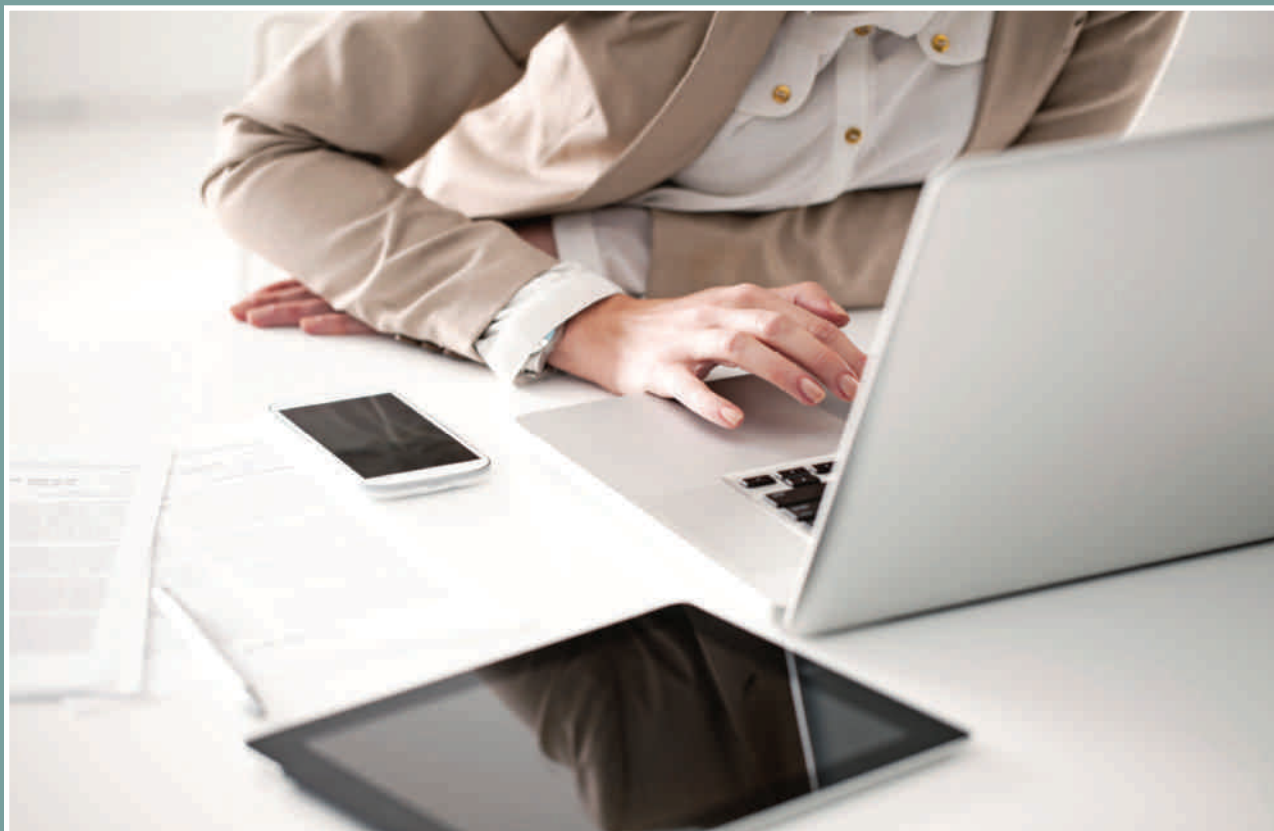


Module 1

Introduction to Information Literacy



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Learning Outcomes

- Define information literacy.
- Explain the benefits of becoming information literate.
- Compare and contrast the four skills needed for information literacy.
- Provide an overview of the five steps of the research process.
- Describe how to develop a research question.
- Compare and contrast various characteristics of information.
- Identify different print and electronic resources.

Introduction

Module 1 introduces you to the concept of information literacy and to the Association of College and Research Libraries information literacy framework. After defining *information literacy*, the module explains how improving your own information literacy can enrich your personal, professional, and academic life. The module also describes the skills needed to become information literate. It then provides a brief overview of the research process, and lastly, an introduction to different characteristics and formats of information.



1.1 What Is Information Literacy and Why Does It Matter?

Your Roadmap to Success: Section 1.1



Learning Outcome #1: *Define information literacy.*

Why is this important?

Mastering this learning outcome will give you a critical foundation: It is the first step to success in this course. As an example of this outcome's importance, consider Marisa, a new student at Ashford. Learning the definition of information literacy got her excited to be a student again and expand her mind, and her world, through her studies. She also got an A on her first quiz, which asked her to define information literacy!

How does it relate to your success in this course?

This section's learning outcome is associated with the following course learning outcome: *Analyze the concept and value of information literacy for successful lifelong learning.* Mastering this learning outcome is essential to your success as a student; it will increase your chances of getting good grades and will increase your capacity to learn to your full potential in your academic, personal, and professional lives.

Learning Outcome #2: *Explain the benefits of becoming information literate.*

Why is this important?

Mastering this learning outcome will help you understand information literacy in a way that is relevant and meaningful to you. For Clifford, becoming information literate meant more than just learning how to find the information he needed to complete his assignments at Ashford. Clifford believes becoming information literate has helped him to locate more resources and ideas to assist his son who has learning disabilities.

How does this relate to your success in this course?

This section's learning outcome is associated with the following course learning outcome: *Analyze the concept and value of information literacy for successful lifelong learning.* Mastering this learning outcome is essential to your success as a student; it will increase your chances of getting good grades and will increase your capacity to learn to your full potential in your academic, personal, and professional lives.

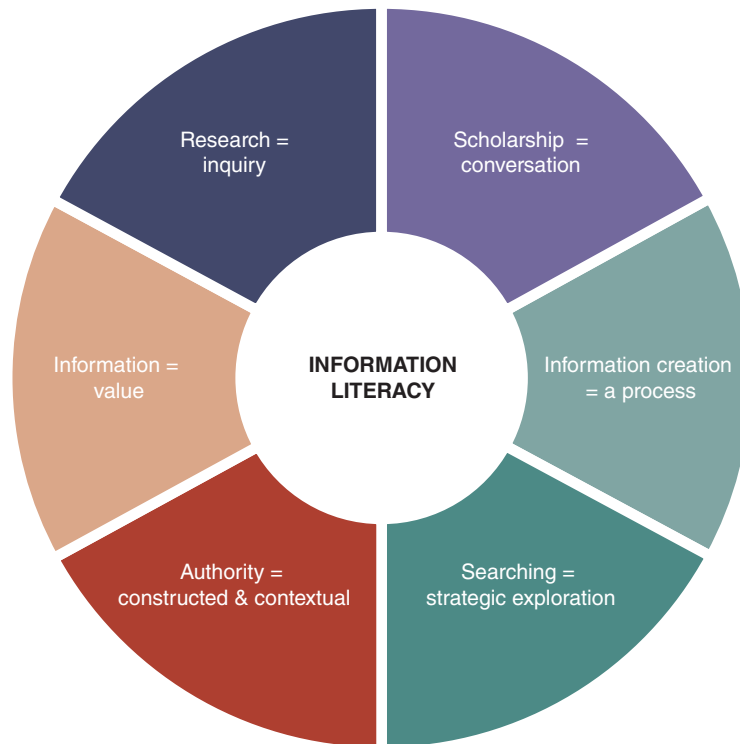
To review the course learning outcomes and their relevance to you, see the *Your Roadmap to Success* feature at the beginning of this book. Best of luck on your journey to success!

Take a deep breath and slowly look around you. What do you see? Mostly likely, copious amounts of different types of information surround you. In addition to the laptop or other device you're using to read this text, you might have a yearly planner, your smart phone, a magazine, or a book lying beside you. Now take a moment and listen to the sounds around you. You may hear a television in the background, perhaps with commercials or news updates, or music, or traffic outside. The point of this brief exercise is for you to take notice and acknowledge the amount and variety of information permeating your life. Some of it may be in a physical form, and some of it digital. The way you take in, process, evaluate, and use the information around you determines your own personal level of information literacy.

What Is Information Literacy?

