

Unit III: Using Technology Effectively & Responsibly

Chapter 12: Information Literacy, Recognizing Misinformation

12.1: Goal

In this chapter, you will develop the skills needed to evaluate information critically in today's digital world. You will learn how to identify reliable sources, recognize misinformation and disinformation, and use evidence to make informed decisions. These skills are essential for academic success, professional growth, and responsible citizenship.

12.2: Objectives

- Define information literacy and explain why it is important.
- Distinguish between misinformation, disinformation, and malinformation.
- Evaluate the credibility of online sources.
- Recognize common characteristics of misinformation and online scams.
- Explain how search engines, algorithms, and social media influence the information people see.
- Identify the role of artificial intelligence in creating and detecting digital content.
- Apply fact-checking strategies using multiple reliable sources.
- Make informed decisions based on credible information.

12.3: Think About It

You are researching a topic for a class assignment. A search engine returns thousands of results, including news articles, blogs, videos, advertisements, and social media posts. Some sources agree, while others completely contradict one another.

How do you know which information is accurate?

Being able to find information is important; but being able to evaluate it is an essential skill in today's digital world.

12.4: Opening Scenario

Taylor is writing a research paper about renewable energy. While searching online, Taylor finds an article with an attention-grabbing headline that makes surprising claims. The article has no author, no publication date, and no references to supporting evidence. A different website presents the opposite conclusion but includes citations, expert interviews, and links to government reports.

Later, Taylor sees a realistic video on social media that appears to show a public official making an inflammatory statement. Before sharing it, Taylor discovers that the video was generated using artificial intelligence and had been digitally altered.

By applying information literacy skills, Taylor learns to question sources, verify claims, and distinguish reliable information from misleading content.

12.5: Why This Chapter Matters

Every day, people make decisions based on information they find online. News articles, videos, search results, social media posts, advertisements, and AI-generated content influence opinions, purchases, voting decisions, healthcare choices, and financial decisions.

Not all information is accurate or trustworthy. Some content contains honest mistakes, while other content is intentionally misleading or designed to manipulate emotions.

Information literacy helps people evaluate evidence, identify credible sources, recognize bias, and make informed decisions. These skills are essential for academic success, responsible citizenship, and lifelong learning.

12.6: What Is Information Literacy

Information literacy is the ability to recognize when information is needed and to **find, evaluate, understand, and use that information effectively and responsibly**. With websites, social media, online videos, AI tools, and search engines providing enormous amounts of information, finding an answer is often easy. The more difficult task is deciding whether that information is **accurate, reliable, current, relevant, and appropriate for your purpose**.

An information literate person asks questions such as: **Who created this information? What evidence supports it? When was it published or updated? Why was it created? Can the claims be confirmed by other reliable sources?**

Information literacy also includes using information ethically by giving appropriate credit to sources and respecting copyright. These skills are especially important today because **misinformation, misleading headlines, manipulated images, deepfakes, and inaccurate AI-generated content** can look convincing. Information literacy helps people make better decisions in school, work, and everyday life.



12.7: Types of Information

Information comes in many forms, and understanding the **type of information** you are using can help you decide whether it is appropriate for your purpose.

- **Primary sources** provide original or firsthand evidence, such as interviews, photographs, surveys, speeches, research data, historical documents, and eyewitness accounts.
- **Secondary sources** analyze, interpret, or discuss primary sources; examples include textbooks, biographies, scholarly articles that review previous research, and many news analyses.
- **Tertiary sources** summarize or organize information from other sources, such as encyclopedias, dictionaries, indexes, and reference guides.

Information can also be classified by its purpose and level of review.

- **Scholarly sources** are generally written by experts for an academic audience and often include research methods, evidence, and citations.
- **Popular sources**, such as magazines, websites, podcasts, and social media, are usually created for a general audience.
- **News sources** report on current events, while **opinion and commentary** express viewpoints or interpretations.

No single type is necessarily best for every situation: the important skill is choosing information that is **credible and suitable for the topic and situation**.



12.8: Misinformation, Disinformation, and Malinformation

False or misleading information can spread quickly through websites, social media, messaging, and other digital platforms, but not all problematic information is created for the same reason. **Misinformation** is false or inaccurate information that is shared without necessarily intending to deceive. For example, someone might share an incorrect statistic because they believe it is true. **Disinformation** is false or misleading information that is deliberately created or shared to deceive people, influence opinions, or cause harm.

Malinformation is different because it may be based on genuine information but is shared or presented in a way intended to cause harm—for example, deliberately releasing private information or presenting genuine material without important context to mislead an audience. Distinguishing among these categories requires considering both the **accuracy of the information and the intent or context behind its use**. Regardless of the category, users should pause before sharing questionable content, investigate the original source, examine the evidence, and confirm important claims with reliable sources.

12.9: Evaluating Sources

Evaluating sources means determining whether information is trustworthy, accurate, relevant, and appropriate for your purpose. Before relying on a website, article, video, social media post, or AI-generated answer, consider **who created it, when it was published or updated, what evidence supports its claims, and why it was created**. Look for information about the author's qualifications, the reputation of the organization or publisher, and links or citations to supporting evidence. A professional-looking website or a large number of likes and shares does not necessarily mean the information is reliable.

Whenever a claim is important, surprising, or controversial, **check it against other independent, reliable sources**. Whenever possible, trace claims, quotations, statistics, images, and videos back to their **original source or context** rather than relying only on someone else's summary. Be alert for emotional or sensational language, missing evidence, outdated information, and content designed primarily to persuade or attract attention. Evaluating information carefully helps you make better decisions and reduces the chance that you will believe or share misinformation.

