Sign Alliance, in Reynolds. (Copyright International Sign Alliance)

Graphic design refers to the art of creating visual content using images and typography (the art and style of arranging text), as well as the principles of composition, to communicate messages. This is something we encounter all of the time. Common examples of graphic design include print and online content, packaging, branding, marketing, advertising, user interface design, motion graphics, and more. All of these are meant to clearly and effectively communicate a message, whether it focuses on the content of a news, entertainment, or scientific article, for example, or on persuading you to buy something through advertising.

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7.16: Critical Thinking

? Critical Thinking: Which Resources?

If you have an assignment that requires you to write an essay about the effects of climate change on polar bear populations, what types of resources would you expect to be helpful to use and why? Which resources may not be as helpful?

If you have an assignment that requires you to write an essay about the top 10 music singles in 2019, what types of resources would you expect to be helpful to use and why? Which resources may not be as helpful?

? Critical Thinking: Bias

How does bias impact the presentation and interpretation of information? What can you do to mitigate that?

How do you recognize when a resource has bias?

? Critical Thinking

If you were looking for information for purchasing a new car, does the format that the information comes in matter to you? Are there times when digital information is more desired than print information? Does the source of the information and its reliability matter to you? Consider how your answers to these questions might change if you're doing scholarly research instead.

When important events and discoveries happen, information is created and shared with other people. People who experience these events share out their experiences (primary sources). Later on, this information is reviewed and studied by researchers who produce new perspectives on those experiences (secondary sources). As they create this information, authors choose which format to share their information in. Both print and online formats have their advantages and disadvantages, with online formats being less permanent but often more accessible.

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7.17: Questions for Critical Thinking



Questions for Critical Thinking About Information Sources and Their Creation Processes

- How might information be perceived differently based on how it’s packaged?
- How do writing style and quality, use and citation of sources, and review and editing processes vary depending on the type of source?
- What does the research method (such as surveys or lab research) have to do with the type of source produced? Can various types of sources develop from the same research method?
- What does how a source is accessed (such as in physical form or online) have to do with how the source was originally created? What features can you look for to determine what type of source it is when you're accessing it online?
- How does the review process affect the credibility of a source?

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CHAPTER OVERVIEW

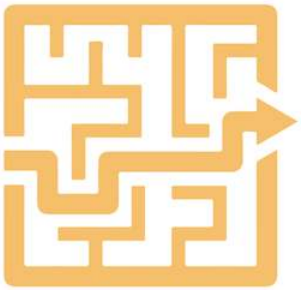
8: Strategic Searching

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8.1: Chapter Overview



This chapter will...

- Analyze the content, organization, and means of access for different library and internet search tools
- Examine how to identify information needs and match them with appropriate internet and library search tools
- Explore different kinds of search language, including keywords, subject terms, and natural language searching
- Analyze AI-assisted searching
- Explore ways to critique search results and refine search strategies in order to achieve relevant and appropriate results

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8.2: Searching as Strategic Exploration

Approaching Searching as Strategic Exploration

Searching for information effectively is often a nonlinear process that requires the evaluation of a variety of sources and the flexibility to evaluate a search and to change direction as new understanding develops.

As we examine the advanced search techniques covered in this section, keep in mind the exploration approach to searching:

- Adopt a **search mindset** and sound **exploration strategies**
- approach searching as a process of discovery
- remember that there is no single magic search term
- use a variety of neutral search terms
- remember that there is no single magic source that meets all of your information needs
- keep an open mind and be willing to allow your research focus to evolve
- seek a "balanced diet" of information that includes a variety of types of sources
- think of searching for information as putting a puzzle together
- be patient -- successful searching takes time
- if you get stuck, ask for help!

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8.3.1: Scenario

Scenario

Your US History professor has just assigned you a descriptive essay that is due in two weeks. For this essay, you will need to outline and describe the events that led up to the American Revolution. You are required to use at least two books and one documentary DVD; nothing can be from an online source. You determine that you need to visit the college library to find these resources, but you aren't sure how to find these resources in the library. You know you can ask for help from the reference librarian, but you want to find the resources yourself. Where do you start?

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8.3.2: Using OneSearch- Your California Community College Library's Search Tool

Does your college use OneSearch?

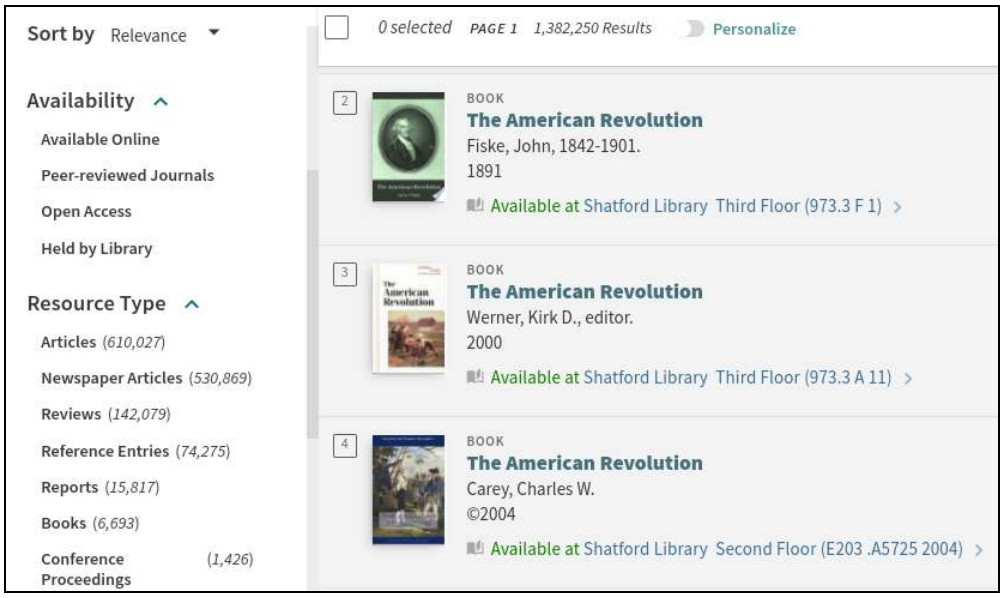
Your California Community College library most likely uses what is known as OneSearch to help you find library resources. If your library does not use OneSearch, there will be a lot of commonalities between your library's search tool and OneSearch. Speak with your instructor or a college librarian for further clarification.

College libraries hold a wide range of materials: books, DVDs, academic (scholarly) journals, magazines, newspapers, and more. When you use OneSearch, you will not only will find what your library physically owns, but it will also search for materials that the library has access to digitally or online. This can sometimes be confusing and can lead to a lot of search results. Fortunately, OneSearch provides you with ways to limit your search results so that you can identify the specific kinds of resources that you need to find.

Example Search

Let's consider the scenario presented at the beginning of this chapter. You need to find resources related to the American Revolution—specifically you need to find two books and one documentary film. Let's look at how you can do this in OneSearch.

If you search for American Revolution, you will see a search result that looks very similar to the one below:



This sample search result list from OneSearch displays what you should typically see when you conduct a search.

Filtering Results: Availability & Resource Type

In your search results, you should notice some key details. Pay attention to the area to the left of your search results, where you can use filters that control your search results. The first set of filters is labeled as "Availability." This will indicate how the resources are available. Are they available online? As peer-reviewed journals? You should notice there is an option that says "Held by Library" or something similar to indicate that your library owns those materials. This is a great filter to use to limit your search results that you can access at your library.

Another area to look at is "Resource Type." Here, you'll find different formats that you can limit your search results to. For our scenario, what types of resources do you need? We need two books. When you look at the image above, you'll see that there are 6,693 books that are available in our search results. By clicking on "Books," you will then be able to browse a list of those items.

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8.3.3: Finding Your Books

Interpreting Your Search Results

After you identify two books that you think you could use, you will need to find those books in the library. Let's take a closer look at the search results:



In the above image, we have limited our search results to "Held by Library" and to "Books" as our resource type. These active filters are on the left side of the above image. The top two results in the example are books that are available in the library. We can confirm that these are books by the "Book" label next to the image of the item in the search result. Below the book's cover, there is another label indicating the book's availability. Both of these books are labeled as "Available," meaning they should be in the library. If the book is checked out, missing, or simply unavailable, OneSearch will update the status so that you will know whether or not the book is available for you.

Call Numbers

The first book is called *The American Revolution*. According to OneSearch, this book is available at this library on its Third Floor.



After the location (Third Floor), you should see a set of numbers. These numbers are known as call numbers. Call numbers allow libraries to organize their resources on their shelves in a logical manner; that is, they will be shelved either numerically or alphanumerically (using letters and numbers) according to these call numbers. In the example above, the book's call number is 973.3 A 11. This means the library has it shelved with other books that are in a 900 range. In the example below, the book's call number is E203.A5725 2004. This means that this book will be shelved in an area where the call numbers begin with the letter E.



But why do some call numbers begin with letters, while others start with numbers? It all depends on the system your library decides to use to organize their materials. For further explanation, see How Libraries Organize Materials.