Information literacy is the ability to identify a need for information and successfully locate, evaluate, and use that information ethically and legally for a determined purpose. For this course we'll focus on information literacy regarding your research papers for school. But information literacy is important in all aspects of life. Being information literate can help you research schools to find the one that's best for your child, find the right sources to determine whether a folk remedy is a valid treatment for illness, compare products critically to find the best value, and think creatively to solve problems.

Recently, the Association of College and Research Libraries (ACRL), a division of the American Library Association (ALA), developed an information literacy framework that expands on this definition (Figure 1.1). The framework identifies six threshold concepts meant to guide

Figure 1.1 Information literacy framework

Source: Association of College and Research Libraries. (2014). Framework for Information Literacy for Higher Education. Retrieved from <http://acrl.ala.org/ilstandards/wp-content/uploads/2015/01/Framework-MW15-Board-Docs.pdf>.

students in the process of becoming lifelong learners through the acquisition of information literacy skills (ACRL, 2015). A *threshold concept* is a central or main idea within a specific subject that can transform your perception of that subject, as it becomes integrated into your way of thinking (Booth & Mathews, 2012). The ACRL's six threshold concepts are

1. **Research as inquiry:** The research process is all about asking questions. Good research questions are dynamic and change according to the results of background research. As the understanding of a research topic increases, so should the quality of the research question. You will explore this concept in more depth later in the module, where you will learn how to develop a research question and conduct background research. You also will explore the different characteristics and formats of information that can be used to help answer your research question.
2. **Scholarship as conversation:** Experts within a field communicate to share information, debate their ideas, and gain understanding. They often contest each other's ideas and seek out the opinions of other scholars within their fields to test these ideas. This concept will be discussed further later in the module, where you will learn the difference between scholarly and popular information sources and where to locate them. It is explored further in Module 4.
3. **Information creation as a process:** Information is presented in different formats because of the purpose of its creation. Considering the creation process of information types will help you select appropriate sources. Later in the module you will

- learn more about this concept and be introduced to formats of print, multimedia, and digital resources.
4. **Searching as strategic exploration:** The one perfect source that answers all aspects of your research question most likely does not exist. Instead, you will need to gather bits and pieces of information from various sources. When researching, explore many different formats of information. Module 2 provides more information about this concept and introduces you to strategic searching in a digital library.
 5. **Authority is constructed and contextual:** All information sources are not created equal. Reliable sources come from authors with experience and expertise, also known as an authority, in the subject area they are writing about. This concept is further discussed in Module 3, which covers what gives an author the authority or credibility to write on a particular topic. Module 3 also introduces a set of criteria that you can use to evaluate sources you find on the Internet.
 6. **Information has value:** Information has value for the author, society, and the publisher. In many ways, it can be considered a commodity. Information can have a monetary value, an educational value, and also a transformation value. Module 5 explores this concept further, including an introduction to copyright and correctly crediting your sources.

These six threshold concepts encompass what it means to be information literate in the 21st century. You may have noticed that these concepts do not exist in isolation, and there is bound to be some overlap between them. As you master these concepts, your information literacy skills will improve, along with your effectiveness as a student and working professional.

It is important to note that information literacy is not the same as computer literacy. Often there is confusion between the two. *Computer literacy* is the fluent use of technology over a range of platforms. In contrast, information literacy is the fluent use of information over a range of environments. It's quite possible you may be an expert in using computers and a novice in using information. Although a certain level of computer skill is mandatory for accessing information online, information literacy is a much broader competency.

Why Is Information Literacy Important?

Do you still subscribe to physical newspapers and magazines? Or do you choose to access this content online through your computer, iPad, tablet, or smart phone? Today, more information is produced in a digital format without a physical counterpart than ever before. Consider the technological advances you've witnessed in the past 10 years. How have they changed your daily routines? Have you learned new skills to keep up with the technology? What about learning new skills to process the increased amount of information you encounter daily? As new websites and new technologies are introduced every day, the need for information literacy is greater than ever.

As you continue to progress through life, the amount of information produced will continue to increase at an incredible rate. Much of this information will be published on the Internet without any verification or vetting process. The volume of this information contributes to our feelings of information overload and the need to make quick decisions about what sources of information to use. When you are information literate, you have the skills to recognize when

information is needed and have the ability to efficiently locate this information. Once you've located the information, you are able to analyze, evaluate, and have confidence in your ability to use this information creatively, ethically, and effectively.

Another benefit of developing information literacy is that it places you on the path toward becoming a **lifelong learner**. This is the deliberate act of choosing to learn new ideas and concepts throughout your life. Lifelong learners embrace the process and challenges associated with acquiring new knowledge. They have a **growth mindset** in that they seek out opportunities to learn new things and put forth the effort to do so. Reflect upon the following quote from the ALA:

Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information, and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any task or decision at hand. (ALA, 1989)

Here are some additional benefits to developing your information literacy skills:

- Knowing when information is needed, locating it efficiently and effectively.
- Critically evaluating whether the information you consume is reliable and accurate.
- Using advanced search techniques to find the most relevant information.
- Making informed opinions and judgments based on quality information.
- Organizing and presenting information in an effective way.
- Understanding the legal and ethical issues relating to using information. (ACRL, 2000)

Developing information literacy skills can also benefit you in the workplace. Reports from U.S. employers point to a growing interest in the development of information literacy, critical thinking, and lifelong learning in their employees (Weiner, 2011). Moreover, the development of information literacy skills within the workplace has the potential to produce "employees who are able to recognize and understand the central place that information, its creation, production, reproduction, circulation, and dissemination play in sustainable workplace performance" (Lloyd, 2011, p. 280). In 2009, the White House declared the month of October to be National Information Literacy Awareness Month. President Obama stated in that announcement:

Rather than merely possessing data, we must also learn the skills necessary to acquire, collate, and evaluate information for any situation . . . National Information Literacy Month highlights the need for all Americans to be adept in the skills necessary to effectively navigate the information age (Obama, 2009).

The bottom line is that no matter what industry you work in (healthcare, government, education, business, and so on), knowing how to integrate and use a variety of information from diverse print and digital sources is a necessity. Sticking to what you know in the workplace may feel comfortable. However, stepping outside your comfort zone and working to increase your workplace information literacy skills can have positive effects for you and the organization you work for.

Section 1.1 Knowledge Check Quiz

1. _____ is the fluent use of technology over a range of environments.
 - A. Information literacy
 - B. Computer literacy
2. Lifelong learners
 - A. go to school their whole lives.
 - B. study a lot.
 - C. have a growth mindset.

Answers: 1 (B), 2 (C)



1.2 What Are the Skills I Need to Be Information Literate?

Your Roadmap to Success: Section 1.2



Learning Outcome: *Compare and contrast the four skills needed for information literacy.*

Why is this important?

Mastering this learning outcome will help you evaluate your own information literacy skills and identify what your personal strengths and weaknesses are. Consider James, for example. Because James didn't think he had much talent for art or music, he never thought of himself as being very creative. He didn't realize, though, that creative thinking (one of the skills needed for information literacy) involves having an open mind and exploring different possibilities in all situations. He now considers himself to be very creative when it comes to innovating work processes while on the job.

How does this relate to your success in this course?

This section's learning outcome is associated with the following course learning outcome: *Analyze the concept and value of information literacy for successful lifelong learning.* Mastering this learning outcome is essential to your success as a student; it will increase your

chances of getting good grades and will increase your capacity to learn to your full potential in your academic, personal, and professional lives.

To review the course learning outcomes and their relevance to you, see the *Your Roadmap to Success* feature at the beginning of this book. Best of luck on your journey to success!

To become information literate, you need to develop a certain set of skills, including critical thinking, creative thinking, problem solving, and higher-order thinking. Once you've developed these skills, you'll be able to apply them to many other areas of your life.

Critical Thinking

Critical thinking requires the use of a specific set of skills to determine the value of an information source: inference, analysis, evaluation, interpretation, explanation, and self-regulation. Individuals who are information literate use critical thinking skills when taking in information by evaluating a source for accuracy and fairness. With the amount of information we are exposed to on a daily basis, we need strong reasoning skills to determine fact from fiction. This is where critical thinking comes in. Critical thinkers are skeptical and do not simply accept all the arguments and conclusions they encounter. Instead, they question these arguments and conclusions, wanting to see the evidence involved. Critical thinkers think actively and strategically about the information they encounter by using a set of skills. Let's take a closer look at each of these skills and see how Sherry, a marketing department employee, uses them during a project at work (Facione, 2011).