12.10: Recognizing Bias

Bias is a tendency or perspective, or the feelings of the writer, that can influence the information you select or how you present it. Bias does not necessarily mean that information is false, but it can affect which facts are emphasized or omitted. Sources may reflect **political, commercial, cultural, organizational, or personal perspectives**, so it is important to consider who created the information, what purpose it serves, and whether other viewpoints or relevant evidence have been left out.

Readers also bring their own biases to information. **Confirmation bias**, for example, is the tendency to favor information that supports what we already believe and to discount information that challenges those beliefs. To reduce the effects of bias, examine evidence rather than relying only on headlines or emotional reactions, compare information from **multiple credible sources**, and actively consider evidence that challenges your

initial assumptions. Recognizing bias does not require finding a source with no point of view; it means understanding how perspectives may influence both the information we encounter and the way we evaluate it.

12.11: Search Engines and Algorithms

A **search engine** helps users find information on the Web. Search engines use automated programs to discover webpages, collect information about them, and organize that information in an **index**. When you enter a search, the search engine uses **algorithms**, sets of rules and calculations, to determine which results are likely to be most useful and how they should be ranked.

Search results are not simply a complete or neutral list of everything available online. Ranking can be influenced by factors such as **relevance, quality signals, location, freshness, language, and sometimes personalization**, and some results may be paid advertisements. Because algorithms influence what information users see first, it is important not to assume that the top result is automatically the best or most trustworthy source. Effective researchers examine the source itself, compare multiple reliable sources, distinguish advertisements from regular results, and refine their search terms when necessary.

12.12: Behind the Scenes

Why Does a Search Engine Show Certain Results First?

When you enter a search query, a search engine does much more than simply look for matching words.

1. The search engine analyzes your search terms.
2. It searches billions of indexed web pages.
3. Algorithms estimate which pages are most relevant based on many signals, such as content quality, page structure, and how other websites link to them.
4. Some results may be influenced by your location, language, or previous searches if personalization is enabled.
5. Advertisements or sponsored results may appear alongside search results and are typically labeled as such.
6. The results are ranked and displayed for you to review.

Because ranking algorithms are designed to predict relevance, not guarantee accuracy, it's important to evaluate the credibility of sources rather than assuming the first result is always the best one.

12.13: Artificial Intelligence and Information

Artificial intelligence (AI) has changed how people find, create, summarize, and interact with information. Generative AI tools can answer questions, explain difficult concepts, summarize documents, translate languages, and help users explore a topic quickly. Unlike a traditional search engine, which generally directs users to sources, a generative AI system may produce a new response based on patterns learned from large amounts of data.

AI generated information should still be **evaluated carefully**. AI systems can make mistakes, provide outdated information, reflect bias, misinterpret a question, or **hallucinate**: generate information that sounds convincing but is inaccurate or fabricated. They may even produce citations or quotations that do not exist. For important academic, professional, financial, health, or other consequential information, users should **verify key claims with reliable sources** rather than treating an AI response as the final authority. AI can be a powerful research assistant, but **information literacy and human judgment remain essential**.

12.14: Fact Checking

Fact checking is the process of determining whether a claim is accurate by examining evidence from reliable sources. When you encounter surprising, controversial, or emotionally charged information, pause before believing or sharing it. Identify the **specific claim** being made, determine who originally made it, check the date and context, and look for evidence that supports or contradicts it. Whenever possible, use **primary or authoritative sources** and compare the claim with reporting or analysis from multiple independent, credible sources.

Images, videos, statistics, quotations, and AI generated content also require verification. A photograph may be real but taken at a different time or place, a quotation may be incomplete, and a statistic may lack important context. Useful techniques include tracing information back to its **original source**, using reverseimage searching to investigate images, and consulting reputable fact-checking organizations. The goal is not simply to find a source that agrees with you, but to determine **what the strongest available evidence supports**.

12.15: Responsible Digital Citizenship

Responsible digital citizenship means using computers, mobile devices, the Internet, social media, and other digital technologies in a **safe, ethical, respectful, and informed way**. A responsible digital citizen thinks carefully before posting or sharing information, communicates respectfully with others, protects personal information, respects copyright and intellectual property, and considers how online actions may affect other people.

Responsible digital citizenship also requires **critical thinking**. Before sharing a surprising story, image, video, or AI generated claim, users should consider its source and verify important information. They should recognize that online actions can contribute to a lasting **digital footprint** and that information can spread far beyond its intended audience. Being a responsible digital citizen means understanding that technology gives us powerful ways to communicate and participate in society. It is our responsibility to use that power with **care, judgment, and respect for others**.

12.16: Information Literacy in Everyday Life

Information literacy is something people need to use every day. We must evaluate information when deciding what to buy, choosing a restaurant, comparing insurance plans, reading health information, planning a trip, applying for a job, or deciding whether to share a social media post. Online reviews, advertisements,

influencers, search results, news stories, and AI generated recommendations can all affect our decisions, but they may not always be accurate, complete, or unbiased.

Using information literacy in everyday life means asking questions before acting: **Who created this information? What evidence supports it? Is it current? Is someone trying to sell me something? Persuade me to do something? Can I confirm it somewhere else?** For example, before making an expensive purchase, a careful consumer should compare specifications, read reviews from several sources, and check the manufacturer's information. Before sharing an alarming story, a responsible user might verify it with reliable sources. These habits help people make **better-informed decisions, avoid scams and misinformation, and participate more responsibly in a digital world.**

12.17: Chapter Summary

Information literacy is the ability to find, evaluate, and use information effectively and responsibly. In a world where digital content can be created and shared instantly, understanding how to recognize misinformation, evaluate sources, identify bias, and verify claims is an essential skill. By applying critical thinking and fact checking strategies, individuals can make better academic, professional, and personal decisions and be responsible digital citizens.