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8.3.4: Filters and Advanced Search Options in OneSearch

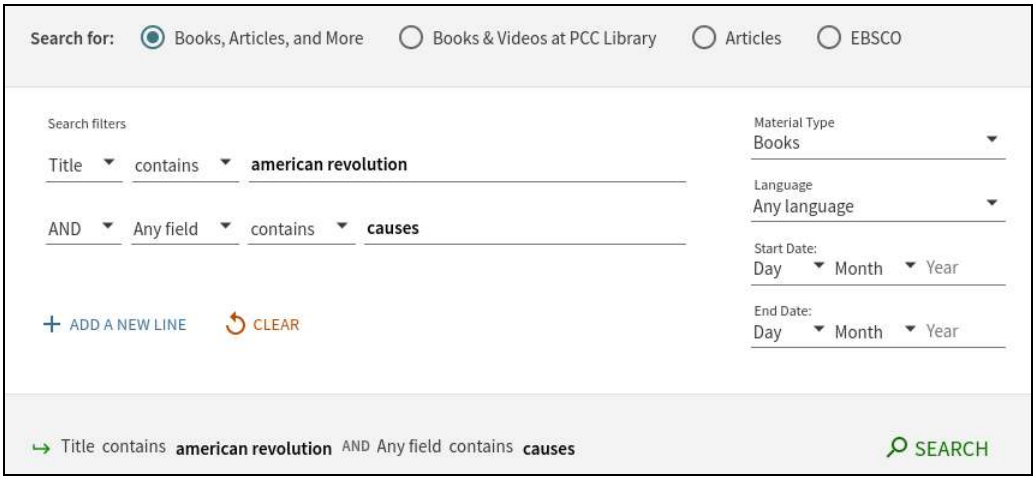
Filters

OneSearch provides you with many options to filter your results. We have already discussed “Availability” and “Resource Type.” Other filters that you might see at your library include Publication Date, Subject, Author, and Language.

Advanced Search

You can also click on an option called “Advanced Search” next to the search box at the top of your results (you might have to do a search first to see this depending on how your library has it set up). This option will allow you to be much more specific with your search. For example, let’s say you wanted to find books that have “American Revolution” in the title because you feel that those books will be most relevant to your topic. You also want to find books that address *the causes* of the American Revolution. This is hard to do in a simple search box. But in the Advanced Search option, you have much more control.

Below is an image of the Advanced Search from OneSearch. You should be able to see that in the first line, the search is set up so that the Title contains “American Revolution.” Then in the second line, there is the option that any field should contain the word “causes.” The search is also limited to a Material Type of “Books.” This Advanced Search has additional menus with other options we could use, such as language and date. You can even add additional keywords by choosing “Add a New Line.”



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8.3.5: Practice

Practice: Finding Other Resources

In the scenario, in addition to finding two books, your history professor also wanted you to find a documentary DVD. How would you find this in the library? What filters might you use? And where do you think it would be located?

TASK: Use your library's OneSearch to see if you can find one.

If your college library doesn't have DVDs, are there other options for you through the library? If not, where else could you look?

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8.3.6: Critical Thinking

? Critical Thinking: Which Book?

In our example search, OneSearch found us 6,693 books, which seems like a great thing because in the scenario, we only need two books. But in reflection, 6,693 books are a lot of books to consider!

How will you determine which two will be the best ones for your research needs? What will you be looking for, and what strategies will you use to assist you to focus your search results?

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8.3.7: Dewey Decimal Classification (DDC)

The Dewey Decimal Classification (DDC) was created by Melvil Dewey in 1873 and is still used by libraries today to organize their collections. The DDC strives to assign all the knowledge in the world to 10 different topical areas organized by number so that each range of numbers (starting with 000–099) is assigned a broad topic area. Below is an outline of these topics.

Dewey Decimal Classification System: Topics

000–099: Computer Science, Information and General Works

100–199: Philosophy and Psychology

200–299: Religion

300–399: Social Sciences

400–499: Languages

500–599: Science

600–699: Technology

700–799: Arts & Recreation

800–899: Literature

900–999: History & Geography

These 10 broad topics are then subdivided into 10 more specific topics. As an example, the 900s–History & Geography is divided below.

900s: History & Geography

900–909: History

910–919: Geography & Travel

920–929: Biography & Genealogy

930–939: History of the Ancient World (to ca. 499)

940–949: History of Europe

950–959: History of Asia

960–969: History of Africa

970–979: History of North America

980–989: History of South America

990–999: History of Other Areas

And then these get broken down even further! Let's look at the 970s.

970s: History of North America

970: History of North America

971: Canada

972: Mexico, Central America, West Indies

973: United States

974: Northeastern United States

975: Southeastern United States

976: South Central United States

977: North Central United States

978: Western United States

979: Great Basin & Pacific Slope region

When we look at this book that we found with OneSearch, we can see that its Dewey number is in the 900s. That means it is part of History & Geography. Specifically, it is a 973, which means it is about History of North America–United States. The .3 refers to the time period between 1775 – 1789.



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8.3.8: Bias in Library Classification Systems

Bias in Libraries

We find bias not only in the ways we interact with information, but also how information is organized in libraries. For example, the Library of Congress system was developed in 1897. Library of Congress subject headings and their order reveal the biases in scholarship at the time, privileging an American perspective, Western European colonialism, and including systemic racism and sexism, among many other biases. Librarians are working to repair this, in the way subject headings are currently being used and added, to amplify the voices of marginalized communities.

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8.3.9: Critical Thinking

? Critical Thinking: The DDC

Reflect on the 970s – History of North America, and the topics that are presented. Do you see anything surprising? If so, what? And what implications do you think this might have for libraries?

970: History of North America

971: Canada

972: Mexico, Central America, West Indies

973: United States

974: Northeastern United States

975: Southeastern United States

976: South Central United States

977: North Central United States

978: Western United States

979: Great Basin & Pacific Slope region

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8.3.10: Library of Congress Classification (LCC)

How It Works

In contrast to the DDC, the Library of Congress Classification system (LCC) strives to divide all the world's knowledge into 21 topical areas and groups them alphanumerically. That is, they first assign a topic area to a letter, and then divide that topic up by numbers. Created by the U.S. Library of Congress to meet the needs of its collection, the first outline of the LCC was released in 1904 ("Library of Congress Classification").

Library of Congress Classification

A: General Works

B: Philosophy, Psychology, Religion

C: Auxiliary Sciences of History

D: World History

E: History of the Americas

F: History of the Americas

G: Geography, Anthropology, Recreation

H: Social Sciences

J: Political Science

K: Law

L: Education

M: Music

N: Fine Arts

P: Language and Literature

Q: Science

R: Medicine

S: Agriculture

T: Technology

U: Military Science

V: Naval Science

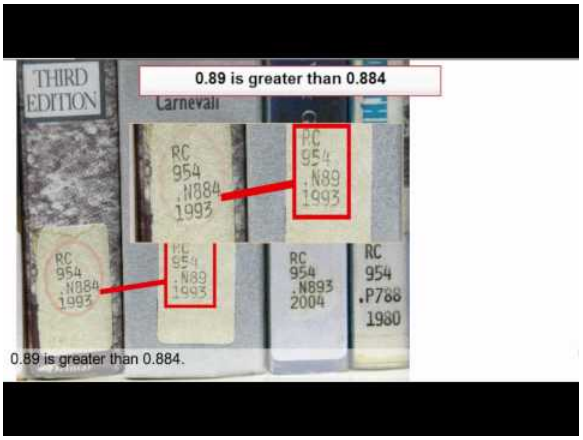
Z: Bibliography, Library Science, Information Resources

The LCC then adds numbers after each letter to get more specific within each topic area. Our example from before has the call number E203.A5725. This call number falls within the range E201–298, which is reserved for works about the American Revolution.



How to Find a Book on the Shelf

Please watch this video explanation [1:49], which demonstrates the different elements of LCC call numbers and how they are ordered on a library shelf:



A YouTube element has been excluded from this version of the text. You can view it online here: http://pb.libretexts.org/collegeresearch/?p=213

Note: This video has open captions. You may also use the text transcript if you prefer to read.

Sources

"Library of Congress Classification." *Librarianship Studies & Information Technology*, 23 June 2020.

"Understanding Call Numbers (Research Minutes)." *YouTube*, uploaded by Ryerson University Library & Archives, 14 Jan. 2011.

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8.3.11: Practice

Practice: Understanding LCC

You have done a search and found some books about the American Revolution that you now need to find on the shelf.

Their call numbers are:

E203.A5725 2004

E203.A5728 2009

E203.A57 2010

Which book would be first on the shelf and which would be last? Why?

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8.3.12: Critical Thinking

Critical Thinking: Other Considerations

Libraries use classification systems such as the DDC or LCC to assist with keeping their materials organized on their shelves, but that's not the only thing that they might use. They might have separate sections to group similar items together. For example, they might have a DVD collection. These may or may not use DDC or LCC, but they will be organized separately from the books. Likewise, there may be a Reserves section, which you may not be able to browse yourself, but you might be able to search for through OneSearch.

What other collections does your library have that might be separated within the library? How will you be able to search for items in those collections? What do you need to know in order to find those items in the library?

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SECTION OVERVIEW

8.4: Using Library Databases

8.4.1: Scenario

8.4.2: What Sources Are Available in Library Databases?

8.4.3: Critical Thinking

8.4.4: Choosing a Library Database

8.4.5: Critical Thinking

8.4.6: Scholarly Articles, Magazine Articles, and Newspaper Articles

8.4.7: You Found Some Resources! Now What?