Inference

Inference is the process of using facts to determine an accurate conclusion or hypothesis from the information available. Given what we know so far, what conclusions can we draw? What can be ruled out? What additional information do we need to resolve this question?

Sherry's boss has asked her to look up demographic information so that the company can target a possible new group of customers to market its existing products. Sales of company products are holding steady in their current markets, but Sherry's boss would like to find a way to boost sales by selling to a new audience. Sherry begins by considering estimates and projections for those in her new target group. She then gathers data on their product and spending behaviors. She continues researching and collecting factual data on the target group. Once the necessary data is gathered, Sherry uses her inference skills to draw conclusions and infer if more testing of this demographic is needed. This approach helps Sherry recognize if any potential new customer opportunities exist for her company. Based on the data she collected, Sherry concludes that this new demographic has potential, but further testing is needed.

Analysis

Analysis is the process of examining pieces of information in parts and as a whole to determine the intended meaning of the information and what it represents. What are the arguments

for and against? Why do you think that? What assumptions must we make to accept that conclusion?

Sherry's boss is happy with her recommendation for a new demographic and asks that she begin organizing a focus group to continue with the testing. Two of Sherry's coworkers present different plans for targeting this demographic through a focus group. Sherry and her boss will be making the final decision of which plan to implement. After the presentations, Sherry and her boss analyze the similarities and differences between the two focus group plans to determine which one will be most successful. They want to ensure they select the plan that will result in the most valid feedback for the company.

Evaluation

Evaluation is the process of assessing the credibility of a person's experience, point of view, or opinion to determine the legitimacy of the information being presented. Why do we think we can trust this person's claims? How strong are those arguments? How confident can we be in our conclusion given what we know now?

As Sherry leads the focus group with the targeted demographic, she discovers quite a few negative attitudes about similar products sold by her competitors. Many of the focus group participants had strong negative feelings about those products that Sherry fears may have influenced others in the group. After the group concludes, Sherry evaluates the effectiveness of the focus group and the responses she received from participants. She must judge if the opinions she collected are valid, meaning whether they have been affected by previous experiences, and whether their complaints need to be investigated further.

Interpretation

Interpretation is the process of understanding the information and then articulating the meaning of that information to others. What does this mean? How should we understand that? In this context, what was intended by saying that?

Looking closely at the information Sherry has gathered, she develops a set of options for addressing the negative responses received from the focus group attendees. She meets with her boss to debrief her and share her findings. Sherry recommends the company conduct more research before moving forward on marketing to the new targeted demographic. Among other things, she suggests they collect data from social media sites and also conduct one-on-one interviews with some of the focus group attendees.

Explanation

Explanation is the process of restating and clarifying information so it can be understood by anyone you are sharing it with. What were the specific findings of the investigation? How did you come to that interpretation? How did you conduct that analysis? Why do you think this was the right answer?

With the second phase of testing complete and all data compiled, Sherry's boss has asked her to make two presentations on the results: one to the CEO of the company and the other to lower-level staff. She is aware that both groups are interested in hearing the results of her research but knows she will need to explain the results in two very different ways. Sherry expects the CEO may want to hear only high-level information, whereas the staff will need more specific details, as they will be responsible for moving the project forward. Sherry's ability to clearly explain her ideas while keeping her audience in mind is critical for making sure the information she presents is understood and well received.

Self-Regulation

Self-regulation is the process of being aware of your own thinking skills and the process you are using to find information. How good was your methodology and evidence? Is there a way to reconcile conflicting conclusions? What are you missing?

After Sherry's presentation, she checks in briefly with her boss. During this meeting, Sherry gives her overall impressions of how the target demographic project went. After some self-reflection, Sherry believes the focus group plan they selected was the best choice. However, Sherry confesses to making a few errors during its implementation that resulted in some of the negative responses from participants. She admits to taking some of the responses personally and feels she should have been more diligent in the screening of participants. In spite of this, Sherry was able to reconcile her mistakes and make a solid recommendation on the viability of this new demographic.

Creative Thinking

Creative thinking is a way of engaging with information imaginatively and coming up with ideas. It requires that you keep an open mind as you explore a wider range of possibilities. Creative thinkers "think outside the box," meaning that they are not limited by barriers or restrictions; they may even break established rules and procedures. For example, they may approach a problem in one area—such as healthcare—by drawing on information from another area—such as ethics. Although they employ evaluation, analysis, and other critical thinking skills, this openness to imaginative exploration tends to make creative thinkers innovators.

The following feature shows the differences between critical and creative thinking. When employing your information literacy skills, you will most likely move back and forth between thinking critically and creatively. Neither type of thinking occurs in isolation. Instead, these skills support each other.

Critical versus creative thinking

Critical	Creative
• Analyzes ideas	• Generates ideas
• Tests a hypothesis	• Forms a hypothesis
• Thinks in terms of what's probable	• Thinks in terms of what's possible
• Tends to think verbally, in terms of words	• Tends to think visually, in terms of images
• Thinks linearly, as in an outline	• Makes associations, as in a concept map
• Relies on logic	• Relies on intuition
• Identifies	• Imagines
• Describes	• Speculates
• Categorizes and classifies	• Tolerates ambiguity
• Makes judgments	• Suspends judgment
• Thinks in terms of the objective	• Thinks in terms of the subjective
• Considers the right answer	• Considers many possible answers
• Embraces standardized methods	• Rejects standardized methods

Consider this example of creative thinking. An organization realized it needed to improve communication between its employees to stimulate creativity and innovation. After some creative brainstorming and planning, the organization decided to redesign the interior space of its office. The goal was to break down communication barriers and to encourage a feeling of trust and community among its employees. To make this happen, the new design resembled a tiny, peaceful village. It had its own village square and café, where employees were encouraged to gather and hold meetings. Although this workplace renovation went against some of the established norms of workplace design, it resulted in the organization consistently launching successful new products. This success is attributed to the increased collaboration and communication between employees at all levels.

You may find that creative thinking does not always come easily and you may need some stimulation to get it going. If you find this happening to you, try brainstorming a list of ideas, talking through your ideas with a friend or coworker, and avoid putting too much pressure on yourself, which can lead to frustration.

Problem Solving

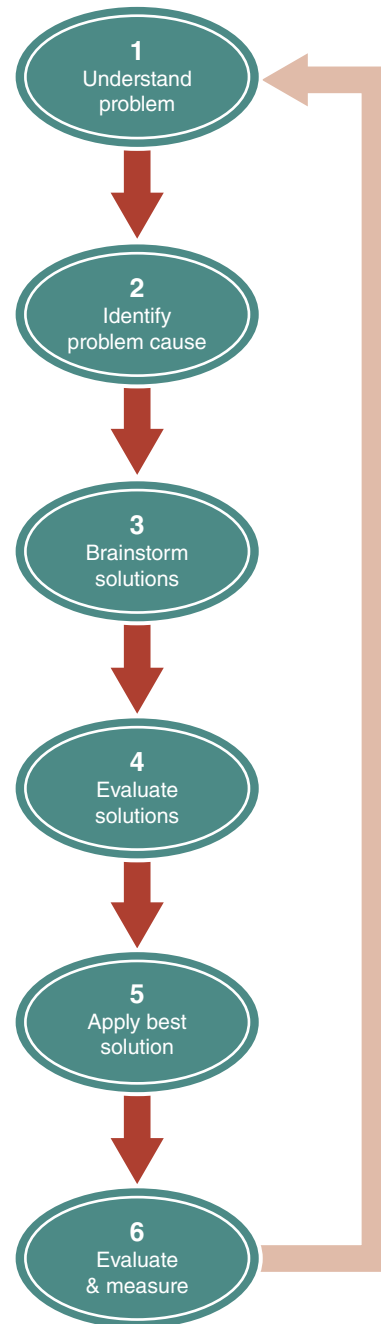
Problem solving is the process of effectively working through an issue or question to find a solution. Individuals who are information literate are able to successfully apply information to solve problems. The problem-solving process consists of six steps: understand the problem, identify the cause of the problem, brainstorm a list of solutions, evaluate the solutions, apply the best solution, and evaluate the outcome. Figure 1.2 illustrates the problem-solving process. At any step in the process, you may decide to go back and repeat an earlier step. For example, once you begin brainstorming a list of solutions, you may find that you still do not have a good understanding of the problem and will need to revisit step 1 to gather more information about the problem. Let's explore each step in the problem-solving process and see how Mike applied this process in the workplace.

1. **Understand the problem.** Before a problem can be solved, it must be understood. To understand the problem, ask yourself questions such as Who? What? Where? When? Why? How? Using this step is like putting the pieces of a puzzle together.

For example, the production of syringes in a medical manufacturing plant has consistently been on back order for more than three months. It seemed the plant could not keep up with an increase in product demands. Concerned, Mike was quite distressed by this problem and the attention it began receiving from his bosses. He set out to identify what was causing the backup in production and how he could increase production to meet customer demands.

Mike's first step was to begin gathering information from each of his section managers. After reviewing their status updates and visiting their departments, Mike discovers the backup in production is connected to the current process used to clean the equipment. He suspects this could be preventing his plant from meeting its increase in production.

Figure 1.2 The steps in the problem-solving process



- 2. Identify the cause of the problem.** Once the symptoms of the problem have been identified, the root cause of the problem can then begin to be defined. This will prevent a reaction to superficial symptoms.

Mike needs to make sure he knows the real cause of the problem, making sure to eliminate the symptoms of the problem. He needs to be able to accurately state what is causing the backup in production to company leaders. Upon deeper inspection, Mike realizes the process for cleaning the equipment is quite time consuming and involves numerous steps. This current cleaning process, while sufficient when production was low, is now highly inefficient not only in time, but also in the electricity it consumes. This holdup is resulting in the plant not being able to meet its daily production quota.

- 3. Brainstorm a list of solutions.** Once the problem and its symptoms have been identified, take time to brainstorm a list of possible solutions. Be careful of jumping in head first to fix the problem. This approach does not allow you to consider all of your options.

Mike begins brainstorming solutions by reaching out to the company's other plant directors. He wants to see if they have encountered similar issues, and if so, how they solved them. He also meets with the equipment-cleaning manager and the staff responsible for carrying out the machine-cleaning process. Mike gathers their input and ideas on the situation and begins creating a list of possible solutions.

The information he receives from other plant directors confirms that (1) his is the only plant using that cleaning method and (2) his plant is the only one still using older model equipment for production. He was able to determine that two cleaning methods are currently being used at other plants that may work for his. Each one would take some modifications to work efficiently at his plant. He also received a possible solution from the equipment-cleaning manager and his staff. This group has been frustrated with the process for a while and was conducting its own research into how to best solve the problem. The group's solution is untested, but it is the least expensive of the three and uses less electricity than the current process or the other two solutions on the list.

- 4. Evaluate the solutions.** Using a set of criteria, you need to evaluate each solution. Is the solution feasible? Is the solution acceptable to those who have to implement it? The plant director must now decide which of the three solutions will solve the problem.

Mike begins by evaluating the strengths and weaknesses of each solution. He decides to focus only on the options that would meet the company's goals of waste reduction and cost savings. This leaves him with two possible options to carefully consider. Looking closely at each one, he evaluates the cost, efficiency, reliability, and required maintenance of each cleaning alternative.

5. **Apply the best solution.** Once a solution is selected, there must be careful planning to ensure it is implemented effectively.

Mike must now decide how to implement the new cleaning process, who will do it, and when it will begin. Since he decided the new cleaning method proposed by the equipment-cleaning department would be best, he meets with the team to discuss logistics and implementation. Additionally, he also needs to factor in how much time it will take to put in the new system and how much production will be lost during this process.

6. **Evaluate and measure.** The solution must be monitored and evaluated to confirm its success.

With the new cleaning system in place, Mike must now watch over the new system to ensure it is working properly. He must also evaluate the results of the new cleaning system by collecting data. If the problem is not resolved, he will need to evaluate what is and is not effective.

Once the new cleaning solution was implemented, the plant's syringe production was able to finally handle demand. It also significantly reduced the amount of electricity used, which ended up meeting two of the company's goals. The new cleaning system became so successful that company leaders plan to use this same system in many of their other plants.

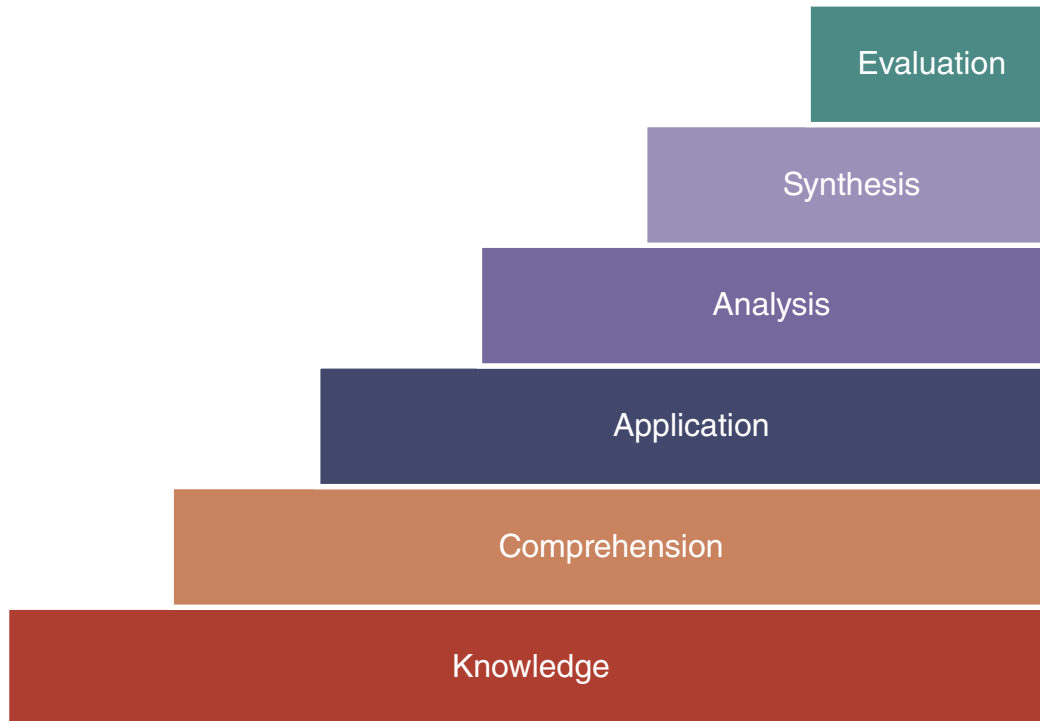
Higher-Order Thinking

Higher-order thinking is reasonable, insightful thinking that uses questioning, investigating, observing, comparing, and connecting to make decisions. In 1956, educational psychologist Benjamin Bloom developed a classification of intellectual behavior and learning. Figure 1.3 illustrates the hierarchy of Bloom's taxonomy, beginning with a base level of knowledge (low-level thinking) and evolving toward evaluation (high-order thinking).

Bloom's taxonomy uses a set of action verbs to represent the type of thinking that occurs at each level: knowledge, comprehension, application, analysis, synthesis, and evaluation. Information literate individuals will move throughout each of the levels depending on their need and purpose for information. You may find you tend to use higher levels of thinking in your academic and professional lives. Let's look at each of the levels by taking a closer look at Sherry's demographic project as an example. Notice that two levels in Bloom's taxonomy are the same as two aspects of critical thinking.

1. **Knowledge** is the recalling of previously learned information, and it generally lays a foundation for greater learning.

This may involve remembering a variety of material, from drawing out facts to a complete theory. When Sherry's boss asked her to identify a potential new demographic group, she began by making a list of the groups they currently were not marketing to. She then increased her knowledge of each group by locating information on their potential interest in her company's products.

Figure 1.3 Bloom's taxonomy

Source: Adapted from Bloom, B. & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals, by a committee of college and university examiners. Handbook 1: Cognitive domain.* New York, NY: Longman.