8.4.8: Considering What You Need to Find

8.4.9: Accessing the Full Text of Your Sources

8.4.10: Critical Thinking

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8.4.1: Scenario

Scenario

Your English professor has assigned the class an argumentative essay. Your assigned topic for the essay is artificial intelligence. You are required to find evidence to support your argument from scholarly journals, magazines, newspapers, and books. You have to cite at least seven sources, at least one of each type, and you also have the option to use a video for one of your sources. Your professor states that she doesn't want you to use websites for your essay; you must use library databases and format your citations according to MLA. You are familiar with searching for books in the library, but unsure how to find the other resources.

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8.4.2: What Sources Are Available in Library Databases?

Why Library Databases?

Although the internet houses great resources, some websites are not appropriate for college-level research, and sometimes professors have concerns over the information that students might encounter online. In a previous chapter we explored Fact-Checking, and in a later chapter, we will discuss Web Search Strategies to find relevant and reliable resources. Unfortunately, you can't find everything through a Google search, which is one reason why you'd want to use a library database.

Most library databases provide access to resources that you would normally subscribe to or pay for, such as a newspaper. You can access some newspaper articles for free online, but websites often limit the amount of articles you can view freely. For example, if you visit the *Los Angeles Times* online you might be able to view one or two articles. After that point, you will need to purchase a subscription to read more. But a library database will provide free access for students and professors at your college.

Another advantage of using a library database is that the resources are secured and safe to access. Some websites require you to accept additional considerations and agreements before accessing materials. But what are you agreeing to? Websites, by their nature, are dynamic resources; their content can change without warning. A resource in a database typically will not change and will often come with a permanent link (sometimes called a "permalink") so that you can find and share the resource in the future.

Please watch the following video [2:34] for a concise summary of the key differences between using library databases and the Web for your research:



A YouTube element has been excluded from this version of the text. You can view it online here: http://pb.libretexts.org/collegeresearch/?p=225

Note: Turn on closed captions with the "CC" button or use the text transcript if you prefer to read.

Additional Database Features

Library databases tend to come with additional tools to support your research. These tools can include help with writing citations, easy-to-use filters to limit your search results, and options to save the article for later use. Whenever you use a library database, you will want to become acquainted with these additional features that will streamline and support your research process.

Takeaways: Library Databases vs. Websites

	Library Databases	Websites
Cost	Always free for students to access.	Varies. Sometimes you can access resources freely, other times you can't.
Privacy & Security	Exposure of students' information is limited through the databases.	You often must "agree to terms" before accessing content on a website.
Reliability	Information in a library database will not change unless the subscription changes.	Websites are dynamic, and content can change daily.
Features	Databases typically come with a range of tools to help you find relevant resources. You have more control over the results you want to see.	Search engines online have limited features to narrow down results. You have less control over the results you want to see.

Sources

"What Are Databases and Why You Need Them." *YouTube*, uploaded by Yavapai College Library, 29 Sept. 2011.

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8.4.3: Critical Thinking

? Critical Thinking: Databases or Websites?

Sometimes instructors will say: “Don’t use online sources—use library sources only!”

“But library databases are online,” you say to yourself. But you also understand that your instructor is referring to public websites or sources you can easily find using Google.

So, despite your instructor’s requirements, how would you decide when to use a library database versus a public website? What are a few of the advantages and disadvantages of each?

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8.4.4: Choosing a Library Database

Many Options

If you look at your library's database list, you might feel overwhelmed and confused. Why are there so many databases to choose from, and which one should you use? The first thing to realize is that library databases are each unique and specialized. Because of this, libraries tend to subscribe to multiple library databases to provide access to a range of materials that support the curriculum of the college. To choose a database, you need to know what each library database provides access to.

EBSCO, ProQuest, Gale

There are three big companies in the world of library databases: EBSCO, ProQuest, and Gale. Most likely, your library will have access to library databases that are owned by at least one of these, if not all three. Their library databases will generally provide you access to digital versions of resources: ebooks, newspaper articles, magazine articles, and scholarly journal articles. These companies also provide access to multimedia resources, such as streaming video and audio files. Some of the most common library databases from these companies are EBSCO's Academic Search Complete, ProQuest Central, and Gale's Academic OneFile. Any of these three library databases will connect you to the full range of resource types.

These three companies (EBSCO, ProQuest, and Gale) own so many library databases that they each also offer an aggregator search tool, which your library might or might not have access to depending on what they subscribe to. An aggregator search tool allows you to search across all of the library databases that your library subscribes to, owned by a single company. So, instead of searching in each of EBSCO's library databases individually, you can do a single search using EBSCOhost. Likewise, you can use the ProQuest Platform to search across most ProQuest resources, and Gale's PowerSearch to search across most Gale library databases. These aggregators also allow you to customize which library databases you want to search within. Note, however, that additional features are often available when library databases are searched one at a time.

Beyond these three companies are many others that your library might subscribe to that can be just as or maybe even more resourceful than the databases already discussed. Speaking to one of your librarians to understand which databases are the most appropriate for your research topic is always strongly recommended.

Scenario

Using the scenario for this section, and knowing that I need to find resources about artificial intelligence, I might want to focus on library databases that hold science articles (including general, multidisciplinary choices that cover science as well as many subjects). After looking at my library's database list, I determine that I will start with EBSCOhost and choose EBSCO's Science Full Text, Academic Search Complete, and MasterFILE. By using EBSCOhost, I'll be able to search all three of these library databases at the same time.

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8.4.5: Critical Thinking

? Critical Thinking: Choosing a Database

Thinking back to the scenario for this section that asks you to find resources about artificial intelligence:

- Which library databases would you use?
- Why would you use those specific library databases?
- Are there any library databases that you would avoid? Why?

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8.4.6: Scholarly Articles, Magazine Articles, and Newspaper Articles

Identifying Different Types of Articles

In our scenario, you have to identify and find different types of articles. As pointed out already, the library databases often come with filters that allow you to separate out these different types of resources. There are even some library databases, such as JSTOR, that specialize in scholarly journal articles, or ProQuest's US Major Dailies, which specializes in newspapers. But what if you're using an aggregator, such as EBSCOhost, and you aren't using a filter to limit your search? How will you be able to differentiate a newspaper article from a magazine article or from a scholarly journal article? And why does it matter? There is a separate chapter that goes into the differences between information resources in more depth, but for quick reference consider the following characteristics of these resource types.

Scholarly Articles



Scholarly journal articles are usually long. They are also written with academic language that can sometimes be very technical. Especially in the sciences and social sciences, you will notice predictable sections within them, with subheadings like introduction, literature review, methodology, results/findings, and discussion/conclusion. They'll have a list of references or works cited, and are often authored by more than one person (especially in the sciences and social sciences). Scholarly journal articles focus on research topics and questions, which means that they may not be reflecting on specific events happening at the moment of publication; rather, they tend to reflect on trends and larger issues.

Magazine Articles



Magazine articles will generally be shorter than scholarly journal articles, written so that they can be understood easily by non-experts, and may or may not have different sections within the article. If they do, the subheadings will not be as predictable as they are in a scholarly journal article from the sciences or social sciences, and the section headings will probably relate back to the topic of the article. A magazine article in PDF format will probably be colorful and have images. You probably won't find a list of references or works cited at the end of a magazine article. In contrast to scholarly journal articles, magazine articles tend to look at specific events occurring at or around the time of publication, and the authors try to analyze that event to explain why it's important.

Newspaper Articles



Newspaper articles are usually the shortest of all three article types. Like magazine articles, they are written in simple language to be understood easily by the general public, but because they are shorter, they don't usually have different subsections within the article. While a printed newspaper article may have some images, there will be fewer than in magazines; newspaper articles in

library databases are typically only available as HTML (i.e., no images). They also tend to describe events that are occurring at the moment the article was published, with very little analysis of importance other than the fact that the event happened. First-hand accounts from people who experienced an event are often reported in newspaper articles. Exceptions to this would be editorials and "op-ed" pieces, which are opinion-based articles about an issue.

Sources

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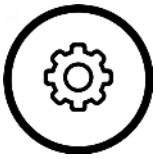
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8.4.7: You Found Some Resources! Now What?

Options



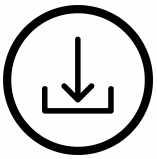
Most library databases give you the option to save, download, or email the resources that you find. You will want to get familiar with how the library databases present these options to you. For example, some library databases allow you to create your own free account within them. The advantage of creating an account (for example, with EBSCO, or ProQuest) is that you may be able to create folders to store links to resources you can easily find again later. You might also be able to save searches, so that you do not have to remember which keywords you entered. You can sometimes set up alerts attached to those searches, so if new resources are added to the library database (which can happen daily), you will be notified about those new relevant resources.

Emailing Sources



But maybe you do not want to set up an account. Not a problem! Many library databases allow you to send an email to yourself with the article or a link back to the article, without ever creating an account for the company that makes that database (You will, however, have to log in to your college library's website to access library databases from off campus, so the database knows you are a student there. If you're unsure how to do this, ask a librarian at your college.) This is where you will need to explore what options the library database offers. Sometimes, the email option is simple; sometimes you will have to fill out a form. If you see a form that needs to be filled out, review it carefully. The library database might be offering some great ways to save you time later, such as an option to include the citation of the article in the email. You can also send the article to other people: If you're working on a group project and everyone needs to look at the same resources, you might want to include your group members on the email form.