2. **Comprehension** is the ability to understand the meaning of information. This level goes one step beyond memorization.

At this level, Sherry begins to summarize the data she has gathered on new demographics, looking to see if one stands out as a potential new customer.

3. **Application** is the ability of knowing when to apply learned skills in new situations.

Sherry and her boss could have benefited from the construction of customer scenarios, where they could apply what they knew about their potential new demographic before conducting the focus groups.

4. **Analysis** is the ability to examine pieces of information in parts and as a whole to determine the intended meaning of the information and what it represents.

Following the presentation of the two focus groups, Sherry and her boss compare and contrast each one, analyzing which would be most appropriate.

5. **Synthesis** is the ability to put together parts to form a new whole, such as compiling various pieces of information, ideas, or concepts together seamlessly.

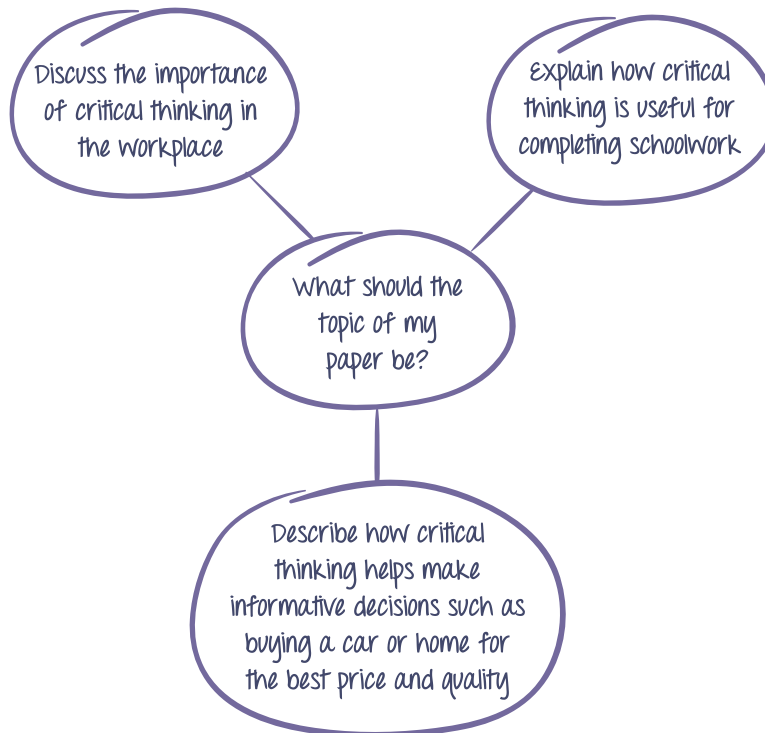
After all the data on the possible new demographic is in, Sherry compiles the demographic project data, including her recommendations into a report for the company.

6. **Evaluation** is the ability to use a set of criteria to judge the value, credibility, and legitimacy of information, such as a statement, research report, novel, or documentary work.

Sherry will assess her project recommendations and performance to determine if they were accurate and effective.

Section 1.2 Knowledge Check Quiz

- The use of a specific set of analytical skills to determine the *value* of information is called
 - creative thinking.
 - critical thinking.
 - problem solving.
- The following is an example of _____ a solution.
 - brainstorming
 - applying
 - evaluating



- Which of the following represents higher-order thinking?
 - A map
 - An analyzed poem

Answers: 1 (B), 2 (A), 3 (B)



1.3 What Are the Steps of the Research Process?

Your Roadmap to Success: Section 1.3



Learning Outcome #1: *Provide an overview of the five steps of the research process.*

Why is this important?

Mastering this learning outcome will help you familiarize yourself with a process that will help you successfully complete assignments in all of your courses. Consider Jennifer, for example. Jennifer, a new student at Ashford, hadn't been in an academic setting since graduating high school over 15 years ago, so she was feeling anxious about completing her assignments. She knew she would have to create an annotated bibliography for her GEN 103 course, but she wasn't even sure what that was! Learning the five steps of the research process helped to ease her mind and made her realize that she could conquer her assignments, one step at a time.

How does this relate to your success in this course?

This section's outcome is associated with the following course outcome: *Develop strategies to access and use information ethically and legally.* Mastering this learning outcome will help you maintain your integrity and reputation, and protect you from legal action and other negative consequences both within and outside of school.

Learning Outcome #2: *Describe how to develop a research question.*

Why is this important?

Mastering this learning outcome will help you identify viable topics for your writing assignments in this and subsequent courses. Consider Marc, for example. Marc knew he wanted to write his research paper about basketball, one of his passions. But the topic seemed broad, and he wasn't sure where to start. Learning how to develop a research question helped Marc to narrow down his topic by formulating a clear question to guide his research.

How does this relate to your success in this course?

This section's outcome is associated with the following course outcome: *Determine the best search strategy for a given information need.* Mastering this learning outcome will enable you to save time in your busy life, so that you can balance the needs of school, work, family, and other commitments.

To review the course learning outcomes and their relevance to you, see the *Your Roadmap to Success* feature at the beginning of this book. Best of luck on your journey to success!

Irwin was excited! He just selected the topic for his research paper in his computer literacy course. His professor said students were to write about the impact of a specific technology on society. Irwin looked closely at the list of approved topics and decided to choose social networking. He's been using different types of social networking for about a decade. He is comfortable using this technology and feels he knows all there is to know about the topic. Irwin is pretty sure he has this assignment locked up and will get a top grade.

As Irwin sits down to begin writing his paper, he is confident in his knowledge of the topic and thinks he will have it written pretty quickly. He's not even concerned about meeting the five- to seven-page requirement because he knows he has plenty to say on this topic. Irwin begins his paper by sharing how he uses social networking to stay in touch with his family and friends, when gaming with others, and when keeping up with his personal interests. He then decides to move into writing about which social networking sites he uses and why. When he finishes, he looks at what he has typed. Irwin realizes that he doesn't even have a full page written and has already exhausted all he knew about the topic. This sudden realization surprises and concerns him. Irwin decides he might need to actually conduct some research. Faced with this new understanding, he pulls out the assignment instructions and starts over.

The remainder of this module and Modules 2 through 5 focus on the research process. This section will introduce the steps of the research process, including a full discussion of the first step, define the need and the audience. Each subsequent module covers the remaining steps of the research process in more depth.

Step 1: Define the Need and the Audience

The first step in the research process is acknowledging a need for information and knowing the audience to whom you will be presenting the information. In your academic life, this need

can come from a research assignment given to you by your instructor, like it did for Irwin. You may be assigned a research topic, expected to select a topic from a given list, or be allowed to pick your own topic. At your workplace, the need for information may come from a presentation you are required to make or research your boss would like you to conduct on a competing company.

Use these questions to locate the information you need

- **What** types of information do I need?
Facts? Opinions? Both sides of an argument? Statistics? Primary or secondary sources?
- **How much** information do I need?
Detailed and in depth or broad in scope? Summary or overview?
- Is there a **viewpoint** I should follow?
Age? Gender? Time frame? Era? Location?
- **Who** is the audience for this information?
Boss? Coworkers? The public? Professor? Classmates? Family and friends?

At this stage of the research process, consider who will make up your audience, what information is most relevant to them, and what writing style would be most appropriate. In your workplace, your audience may be your boss, coworkers, clients, and department heads, or perhaps you are researching information that will be presented to the public through your company's website. At school, your audience will most always be your instructor and classmates. In your everyday life, your family may want to try out a new restaurant and you have offered to locate one. Since your family will be your audience, your presentation of your restaurant research will be much less formal.

Defining the Topic

After you identify what information is needed and who your audience will be, it's time to begin defining your topic. If you have only a general idea of what your topic is, like Irwin did, it's important that you conduct background research to gain a clearer understanding of the questions you need to answer or problems you need to solve with your research. Use encyclopedias, Google, and even Wikipedia for background research. Keep in mind that the research process is not a one-way street. Think of it as a river. The process has a beginning and an end, but it does not flow in a completely straight line. It begins with background research and your preconceived notions and beliefs about a particular topic. As you learn more about the topic, those preconceptions change and you begin to ask different, more informed questions. This alters the direction of your initial path and helps guide you toward a more fully formed research question. You will need to test and refine your topic based on the background research you uncover. Remember to keep your mind open to other ideas or perspectives on your topic that you previously may not have considered. Make sure you never finalize a research topic without conducting some exploratory or background research first.

Let's check in with Irwin. Once he discovered he really didn't know as much as he thought he did on his topic, he decided to use a KWHL chart (Table 1.1) to help get his thoughts together. He fills in what he *knows* about his topic (K), then brainstorms ideas for what he *wants* to know about social networking (W), and lists *how* he could get those answers (H). Later, he

will fill in what he *learned* about social networking (L). After filling in the first three sections of the chart, he conducts background research using Wikipedia and Google. He can't believe how much he did not know about social networking and its impact on society. He even adds more topics he'd like to learn about to his chart.

As you conduct background research, consider using a KWHL chart or a concept map. Each one can help you organize your thoughts and help you figure out if you've located a sufficient amount of background research. Give yourself time to complete this type of reflection, and if you feel your KWHL or concept map is incomplete, try conducting more background research. (Refer to your course for more about concept maps.)

Table 1.1: Irwin's KWHL chart, just starting

K	W	H	L
What do I know?	What do I want to know?	How do I find out?	What have I learned?
<p>Social networking has been around for at least 10 years.</p> <p>It's useful for staying in touch with friends and family.</p> <p>It helps me keep up with groups and organizations I'm interested in.</p> <p>Some of the gaming systems I use have social networks built in.</p>	<p>How do others use social networking?</p> <p>Has it been around for longer than 10 years?</p> <p>Does it impact my life the same way as it does others in society?</p> <p>What are popular social networking tools?</p> <p>Has social networking evolved with the needs of society?</p> <p>What are popular social networking tools in the workplace?</p> <p>How are companies using social networks to enhance their organizations?</p>	<p>Background research: Wikipedia and Google</p>	

Moving from the Topic to the Research Question

Once you have fleshed out your topic and begun conducting background research, you are ready to turn your topic into a solid research question. Earlier in this module, we explored the ACRL's information literacy threshold concept, *research as inquiry*. This concept acknowledges that research can be repetitive in its process and may require you to revisit different stages of the research process. It also involves asking questions about your topic that increase in complexity. To do this, you will need to critically reflect on your topic and think about what you really need or want to know. One step should be developing a basic idea of current happenings within the field you are studying. Start by making sure you understand basic vocabulary and are aware of sticking points between experts in this field. You can find this information by consulting a variety of sources such as blogs, scholarly journals, and websites from organizations. If you did not locate these items when first conducting background research, you will need to continue with this process. Try searching for leading scholars or experts who could point you toward key publications in that field. The information you gather here has the power to positively influence the direction of your research. Additionally, it can also lead you to noticing gaps in your knowledge of the topic.

Students who are developing their abilities in the *research as inquiry* threshold concept

- formulate questions for research based on gaps in information or data available.
- practice thinking critically when confronting new learning, where lack of familiarity with new methods and approaches requires additional effort.
- value intellectual curiosity in developing questions and learning new investigative methods.
- recognize that learning is a process and that reflecting on errors or mistakes leads to new insights and discoveries (ACRL, 2015).

Constructing a good research question is one of the most important steps in the research process. A successful research question is clear, concise, and open ended. It effectively summarizes the topic you are investigating, and is written to receive an objective answer based on facts. Unsuccessful research questions are vague and aim to explore everything about a topic. Avoid writing research questions that elicit a yes or no answer or an opinion. Practice taking the information from your KHWL chart or concept map and try writing three or four questions that address different subtopics of your question. Following are examples of some unsuccessful and successful research questions.

Unsuccessful research questions: Vague, broad questions that tend to generate **yes/no or opinion-based answers.**

- Who is Abraham Lincoln?
(This question is too broad and vague.)
- Why is social media harmful?
(Is it? This question is leading toward an answer based on a predetermined opinion. Remember to leave any bias or prejudice you may have out of your questions.)
- Do cows carry diseases?
(This is a closed question with a yes or no answer. This type of question would work only if you were tasked with exploring both sides of the issue.)

Successful research questions: Clear, concise, and specific questions that tend to generate **objective answers based on facts.**

- What events led to Abraham Lincoln's Emancipation Proclamation of 1863?
(This question is clear, concise, specific, and can be answered with facts.)
- How are online users addressing privacy issues on social networking sites like Facebook?
(This question is clear and concise, and it expands upon an issue that can be answered with data from Facebook users.)
- How do cows in the United States contract respiratory diseases?
(This question is open-ended and can be answered by factual research.)

Remember, research is a process. Conducting background research on your topic will aid in the construction of your research question. Sources such as Wikipedia, online encyclopedias, and websites are all good resources to use for background research.

Let's check back in with Irwin and see how he is progressing with his research assignment. When we left him, he was organizing his thoughts and ideas using a KWHL chart and conducting background research on his topic. The sources listed in his chart are the ones Irwin used to complete his background research and to form his research question. He learned through his background research that social media has impacted quite a few facets of our society, too many to cover in one paper. During his background research, he learned a bit more about how social networking could be used to possibly improve a person's career options. This sparks Irwin's interest. He decides to focus on the impact of social networking in the workplace and structures his research question as:

“What is the impact of social networking in the 21st century?”

Step 2: Locate and Access Information

In this step of the research process, you will critically reflect on your research question and brainstorm the types of resources you will need to answer that question. This is your research plan, and it should include accessing information from libraries and the Internet. Use this plan as your guide for incorporating a variety of sources into your paper. If you are required to use a certain type of resource, such as a scholarly one for an academic assignment, make a note of it and include it at the top of your plan so that you do not forget.

Irwin's assignment requires that he use his course textbook, two scholarly sources, and one source of his choice in the development of his paper. This means that he needs to locate three sources on his own. Irwin jots down this information on his research plan and begins considering what types of sources he could use.

Later in this module, you will be introduced to different types and formats of information that you can use to help answer your research question. Modules 2 and 3 instruct you on how to improve your researching using libraries and the Internet.

Step 3: Evaluate Information

As you search for information, you will discover no shortage of possible resources. However, much of what you'll find online cannot actually be considered good information. Evaluating these resources requires that you use a set of criteria. Module 3 shows you how to effectively use your information literacy skills to apply the CRAAP test to information. The acronym CRAAP stands for currency, relevance, authority, accuracy, and purpose. As you conduct this evaluation, you will need to make sure the resources you choose not only pass the CRAAP test, but also meet your information need.

Use these questions to locate the information you need

- What **types** of information should I use?
Books? Journals? Encyclopedias? Magazines? Newspapers?
- Where can these information types be **located**?
Library? Internet? Stores? People?
- How can this information be **accessed** once I locate it?
Borrowed? Downloaded? Printed? Photocopied?
- How should I **organize** the information I access?
Digital folders? Physical folders?

Step 4: Organize Information

In the fourth step of the research process, you'll organize both the information you've gathered and the presentation of that information. Keeping the information you located in steps 2 and 3 organized will help you to present the information from those resources in an organized manner. Many different systems are available to help organize the information you collect. Module 4 details what these systems are.

Use these questions to organize your information effectively

- How do I organize the **key pieces** of information from each of my resources?
By main ideas? By viewpoints? By key issues?
- How do I think of information in **new ways**?
- What is the best way for me to organize **large amounts** of information?
- How do I organize information for **presentation**?
Chronologically? By problem versus solution? By priority of ideas?

Step 5: Communicate Information

The final step is to effectively communicate the information you've gathered to satisfy the information needed. The communication style you'll use should be appropriate to your audience, whether it was verbal, visual, or electronic. Additionally, you'll consistently cite your sources using a format like the American Psychological Association (APA) style. Module 5 explains these concepts in further detail.

Use these questions to communicate information effectively

- Who is my **audience**? Is the setting **casual or formal**?
- What **method** is best for communicating my research results?
Written? Verbal? Visual? Digital?
- For the selected method, what **type of presentation** best meets my communication need?
Report? Narrative? Proposal? Slide presentation? Image? Diagram?
- How do I **properly cite** the sources I use?