Downloading Sources



Some people prefer not to email the resource and they just want to download it. This is sometimes an option, depending on the library database and the resource. If it's available as a download, you might want to keep notes about the resource, so that you remember which library database you found it within, and any publication details you might need to build a proper citation for the resource.

Sources

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Image: "Settings" by Freepik, adapted by Aloha Sargent, from Flaticon.com

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8.4.8: Considering What You Need to Find

One of the main tasks that you will do within library databases is find articles, often scholarly journal articles. Fortunately, many library databases include filters that limit your results to just scholarly journal articles. This is especially helpful when using the big aggregator search tools from EBSCO, ProQuest, and Gale. But there are often other considerations to take into account when finding resources. As a reminder, always check your assignment requirements and ask yourself these questions:

Assignment Guiding Questions

1. How many resources am I required to find?
2. What types of resources am I required to find?
3. Are there any types of resources that I am not allowed to use?
4. Is there a requirement related to the publication date of the resources?
5. Are there any other requirements that might be helpful to remember (due dates, citation styles, etc.)?

Let's look at our scenario for this section to answer these questions:

> Your English professor has assigned the class an argumentative essay. Your assigned topic for the essay is artificial intelligence. You are required to find evidence to support your argument from scholarly journals, magazines, newspapers, and books.You have to cite at least seven sources, at least one of each type, and you also have the option to use a video for one of your sources. Your professor states that she doesn't want you to use websites for your essay; you must use library databases and format your citations according to MLA.

According to the Scenario, we can answer the guiding questions as follows:

Answers to Assignment Guiding Questions

1. Seven resources.
2. At least one scholarly journal article, one magazine article, one newspaper article, and one book. That's only four out of the seven. You must find more of those resources to equal seven, and you can also use videos. All resources must come from library databases.
3. You can't use websites.
4. No publication date restrictions were provided.
5. MLA citation style must be used.

Having this information outlined for yourself will help you stay focused as you search through the library databases. After identifying some keywords to seek resources related to your topic, you can then use filters to limit your results to specific resource types (depending on the library database you are using). You should also be able to limit to a publication date when necessary.

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8.4.9: Accessing the Full Text of Your Sources

Full Text Options

You might also see an option to limit your results to full text. Full text means that you will have full access to the resource. If you want to be able to read the article or view the resource, make sure that the full text option is selected. If you see search results that only bring back a summary, an abstract, or a citation for an article, it's most likely because you didn't select the "full text" option in your search filters.

Sometimes, there may be different ways to read the full text of an article or ebook. You might see HTML, PDF, or ePUB presented as options, and each format has strengths and weaknesses. In the end, it's up to you to decide which one to use. But you will want to be familiar with each type, because sometimes the resource you want to use will only be available in one of them.

HTML



HTML stands for Hypertext Markup Language. This is the basis for all text online. When you see HTML as an option to access the full text of an article or an ebook, it means the article will be presented as text only—much like text on a website, but without any flashy graphics or images. Just the text. What's great about this is that the text can be manipulated by the library database—manipulated in a good way. It can be converted into other languages, or the library database can read the text aloud or generate a file for you to download an audio version of the resource. HTML full text also tends to load rather quickly, and you can easily copy, highlight, and search through the text using keyboard shortcuts such as CTRL+F or Command+F. There are also disadvantages: Because there are no graphics or images (or when they are available, they are often separate from the text), you can lose context and vital information. Page numbers may be missing, and the text itself may have been loaded with errors from the original source. These can all be very problematic if you will be citing the resource.

PDF



PDF stands for "portable document format" and describes a document that retains or reflects the formatting of a formally published, printed document, with all the images and charts, page numbers, and publication information. In some PDFs, it is possible to select and copy the text, and the text can be recognized by screen readers and other accessibility software. Other PDFs are a scanned image of an original printed document, and the file may not be readable as text by your computer—it might just see an image. This makes it hard to copy and highlight text, and nearly impossible for the computer to translate it into a different language. Depending on the file size and the speed of your internet connection, some PDFs might take longer to load. But you can download them and save the file to read offline later, which is not always possible or easily done with HTML-based resources. Overall, though, PDFs are preferable when doing academic research, and are highly recommended to use because they preserve the look of the original source.

EPUB



EPUB can be described as a cross between PDF and HTML. This is a file type that you can download and access offline, that will have images embedded within it. But like HTML, the text can be manipulated by the computer or device. EPUBs are adaptable to screen size; text can be reformatted to be easily read on various devices, such as a smartphone or tablet. A PDF doesn't have that flexibility. The text in EPUBs can be recognized by screen readers and other accessibility software more easily than in PDFs. Disadvantages are that you will find EPUBs almost exclusively with ebooks, and you will need a separate EPUB reader software to read the resource offline; whereas most devices come equipped with PDF readers, not all devices have an EPUB reader installed.

Sources

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8.4.10: Critical Thinking

? Critical Thinking: What Type of Resource is it?

You come across an article that is available in both PDF and HTML format. You're unsure if it's a magazine or scholarly article. What are some key indicators you will look for to assist you in determining which one it is? And then will you download it, email it, or save it for later? Why would you choose one of these ways over the other?

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SECTION OVERVIEW

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8.5.6: Comparing Search Tools

8.5.7: Practice

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8.5.11: Critical Thinking

8.5.12: Refining Your Search

8.5.13: Searching and Privacy

8.5.14: Practice

8.5.15: Citing Websites, Web pages, Files, Articles

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8.5.1: Scenario

Scenario

Your professor wants you to research antiracism. Specifically, you are to identify efforts and/or policies by government agencies and private organizations that support antiracism. Your professor explicitly states that the library databases cannot be used for this assignment, and you will need to find credible primary and secondary sources online. She wants you to submit an annotated bibliography using MLA style, that includes 10 websites and/or online documents.

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8.5.2: A Very Brief History of the Internet

Meanings

We use the internet every day. Before we dive into conversations about navigating the rich resources you can find online, it's helpful to understand what these terms mean and where this all came from.

If a 5-year old child asked you: "What is the internet?" how would you describe it?

This can be challenging, because we may not think about how the internet works, and many of us take the internet for granted. To keep it simple, the internet can be described as a very large network of computers that communicate with each other in standardized ways, so information can be shared efficiently and effectively.

History

In 1969, the first version of the internet was created and set up as a network (called ARPANET) between four "nodes": UCLA, the Stanford Research Institute, UC Santa Barbara, and the University of Utah (Mack). A student programmer named Charley Kline sent the first message over ARPANET on October 29, 1969. The simple message "LO" was supposed to be "LOGIN", but the system crashed after the "O" (Norman).

To learn more about these early days of the internet, watch this short video [4:56] featuring Leonard Kleinrock who led the effort:



A YouTube element has been excluded from this version of the text. You can view it online here: http://pb.libretexts.org/collegeresearch/?p=257

Note: This video is auto-captioned. Accurate captions are available at the Amara version. Use the text transcript if you prefer to read.

> **What is ARPANET?** ARPA stands for Advanced Research Projects Agency. NET is short for network. ARPA was part of the U.S. Department of Defense.

From these humble beginnings came new ways to share information and communicate. In 1971, we had the first email message and saw the creation and international expansion of more networks, which prompted a standard for the networks that was released in 1983 (McDowall). This eventually led to the establishment of the Web, which was released by CERN (the European Council for Nuclear Research) in 1993 and led by Tim Berners-Lee (Greenemeier). Therefore, while the terms are often used interchangeably, the internet is separate from the Web: the Web can be simply described as an application that runs on the internet, facilitating a way to standardize and share information from the internet.

A need emerged for platforms to display information on the Web known as browsers; today, Google Chrome, Mozilla's Firefox, and Microsoft's Edge are three popular browsers. A need also emerged for tools that could index and search information within the Web, or search engines; today, these include Google, Yahoo!, and Bing.

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8.5.3: Critical Thinking

? Critical Thinking: Internet Ownership?

The internet is not really owned by anyone, and yet, it is owned by everyone! What do you think that means? If the internet is not really owned by anyone, does that mean everyone has the same access to information across the world? Why or why not?

Do you think there are other issues to consider when thinking about internet management and use? What issues would those be?

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8.5.4: Search Engines and Tools

As you probably already know, there are many different search engines and tools available for you to use, and many of them are now easily accessible and embedded in the devices we use every day. Long gone are the days when you go to a search engine's website to begin searching online. As an example, if you need to find the nearest pizza restaurant, you can simply type in your browser's address bar or ask your phone: "Where's the nearest pizza restaurant?" and you will be supplied with an answer. Search technology continues to advance as it becomes further integrated into our daily routines.

This can be very convenient, but can also lead to more questions. What search tools are the best to use? Are there disadvantages or risks associated with how search tools are used? Let's start by discussing the different search tools available.

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8.5.5: AI-Assisted Searching

AI Is Not A Search Engine

While search tools such as Google, and even some library search tools, use AI, it is important to know that GenAI (generative AI) tools such as ChatGPT is *not* a search engine. It does not search for answers to your question and provide answers. Instead, it provides an answer that sounds plausible, but may or may not be comprehensive or even accurate.

Watch the short video below from Professor Casey Fiesler for an explanation.

https://socialsci.libretexts.org/@go/page/260878

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8.5.6: Comparing Search Tools

Common Search Tools & Search Engines

There are many different search tools, and you probably use quite a few without thinking about them, such as artificial intelligence (AI) assistants. Examples include Siri, Alexa, Google Assistant, Cortana, and Bixby. AI assistants are usually voice activated and will search the internet for answers to your questions, suggest resources for you to look at for information related to your question, and perform tasks such as turning on lights or creating a shopping list.

Another type of search tool that you probably use is a search engine. Search engines are online tools that search for web pages based on keywords. Many of these are now embedded in your browsers to make searching online easier, but each have their own websites as well that you can search from. The big names in this area are Google, Yahoo!, and Bing. Though they may bring back different search results, they function overall using the same main principle: to bring back as many relevant results as possible. How each one defines and determines what is "relevant" may differ, and their criteria and methods are typically not transparent to the user.

Other Tools

Besides search engines, there are other online search tools that you might be familiar with but didn't know what to call them, such as Yelp. There, you can search for businesses and learn information about those businesses, often including links to their websites. Yelp doesn't search the Web; rather, it maintains its own records and links for those businesses. Because Yelp controls what it searches and what it lists, it is called a directory. Web directories are search tools that link out to hand-selected websites usually organized by categories or topics.

Determining which search tool is the best to use depends on what you are trying to accomplish. If you're trying to find the nearest pizza restaurant, using an AI assistant is probably really great; using a directory like Yelp might also be helpful. But what about for our scenario? What type of search tool would be the best to use, do you think?

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8.5.7: Practice

Practice: Comparing Search Engines

Let’s think about the scenario for this chapter and the example assignment. Knowing that search engines rely on your keywords to find relevant results, what keywords would you use?

After you think of a few, test them out!

Try them with an online search engine of your choice and note the top five results. Now try a different search engine. Did you notice any major differences or similarities between the two? Were the results what you were hoping for, or expecting to see? Any surprises?

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8.5.8: Google Scholar

Google Scholar

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

When to Use It

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

How to Use It

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

Movie: Using Google Scholar

Watch this tutorial on the basics of Google Scholar use.

An interactive or media element has been excluded from this version of the text. You can view it online here: https://ohiostate.pressbooks.pub/choosingsources/?p=809

View video

Note: Setting your school in Scholar Preferences will help you make direct connections to online sources provided by your library. If you want to locate sources in many different libraries, add WorldCat in addition to your library. (Remember to save your preferences.)

In your search results, you can connect to an online version if there is a linked option following the item's title. (If you've added Ohio State under preferences, a Find It link is shown to provide a link to full-text or to help you request the item if it's not available online. If you've added WorldCat to you preferences, the Library Search link displays the WorldCat record, which shows all of the libraries that own the item. If there are multiple references to the same item, Google Scholar groups them. You can click the versions link following a title to see a list of all versions.)

Additional Tips

- The Any Time link in the left column of results allows you to limit your search results by date.
- Find Advanced Scholar Search by clicking on the three horizontal lines icon. Advance Scholar search provides additional search fields such as author, publication, and date, as well as phrase matching and word exclusion.

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8.5.9: Academic Search Tools

Scholarly Content Online

There are some specialized search tools on the internet that target academic audiences. Perhaps the most popular one is Google Scholar, which looks for academic, scholarly content. Another tool is Microsoft Academic Search. There are also a few subject-specific search tools that you might want to become familiar with, such as PubMed (for the biomedical field) or ERIC (for the education field).

Paywalls



Typically, you would find scholarly content using a library database, but the tools described above can also help connect you to scholarly content that your college subscribes to. The problem—especially for community college students—is that these tools also find a lot of resources that your college might **not** subscribe to.

For this reason, a lot of the content these search tools will find is behind something called a paywall. A paywall is a barrier you may encounter online, when you have to pay before you can access a resource. Scholarly journal articles you find online come with a price, which can range anywhere from $25 per article up to well over $100 per article!

In our scenario, you have to find 10 resources. That means, for this class assignment, it might cost you anywhere from $250 to over $1000 to complete. At this point, you might be thinking that these academic search tools are not worth using, and we wouldn't blame you. But these tools don't always lead you to a paywall, and a paywall is not always a dead end. These tools can help you identify resources that might also be available for free in library databases your college subscribes to, and these tools will often connect you to open access resources.

Sources

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8.5.10: Open Access



“Open access” refers to resources online—usually academic resources—that are freely available. When trying to find scholarly articles online, you will want to find open access journals or open access articles within more-traditional scholarly journals. Google Scholar and Microsoft Academic Search don’t do a great job of helping you limit your search results to those resources that you have access to, so it can be frustrating at times when using them to conduct research. On the other hand, PubMed and ERIC do provide ways for you to limit your search results to those resources that are freely available. Another resource to check out is The Digital Commons Network, which is a directory of open access articles and resources from universities and publications that you can access freely.

Remember, for any resource that you find online that you cannot access or that has a paywall, consult with a librarian to see if there’s another way for you to access the resource freely. It might be possible for the library to get you access through interlibrary loan, which is when libraries cooperate with each other to provide access to resources that one library may not have, but another library does.

OER: A Special Kind of Open Access Resource

OER stands for Open Educational Resources. OER are materials that can be used and adopted in place of traditional course materials in order to promote equitable access to education as there is no cost for the student or faculty to use OER. That means if your professor uses an OER textbook, you can access that textbook for free online. This is an OER textbook, as an example.

OERs are not limited to textbooks. They could be articles, documents, movies, images, and more. What defines them are the permissions or license that comes with them. Though we won’t dive into all the aspects of licensing and copyright permissions, basically, if the material is licensed so that you can share, revise, and keep a copy of the resource freely, then you have an OER. OER is different than open access in this regard, because open access only allows you to access the resource.

Sources

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8.5.11: Critical Thinking

? Critical Thinking: Open Access

Open access as a concept sounds great! These are resources you can access freely online. The internet was created to support sharing information freely. But just because you can access a resource freely doesn't mean you can do whatever you want with that resource, right? There is copyright to consider. What can't you do with a resource that you can access freely? It may help to think about YouTube videos. You can access those freely. Can you download them freely? Can you edit them? Should you be able to?

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8.5.12: Refining Your Search

Now that you have learned about tools and some of the issues surrounding searching online, you need to be able to control your search. Just like with library databases, there are strategies you can employ with online searches. Recall that in our chapter scenario, you needed to find information about antiracism efforts of government and private organizations. When forming your search for this scenario, you might use the following keywords: antiracism, government, organizations, policies, and efforts. But you might want to take advantage of some more **advanced search** commands.

Limiting by Domain

One search command to make note of is site:. This command allows you to search for, or within, specific websites based on domain name. For our scenario, we need government and organizations, so it would be helpful to limit our search to those types of websites. You can set up your search to look something like this:

antiracism policies site:gov

This search example will look for the keywords antiracism and policies within government websites only. The site: command will limit results to those with gov in the website address (also known as the URL). The domain gov is reserved for U.S. government websites.

Other common domains that you could use include .com, .org, and .edu. The domain .org stands for "organization," however, **anyone** can use the .org domain, not just non-profit organizations. It is **very important** to use these domain reservations as guidelines rather than definitive markers of credibility. For example, an .edu website (reserved for educational institutions) could host papers written by students, which might not be appropriate sources for a college-level research paper. Likewise, an .org website could be hosted by a commercial enterprise or even a hate group.

Limiting by File Type

The scenario also asks for online documents. The meaning of this word, "documents," can be vague and unclear, but its use in the scenario indicates that we're looking for something you can download, such as a PDF or maybe a Word document. You can also limit your results to file types when searching by using the filetype command. Your search would look something like this:

antiracism policies site:gov filetype:pdf

With the search example above, you will be limiting your search results to government websites that have PDFs related to antiracism policies.

Other Filters

In addition to those commands, there are easy-to-find tools built into search engines. You can search for images, news, maps and more when you search online. You can limit your results to the past year, the past hour, or other time periods. All of these additional limiters can be very powerful and helpful when conducting research, depending on your topic. Explore your search engine to see how much control you can have over your online searching.

- Google Search Help
- Bing Help

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8.5.13: Searching and Privacy



Accept?

Have you ever visited a website and seen a pop-up that says “Accept Cookies” or “Accept Privacy Terms”? These pop-up messages are everywhere! Because we want to see the information on the website, we often click “yes” and move on without giving it another thought. But what information are you giving up? Does it really matter? There are arguments on both sides of the fence here. Some people feel that websites and companies are tracking individuals too much, to the point where targeted ads are infiltrating what people see and experience. Others claim these ads are not as targeted as they seem, and that people aren’t really being tracked—rather, activity is being tracked.

Impact

We do know, however, that your online activity can impact your search results. This phenomenon is called a filter bubble and this occurs most often and strongly within social media, but also within search engines. On social media, you are fed stories based on people or organizations you follow and posts that you liked. This means that, before long, you see only those things that you “liked” or similar items that you have followed. This greatly limits what you see, and a filter bubble is created. Same with search results. Basically, the search tool you use learns about your preferences. It knows your location, for example, therefore, it will provide results relevant to your geography. Search tools can also track the things you click on and will provide similar results in the future. If you start clicking on New York Times articles frequently, you might see more results coming back from the New York Times in your searches. For more on the problematic “personalization” of information we see online, please read the section on Filter Bubbles.

Protecting Privacy

There are steps you can take to combat these behaviors of online tools. One thing you can do is use a search tool that does not track your browsing history. DuckDuckGo is a popular search engine that protects your privacy as you search online. Another step you can take is to use your browser’s “incognito” or “inPrivate” mode. This will also limit what is saved on your computer and prevent or limit tracking behavior as you search.