Section 1.3 Knowledge Check Quiz

1. In a KWHL organizational chart, what does the “L” stand for?
 - A. How do I List what I need to know?
 - B. What have I Learned?
2. “Is the setting casual or formal?” and “What method is best to present my research?” are questions you ask before you
 - A. define the topic of your research.
 - B. access your research.
 - C. communicate your research.

Answers: 1 (B), 2 (C)



1.4 What Types of Information Are There?

Your Roadmap to Success: Section 1.4



Learning Outcome: *Compare and contrast various characteristics of information.*

Why is this important?

Mastering this learning outcome will help you evaluate information sources and select those that best meet your needs. Consider Tiffany, for example. After familiarizing herself with the characteristics of information, Tiffany was able to identify which parts of the newspaper would likely provide reliable data for her school assignments and which parts would not. She also felt better informed to have a discussion with her son about the dangers of believing everything you see on the Internet.

How does this relate to your success in this course?

This section's learning outcome is associated with the following course learning outcome: *Evaluate information sources for authority, bias, accuracy, and currency.* Mastering this learning outcome will help you identify threats and misleading or outdated information that could jeopardize your schoolwork, as well as your personal life.

To review the course learning outcomes and their relevance to you, see the *Your Roadmap to Success* feature at the beginning of this book. Best of luck on your journey to success!

The type of information you look for will vary according to the question you are trying to answer. This section identifies a variety of characteristics of information and explains how to choose the type of information that will best meet your needs.

Scholarly and Popular Information

Scholarly information most often comes in the form of academic journal articles and books. These types of resources are written by scholars in a field of study and usually report on their original research, experiments, theories, or studies to the scholarly community. Since the authors of this type of information are considered experts in their field, their credentials will usually be published within the article or book. The language the authors use when writing these resources is formal, technical, and specific to their field. It might even include jargon that a person outside that field might not understand. Scholarly articles and books usually include an abstract, which is a brief summary of what the article discusses, a bibliography with a list of resources, and sometimes charts or graphs to illustrate their research.

Some, but not all, scholarly information is **peer-reviewed**. This means that the information within these resources was evaluated, or vetted, by other scholars within the same field to ensure that it is accurate and suitable for publication. Scholarly, and especially peer-reviewed, resources are considered of the highest quality and should be used when conducting academic research.

Earlier in the module you were introduced to the threshold concept of *scholarship as conversation*. This concept emphasizes the role of scholars, which is to contribute to the goals and the debates within their field of study. The “conversation” occurs when information consumers, creators, and experts collaborate to determine meaning and explore new theories. For example, picture yourself at a party where quite a few conversations are occurring at the same time. As you choose to focus on one topic of conversation, you hear bits and pieces of conversations from people with differing opinions and arguments. You use the diverse arguments people make about the same topic to form your own opinion. This is essentially what the scholarly conversation is: different scholars and experts sharing their ideas and research results to their communities through published journal articles and books. Other scholars and experts read this information, interpret it, and build on it to create new conversations or advance existing ones.

As a student conducting research, you pick up only a few bits and pieces of a scholarly conversation from a few scholarly sources. These sources do not make up an entire scholarly work or encompass all of the perspectives on the topic. Once you have a good sense of the conversation, consider your own thoughts and feelings on the differing perspectives as you relate this information to answering your research question. Try viewing yourself as a budding researcher and scholar, and seek to add your own voice to the conversation.

Students who are developing their abilities in the *scholarship as conversation* threshold concept

- identify the contribution that particular articles, books, and other scholarly pieces make to disciplinary knowledge.

- predict that a given scholarly work may not represent the only—or even the majority—perspective on an issue.
- recognize that they are often entering into the midst of a scholarly conversation, not a finished conversation.
- suspend judgment on the value of a particular piece of knowledge until the larger context for the scholarly conversation is better understood.
- value user-generated content and critically evaluate contributions made by others.
- see themselves as contributors to scholarship rather than only consumers of it (ACRL, 2015).

Popular information sources are considered nonscholarly. They are generally found in newspapers and magazines, and they cover topics of wide-ranging interests, usually intended to inform or entertain the public. Journalists—who might or might not have expertise in the field—author the information, using vocabulary that is familiar to the general public. The articles usually have photographs, illustrations, or advertisements in them. Before publication, an editorial staff reviews articles under consideration for style and content. Popular articles are usually quite brief and typically don't include a bibliography or a reference list. However, some magazines do provide considerably researched articles and contain a reference list, and some Internet news sources embed links to the scholarly studies they discuss. Overall, popular resources are generally considered reliable, and depending on your topic can be beneficial to your research. Examples of popular information include daily print and online newspapers such as the *Los Angeles Times*, weekly news magazines such as *Time* magazine, and scientific magazines such as *National Geographic*.

Primary, Secondary, and Tertiary Information Sources

Depending on the nature of your research question, you might need to use a combination of primary, secondary, and tertiary information. Do you know the difference? **Primary sources** of information are generally firsthand or original accounts of an event. These sources offer an inside view to an event, are unedited, and unevaluated. The types of materials that can be classified as primary sources are directly dependent on the field or subject being studied. For example, in the field of history, primary sources tend to be actual objects in the form of diaries, poems, letters, oral accounts, photographs, and artwork. Outside this field, observations, and research studies would be considered primary source materials.

Secondary sources, on the other hand, interpret and analyze a primary source by attempting to explain or summarize it. Because of this, they can sometimes be used to locate primary source material. One way to do this is to check the bibliography or reference list of the secondary source. Since secondary sources are more widely accessible than primary sources, it's important that you closely evaluate both the content of the resource and the creator of the resource.

Tertiary sources provide general overviews, summaries, or data and statistics related to a topic. Reference works such as encyclopedias and databases are examples. They are great for background information but should rarely be considered sources for an academic paper, as they do not contain any original research or advance the scholarly conversation. Table 1.2 identifies different types of primary, secondary, and tertiary sources.

Table 1.2: Types of primary, secondary, and tertiary sources

Primary sources	<ul style="list-style-type: none"> • Original data, research studies, and lab reports • Speeches, interviews • News film footage • Manuscripts, letters • Diaries, autobiographies, memoirs 	<ul style="list-style-type: none"> • Surveys • Official records • Poetry, drama, novels, music, art • Photographs, artwork, posters, pottery, furniture, clothing, buildings
Secondary sources	<ul style="list-style-type: none"> • Textbooks • Journal, magazine, or newspaper articles that do not present original research findings • Histories 	<ul style="list-style-type: none"> • Criticisms • Commentaries • Pamphlets, technical reports, conference proceedings, dissertations, theses
Tertiary sources	<ul style="list-style-type: none"> • Almanacs • Dictionaries, encyclopedias • Atlases • Chronologies • Directories • Fact books 	<ul style="list-style-type: none"> • Guidebooks, manuals • Indexes, abstracts, bibliographies used to locate primary and secondary sources • Textbooks (also can be secondary)

When preparing to use or cite a source, try tracking down the primary source that is referenced in your secondary or tertiary one, and cite both. This will ensure the integrity of your research.

Subjective and Objective Information

The terms *subjective* and *objective* identify the author's perspective. **Subjective information** is someone's belief, opinion, or judgment on a particular topic. It can be based on facts; however, it's expressed as someone's interpretation of those facts. Subjective information is not supported by evidence. For example, consider the editorial section of a newspaper. Editorials are opinion pieces written to present the editorial staff's opinion on a particular topic or issue. Editorials may contain some facts, but these facts are carefully chosen and presented in language meant to persuade the reader. Subjective information can also be found in personal essays and autobiographies. Subjective information is not necessarily reliable and should not be used in academic research.

On the other hand, **objective information** is based on evidence that can be observed, measured and verified by others. It is unbiased and carries no judgment. Journalists are supposed to write objective articles that do not lean toward a certain side of an issue; however, such articles often are influenced by the journalist's values. Scientific research studies are also considered objective, although they can still contain errors, inconsistencies, and misinterpretation. Objective information should never be presented in conjunction with a feeling or a stance on an issue. This does not happen often, which is why it can be difficult to pull objective statements from information sources. Objective information can also be found in encyclopedias, almanacs, and other reference materials. Table 1.3 shows the differences between objective and subjective information.