You should always be vigilant about what you agree to online. Don’t dismiss those pop-ups that you “agree” to so quickly. If you’re on a website that you are unfamiliar with, take the time to read through to what you are agreeing to. You might be surprised, and you will have to decide for yourself if what you agree to is worth what you want to access. Some of these agreements may be harmless; but in the end, it’s your information and your privacy that might be at risk. Only you can determine if and when those values should be waived.

Sources

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8.5.14: Practice

? Practice: Advanced Search Commands

Think of keywords related to your research, or use the example searches supplied in this section in a search engine of your choice. Try limiting by .edu domain and for documents such as PDFs.

What did you find?

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8.5.15: Citing Websites, Web pages, Files, Articles

Considerations

The final part of our chapter scenario asks you to create a bibliography of the websites and online documents that you have found. Citing (including the meaning of "annotated bibliography") is covered more fully in a later chapter, but for the purposes of this scenario, there are some things to consider:

1. Some online academic search tools (such as PubMed) will provide you with citation guidance for resources.
2. Websites and web pages are different. Unsure what you are citing? Ask a librarian, or a writing tutor!
3. Always check with your professor to confirm what they expect. Some may have customized requirements, and you will need to make sure you create citations that meet those expectations.
4. Use online citation generators (such as EasyBib or Citation Machine) cautiously. They can be great timesavers, but they can also create headaches! Make sure you have an authoritative resource to double-check any citation that is created for you, such as Excelsior Owl or your library's own resources.

Example

Let's try to cite the following web page together: https://ceo.lacounty.gov/antiracism/

The format for a web page in MLA:

Author's Last name, First name. "Name of Web Page." *Name of Website*, date of publication, website address.

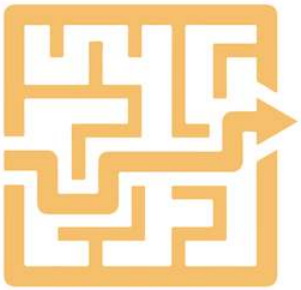
MLA citation for our web page:

"Anti-Racism, Diversity, and Inclusion Initiative." *Chief Executive Office of Los Angeles County*, 2020, ceo.lacounty.gov/antiracism/.

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8.6: Questions for Critical Thinking



Questions for Critical Thinking About Strategic Searching

- Why might it be useful to develop a search plan before searching for information?
- How can you determine what you're looking for and where to search for it?
- How might understanding the characteristics of different types of sources and search tools, and how information is organized in different places, help you to develop a more effective search strategy?
- How do you know when you have a good search results list and when you should revise your search? How can you determine whether the sources in your search results are relevant and credible without reading every one?
- Why and how might learning more about your topic prompt you to change your search strategies?
- How can you tell when you've found a gap in the available information on a topic and when you just need to adjust your search strategy to find the information?

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CHAPTER OVERVIEW

9: Authority and Credibility

9.1: Chapter Overview
9.2: Types of Expertise and Influence
9.3: Fact-Checking and Source Evaluation Strategies
9.4: Evaluating Data as Sources
9.5: Questions for Critical Thinking

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9.1: Chapter Overview



This chapter will...

- Distinguish between authority, expertise, and source type
- Examine the strengths and limitations of different types of expertise and influence
- Critique the constructed nature of authority and the responsibilities associated with it
- Distinguish between individual authorities and bodies of knowledge
- Further explore fact checking and source evaluation strategies, including selecting appropriate sources for specific information needs

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9.2: Types of Expertise and Influence

Expertise: What Makes Someone an Authority on a Topic?



People develop different types of expertise on a topic through different types of training and experience, including:

- Education
- Personal experience
- Professional practice

Consider surfing as an example. An experienced surfer might be able to distinguish between different types of waves and ride them expertly without fully understanding the science behind how the waves are created. On the other hand, a scientist with a PhD in physical oceanography might understand the processes that create different types of waves in great detail, without being able to surf any of them. The surfer and the oceanographer have different types of expertise related to waves. Depending on the type of information you need, one or the other of them might be a better authority.

Whose Voices Get Heard?

In addition to considering different types of authority, it is important to consider who is most able to publish and share information and who is more likely to encounter barriers to publishing and sharing their expertise. The publishing process, the published sources available, and the voices represented in those sources, reflect the biases of the society that produces information sources. For example, many researchers have noted a gender bias in academic publishing that results in women being underrepresented as editors, reviewers, and authors of scholarly journal articles.

Evaluating Authority

To evaluate the credibility and usefulness of an information source, you will need to identify the type of expertise the creator of the information has *and* determine whether that type of expertise is appropriate for your needs.

Keep in mind that a certain type of expertise in one area doesn't guarantee expertise in another. For example, having a PhD in physics doesn't make someone an expert in nutrition or art history.

You can research someone's expertise by Googling them – see what others say about them, not just what they say about themselves! Scholarly articles should include the authors' professional affiliations – you can learn more by going to their universities' websites.

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9.3: Fact-Checking and Source Evaluation Strategies

Evaluating Sources for Research Projects

In Chapter 3, we examined the **lateral reading** (SIFT) approach that professional fact checkers use to help them evaluate a source by examining what *other* sources can tell them about it. This might including finding out more about the source's publisher through Wikipedia, or check the truth of a claim using an internet fact checking site like Snopes.

Once we have fact-checked a source, we can use **vertical reading** (PICK) to examine it more closely to determine its useful to our research.

SIFT & PICK Fact Checking & Source Evaluation

What Makes an Information Source "Good?"

“Good” sources include those that provide complete, current, factual information, and/or credible arguments based on the information creator’s original research, expertise, and/or use of other reliable sources.

Whether a source is a good choice for you depends on your information needs and how you plan to use the source.

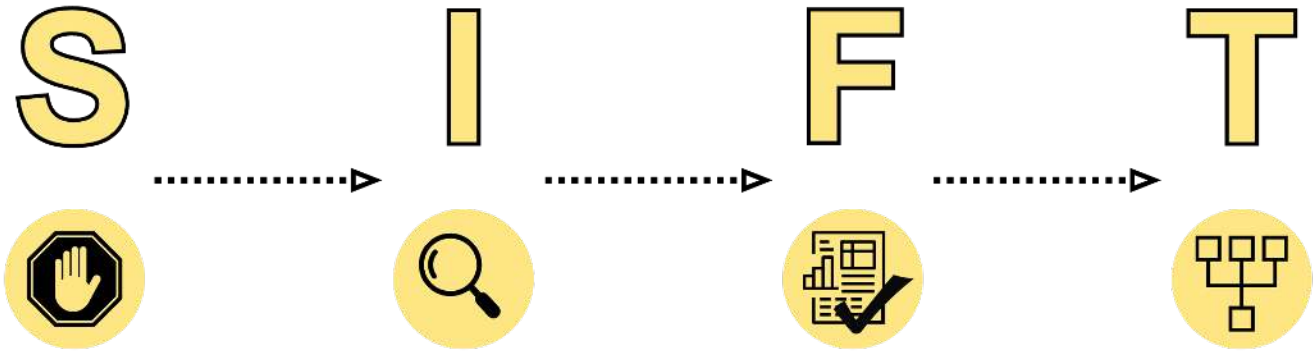
Evaluating Sources Using Lateral & Vertical Reading

The **SIFT* & PICK** approach to evaluating sources helps you select quality sources by practicing:

Lateral Reading (SIFT): fact-checking by ***examining other sources*** and internet fact-checking tools; and

Vertical Reading (PICK): ***examining the source itself*** to decide whether it is the best choice for your needs.

*The SIFT method was created by Mike Caulfield under a CC BY 4.0 International License.



Stop

- Check your emotions before engaging
- Do you know and trust the author, publisher, publication, or website?
  - If not, use the following fact-checking strategies before reading, sharing, or using the source in your research

Investigate the source

- Don't focus on the source itself for now
- Instead, read laterally
  - Learn about the source's author, publisher, publication, website, etc. from other sources, such as Wikipedia

Find better coverage

- Focus on the information rather than getting attached to a particular source
- If you can't determine whether a source is reliable, trade up for a higher quality source
- Professional fact checkers build a list of sources they know they can trust

Trace claims to the original context

- Identify whether the source is original or re-reporting
- Consider what context might be missing in re-reporting
- Go "upstream" to the original source
  - Was the version you saw accurate and complete?

Purpose / Genre / Type

- Determine the *type of source* (book, article, website, social media post, etc.)
  - Why and how it was created? How it was reviewed before publication?
- Determine the *genre* of the source (factual reporting, opinion, ad, satire, etc.)
- Consider whether the *type* and *genre* are appropriate for your information needs

Information Relevance / Usefulness

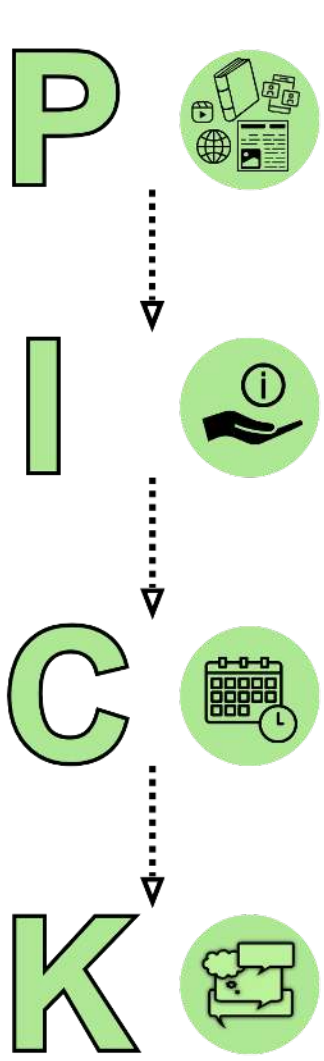
- Consider how well the content of the source addresses your specific information needs
  - Is it *directly* related to your topic?
  - *How* does it help you explore a research interest or develop an argument?

Creation Date

- Determine when the source was *first* published or posted
  - Is the information in the source (including cited references) up-to-date?
- Consider whether newer sources are available that would add important information

Knowledge-Building

- Consider how this source relates to the body of knowledge on the topic
  - Does it echo other experts' contributions? Does it challenge them in important ways?
  - Does this source contribute something new to the conversation?
- Consider what voices or perspectives are missing or excluded from the conversation
  - Does this source represent an important missing voice or perspective on the topic?
  - Are other sources available that better include those voices or perspectives?



- How does this source help you to build and share your own knowledge?

More Fact Checking & Source Evaluation Resources

Online Fact-Checking Sites

- Global Fact-Checking Sites
- FactCheck.org
- PolitiFact
- Snopes

Source Evaluation Guides & Tutorials

- Better News Fact Checking
- First Draft Verifying Online Information
- SIFT & PICK Fact Checking & Source Evaluation (PDF)

Free Interactive Ebooks & Online Courses

- Check, Please! Starter Course
- CTRL-F: Find the Facts
- Introduction to College Research
- Web Literacy for Student Fact-Checkers

Journalistic Standards

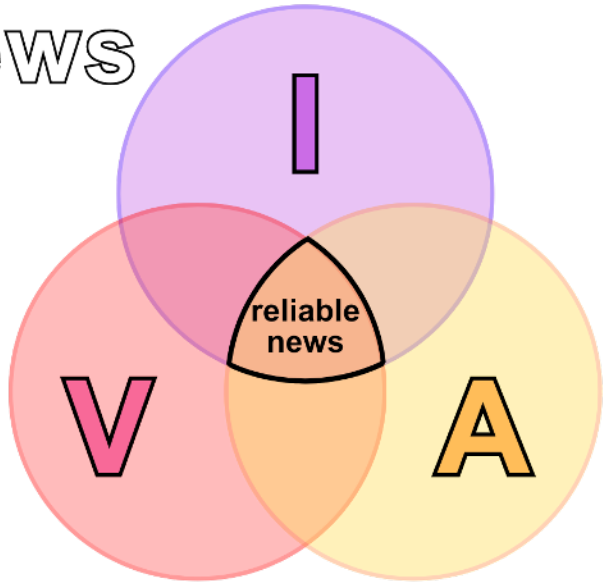
We examined journalistic standards in Chapter 3. Below is a reminder of the V.I.A. acronym.

VIAbility of News

Verification

Independence

Accountability



The Center for News Literacy at Stony Brook University uses the acronym V.I.A. to describe the characteristics shared by trustworthy media outlets.

VIAbility of News Sources

A media outlet that adheres to journalistic standards is committed to the following practices:

Verification

- Uses *evidence* from *multiple credible sources* to demonstrate the accuracy or truth of claims

Independence

- Remains *free* from outside control or influence
- Makes *conscious effort* to set aside preexisting beliefs
- Uses *checks and balances* to ensure independence

Accountability

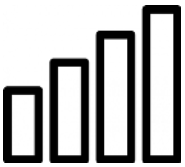
- Takes *responsibility* for work
- Acknowledges mistakes and *makes corrections*

Sources

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9.4: Evaluating Data as Sources



Evaluating data for relevance and credibility is just as important as evaluating any other source. As with other information sources with data there is never a 100% perfect source. You'll have to make educated guesses (inferences) about whether the data are good enough for your purpose.

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

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

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

To evaluate the credibility of the data in a research journal article you have already read, take the steps recommended in Evaluating Sources, plus consider these questions:

- Is the article in a peer-reviewed journal? Look at the journal's instructions for authors, which are often located on the journal's website, to see if it talks about peers reviewing the article and asking for changes (revisions) before publishing. If it is a peer-reviewed journal, consider that a plus for the article's credibility. Being peer-reviewed doesn't mean it's perfect; just more likely to be credible.
- Do the authors discuss causation or correlation? Be wary of claims of causation; it is very difficult to determine a causal effect. While research studies often find relationships (correlation) between various variables in the data, this does not equal causation. For instance, let's return to our example above: If the study of Minneapolis high school students' sports participation showed a positive correlation between sports participation and college enrollment, the researcher cannot say that participation caused college enrollment. If it were designed to show cause and effect, the study would not have resulted in a correlation. Instead, it would have had to have been designed as an experiment or quasi-experiment, used different statistical analyses, and would have supported or not supported its hypotheses.

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9.5: Questions for Critical Thinking



Questions for Critical Thinking About Authority and Credibility

- How or why do we decide if someone is an expert and/or authority on a topic?
- What types of influence do authorities have?
- What might be expected of us as we become authorities ourselves?
- How might social, cultural, or personal biases amplify the voices of some authorities and silence others, based on factors such as politics, religion, race, gender, sexual orientation, socioeconomic class, etc.? How do our own opinions and biases influence our judgments about someone's authority on a topic?
- How does the context in which we intend to use a source affect our determination of its credibility? Can a source be credible in some contexts but not in others?

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CHAPTER OVERVIEW

10: Scholarly Communication and Knowledge-Building

10.1: Chapter Overview

10.2: Scholarly Conversations and the Development of Knowledge

10.3: Citizen Science

10.4: Putting Your Sources in Conversation with Each Other

10.5: Questions for Critical Thinking

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10.1: Chapter Overview



This chapter will...

- Examine scholarly conversation and how it contributes to the development of knowledge and changing scholarly perspectives over time
- Critique scholarly contributions within the context of bodies of knowledge as well as the voices/perspectives/expertise that have been excluded from scholarly conversations
- Explore ways students can participate in scholarly conversations

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10.2: Scholarly Conversations and the Development of Knowledge

Communities of scholars, researchers, professionals, or other experts build knowledge through ongoing “conversations” of different types in which ideas are formed, debated, and weighed against each other over time. Students begin to participate in these conversations when they engage with information sources and share their academic work.

"To participate in college-level research is to engage with a chain of debate and scholarship that extends well beyond any individual scholar or researcher’s efforts. As new knowledge builds on or upends older established knowledge, a conversation of sorts develops across time. When we conduct or synthesize the research or writings of others in a college-level research paper, we participate in that conversation" (Hisle & Webb, 1.6).

"We are capable of original thought. But much of what we think about is based on what we have learned from others’ contributions. Even Albert Einstein, a very original thinker, learned from others and then worked on problems many in the field had identified (Stachel, 2005).

“He [Einstein] had been probing the edifice erected by his predecessors in this field [theoretical physics] for its strengths and weaknesses…” (Stachel, 2005, p. 215). All our work is based on generations of work that has come before us. Our predecessors read and used the work of their predecessors. With gratitude, it is only right that we acknowledge the work of others on which our thoughts and works are grounded.

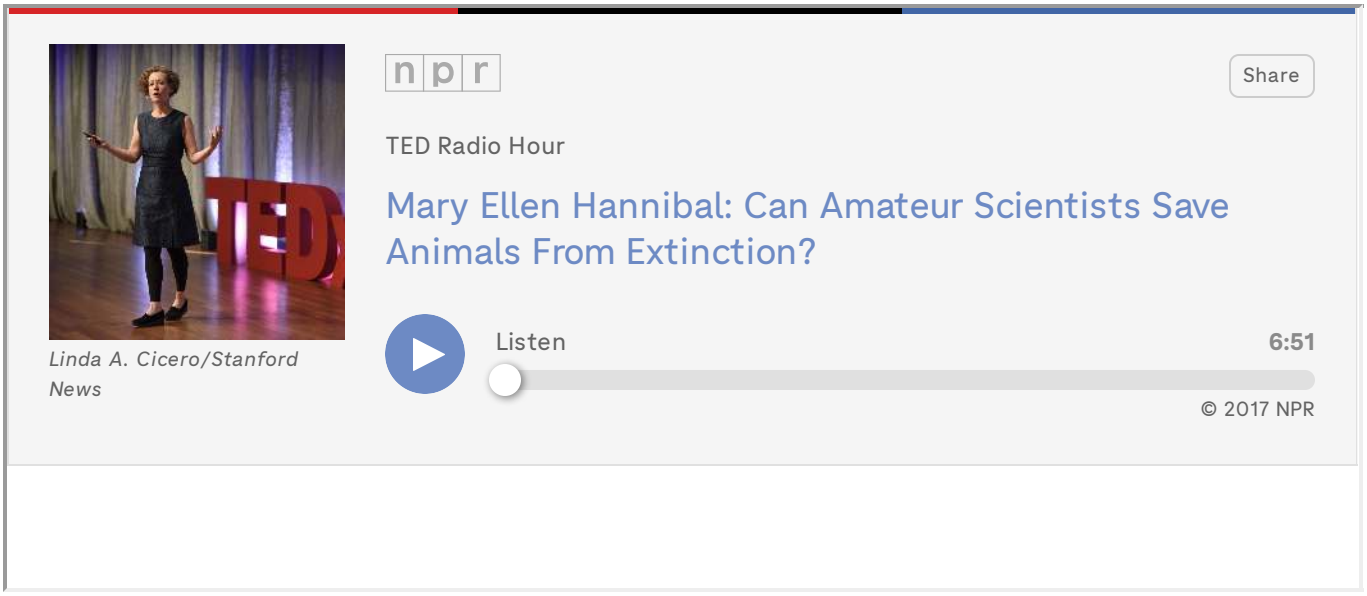
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10.3: Citizen Science

Building Knowledge Through Citizen Science

CitizenScience.org describes "citizen science" as "the involvement of the public in scientific research – whether community-driven research or global investigations." These projects are examples of information communities in which novices and experts work together to build knowledge.

The excerpt from the TED Radio Hour, below, describes one citizen science project. You can also read the transcript.



If you are interested in citizen science, you can listen to the complete TED Radio Hour Citizen Science episode for more examples.

The websites below provide information about citizen science projects in which you can participate:

- Citizen Science Alliance
- Scientific American Citizen Science

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10.4: Putting Your Sources in Conversation with Each Other

The Dinner Party

To practice thinking about different types of sources that work well together, instead of choosing sources, students in small groups will choose who to invite to a small dinner party. The goal is to put together a group of guests that will be able to find enough common ground to have interesting conversations. Small groups will share their plans with the class, and explain their reasoning.

Your goal is to put together a small dinner party where your guests will be able to find enough common ground to have an interesting conversation. Select 3 guests from the following list, then answer a few questions about why you chose these guests and how you, as the host, hope to direct the conversation so that everyone can participate.

- **James** grew up in a neighborhood with high poverty and crime. He spent 5 years in prison for stealing a car when he was a teen. He's been out for nearly a decade, and though he had trouble finding work at first, he now works in a well-reviewed restaurant as a line cook and has begun studying in a culinary program. He wants to be an executive chef and eventually open his own restaurant. James has a son who was born when he was in prison, and he wants to be a good role model.
- **Madeline** is an intellectual property lawyer for a mid-size firm. She loves new tech and gadgets and is always the first to have the latest device or apps. She says that technology changes everything about our lives, though she admits it's not always good. Madeline loves to talk about the legal and ethical implications of new technologies and how the government should or should not try to regulate them. She's also an outspoken advocate for equal rights and a card-carrying member of the ACLU (American Civil Liberties Union).
- **Mike** is a rapper who's had one album released by a small independent record label. He frequently uploads homemade music videos to YouTube to "be seen." He plays local clubs and draws decent crowds. His idols are Kendrick Lamar and Common for their social consciousness. To pay the bills, Mike works two part time jobs, at a bookstore and an after-school program. Sometimes it's hard to pay the rent, especially during the summers, but he's optimistic that it will all work out for him.
- **Carrie** is an abstract and conceptual artist who creates paintings and sculptures with found objects. She's also a huge pop culture fan and loves to incorporate current trends into her art. She currently works as an elementary school art teacher. Due to budget cuts her schedule was cut to part-time and she travels between three different schools. Fortunately her wife is employed full-time, so they are financially stable. Carrie likes to take her time to consider all sides of a topic and rarely has decisive opinions. She enjoys hearing others' perspectives and particularly values life experience.
- **Taryn** is an aspiring model and part-time receptionist for a high-end salon. She considers her appearance and presentation to be her brand and she works hard on her social media presence. She has two dogs and is passionate about cruelty-free beauty products. She's a member of PETA (People for the Ethical Treatment of Animals) and volunteers at her local cat shelter on weekends.
- **Sam** just finished a PhD in Communication and Media Studies and started a job as an instructor at the local community college. In the class they teach, they talk a lot about Freedom of Information issues, and they're concerned that students don't worry enough about online privacy. Sam likes their smartphone, but only uses apps and social media minimally because they're afraid of identity theft. Sam is also adjusting to being at a community college rather than the large research universities where they were a student and graduate student. Their students have a wide range of life and school experiences, some still improving their English, and some who have returned to school after doing other things. A few of their students are older than they are.
- **Aubrey** is studying to be a Unitarian minister. He volunteers twice a week leading a class on meditation at the county jail. He often talks about social justice issues such as reforms in juvenile justice and economic inequality. Aubrey often participates in demonstrations for equality including Black Lives Matter. Aubey is not married or currently in a relationship but he would like to have children one day.

(Adapted from Kowalik, E. https://projectcora.org/assignment/usage-sources-party)

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10.5: Questions for Critical Thinking



Questions for Critical Thinking About Scholarly Communication

- How can we gain greater understanding of a topic by examining the connections and ongoing "conversations" between different sources on that topic?
- How do the expectations for scholarly conversation differ depending on the type of communication (such as written or oral) and the field of study?
- How have you participated in conversations that build knowledge within the communities you belong to (such as communities related to sports, hobbies, or other interests)?
- How do our responsibilities shift when moving from be a consumer of information to becoming a critic and/or creator of it?
- What barriers exist to entering into the conversation of scholarship? How can we address those barriers?
- How does generative AI facilitate complicate or change the process of scholarly communication and knowledge building? In what ways does AI facilitate the development of knowledge? In what was does AI harm the development of knowledge?

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CHAPTER OVERVIEW

11: Information Literacy As A Lifelong Practice

11.1: Chapter Overview

11.2: Practicing Information Literacy

11.3: Managing Information Overload

11.4: Questions for Critical Thinking

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11.1: Chapter Overview



This chapter will...

- Analyze ways to apply critical thinking to make responsible, ethical choices regarding when and how to participate in information ecosystems
- Explore how to adapt to change in information ecosystems and technologies and manage information overload
- Examine strategies for managing information overload
- Explore ways to practice information literacy, info-environmentalism and information social justice in school and beyond

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11.2: Practicing Information Literacy

Information Literacy and Lifelong Learning



Lifelong learning has to do with continuing to develop knowledge for personal or professional reasons, either formally or informally, even when we are not in school pursuing a degree or certificate. Lifelong learning, like learning in school, involves participating in information communities and engaging in information apprenticeship.

The information landscape is likely to change in ways we can't even imagine. But we can make a conscious choice to engage in the practice of lifelong learning in a way that continues to develop our information literacy, even as the nature of information and the ways we access it change.

Reflect

We can continue to reflect on the key topics and concepts explored in this book:

- Information Literacy
- Information Ecosystems, Algorithms, and Organization
- Misinformation, Disinformation, and Fact-Checking
- Information Social Justice
- Information Value and Ethics
- Research as a Process of Inquiry
- Information Sources and Their Creation Processes
- Strategic Searching
- Authority and Credibility
- Scholarly Communication and Knowledge-Building

Practice

We can apply the practical skills covered in this book to our use and creation of information in all areas of our lives, such as:

- using a strategic approach and advanced search strategies, even when using internet search tools such as Google;
- critically evaluating the sources we encounter, using a tool such as SIFT & PICK Fact Checking & Source Evaluation;
- using information responsibly and ethically by giving credit to the creators of the information, words, and ideas we use;
- making conscious, ethical choices about the information we create and/or share publicly; and
- seeking guidance from those with more expertise.

Cultivate

We can cultivate habits of mind and approaches to information that continue to develop our critical thinking and information literacy, such as:

- maintaining curiosity, mental flexibility, an open mind, and a skeptical stance;
- checking our own biases and worldview;
- questioning traditional notions of granting authority, and recognizing the value of diverse ideas and worldviews;
- investigating the power dynamics at play and seeking out multiple perspectives, including the voices and perspectives that may not be immediately apparent;
- understanding how and why some individuals or groups of individuals may be underrepresented or systematically marginalized within the systems that produce and disseminate information;
- recognizing that we often join ongoing information "conversations" in the middle, and exploring the larger context of the information;

- analyzing evidence before making assumptions or drawing conclusions; and
- recognizing issues of access or lack of access to information sources.

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11.3: Managing Information Overload

Below are some strategies to manage overwhelm in response to the massive amounts of information available to us online at all times:

- Be thoughtful about the type, purpose, and quantity of information you engage with
- Put digital tools to work for you with note-taking apps, cloud storage, and citation matrices or citation management tools
- Brain dump: write down thoughts and information to clarify, prioritize, and clear your mind
- Focus on one task at a time, taking care to minimize distractions
- Take information breaks to refresh and refocus

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11.4: Questions for Critical Thinking



Questions for Critical Thinking About Information Literacy as a Lifelong Practice

- How has your understanding of your own information literacy changed while reading this book?
- How do you find yourself engaging with information differently than you did before reading the book?
- How do you feel now about your ability to find, evaluate, and use information in everyday life?
- How does AI impact your information literacy development and practice?
- What new perspectives do you have on the information communities do you belong to (such as communities around common interests)?
- How and why might information communities disseminate or suppress information within the community and outside it? What is your responsibility to those communities regarding the information you consume, create, and/or share?
- What are your personal responsibilities regarding how you behave within information ecosystems broadly? What are your responsibilities regarding mis/disinformation, information disorder, information hygiene, and info-environmentalism?
- What are your personal responsibilities regarding information justice?
- How do you envision yourself applying what you have learned from this book to the ways you engage with information in the future, as the technologies and dynamics of information ecosystems change over time?

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