Table 1.3: Differences between objective and subjective information

	Objective	Subjective
Information	<ul style="list-style-type: none"> • Can be observed with the senses (seen, heard, touched, smelled) • Factual • Can be counted, described, imitated • The same from multiple reporters • As close to truth as we can get • Can be helpful in decision making 	<ul style="list-style-type: none"> • Belief, suspicion • Opinion, judgment, assumption • Varies (e.g., from person to person, from day to day) • Able to take on a life of its own (like a rumor) • Untrue • Can be destructive in decision making
Language	<ul style="list-style-type: none"> • I saw . . . • We counted . . . • She observed . . . • This is what he did . . . • I said . . . • It sounded like this. • He stood in this place. • Her action looked like this. 	<ul style="list-style-type: none"> • He did not want to . . . • We do not like . . . • I thought . . . • We feel . . . • She thinks . . . • I need . . . • He was just trying to avoid . . . • They were just trying to control me.

Understanding the difference between subjective and objective information will help you not only select proper resources, but also create and share information. For instance, at some point in your academic career, you may be expected to take an objective or subjective position in a paper. This expectation may or may not be detailed in your assignment instructions, so make sure you understand what type of information is being asked for. A subjective paper will call for you to share your thoughts, feelings, ideas, or opinions and may not require you to use external sources. An objective paper will require factual information and data. Avoid including any subjective statements when writing an objective paper.

In the real world, you will also encounter subjective and objective information. Let's take a look at some subjective and objective examples.

Forty-seven percent of Americans pay no federal income tax. These people believe they are victims and would never vote for a Republican candidate.

This statement paraphrases a quote by 2012 presidential candidate Mitt Romney (Margolin, 2012). The first sentence in the quote is objective in that it includes a quantifiable fact that 47 percent of Americans do not pay federal income taxes. However, in the second sentence Romney states his personal point of view or opinion, which is completely subjective.

A doctor advising a patient on options for treatment plans for a certain disease may present arguments for and against these options. The doctor may relate stories of patient preferences and side effects, and also include their own scientific knowledge about the success rates of treatments.

In this example, the information the doctor provides on both patient preferences and side effects is considered subjective. Every patient is different and will not prefer the same

treatment or encounter the same side effects. The doctor’s knowledge on the success rates of the treatments is considered objective, as is the information that can be proven through the success rate data.

Factual and Analytical Information

Another consideration to make when determining the type of information contained in a source is whether it is factual or analytical. **Factual information** is simply a statement of fact, containing no analysis or extra explanation: “My mother was born in Denver, Colorado.” This statement is a fact, is undisputable, and requires no evaluation. Factual information also remains unchanging, meaning if it’s true today, it will be true tomorrow, and 10 years from now. Factual information is closely related to objective information, in that objective information contains factual data. However, objective information aims to use those facts to explain both sides of an argument or issue. Examples of factual sources of information include statistics, encyclopedias, and almanacs.

Analytical information examines and interprets factual data, often to form an opinion or draw a conclusion. It focuses on the why or how of the data. For instance, an analysis from the data of a hurricane or tornado would be considered analytical information. Because analytical information involves the use of opinions in the interpretation of data, it can be associated with subjective information. Analytical information can be found in sources such as books, articles, and some websites.

In your academic life, you will encounter research papers that require you to write using analytical information. The assignment instructions for these papers include terms such as *analyze, compare, contrast, relate, examine, and classify*. Analytical writing requires the inclusion of factual data on your topic to support your analysis. It also requires you to analyze relationships between information and sometimes reorganize it into categories, groups, or relationships. For example, let’s say you were writing a paper on two differing theories. You could divide your comparison of the two theories into three parts, such as how each theory treats social context, language acquisition, and emotional development.

Factual

- You know the difference between *fact* and *opinion*.
A fact *can be proved*, but an opinion *can’t*.
Similarly, **factual information can be proved**, and **analytical information can’t**.

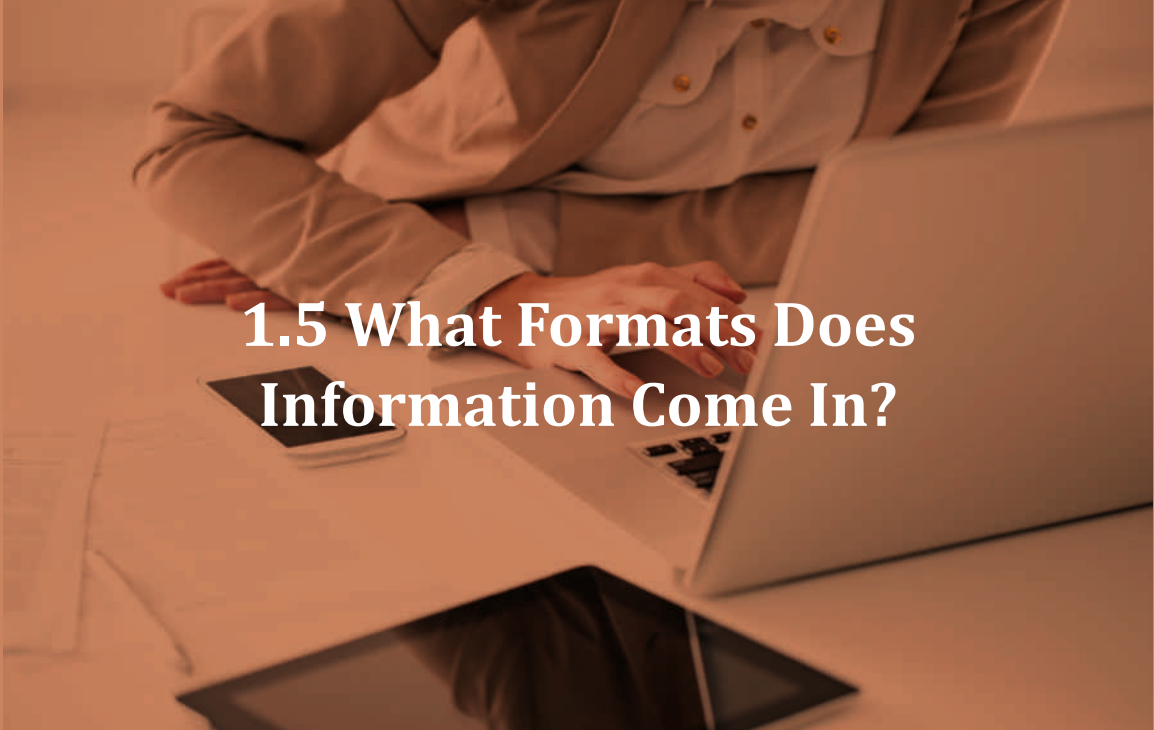
Analytical

- Analytical information is *more than just opinion*, though.
It is an *interpretation* of the facts, derived from *evidence*.
An **opinion doesn’t always give solid reasons**, whereas an **analysis does**.

Section 1.4 Knowledge Check Quiz

1. A personal journal is an example of a _____ source.
 - A. primary
 - B. secondary
 - C. tertiary
2. Which of the following is an example of a secondary source?
 - A. Newspaper
 - B. Letter
3. A dictionary is an example of a _____ source.
 - A. primary
 - B. secondary
 - C. tertiary

Answers: 1 (A), 2 (A), 3 (C)



1.5 What Formats Does Information Come In?

Your Roadmap to Success: Section 1.5



Learning Outcome: *Identify different print and electronic resources.*

Why is this important?

Mastering this learning outcome will help you distinguish between formats of information and use them to your advantage. Consider Clayton, for example. Clayton grew up before the Internet was widely available, and he remembers how much more difficult it was to access information then. These days, he enjoys being able to find information at the click of a button; he looks up something on Wikipedia at least once a day. Upon learning more about the formats of information though, he realized that while Wikipedia might be a good place to gather preliminary information, he should not use Wikipedia as a source for his school assignments.

How does this relate to your success in this course?

This section's learning outcome is associated with the following course learning outcome: *Determine the best search strategy for a given information need.* Mastering this learning outcome will enable you to save time in your busy life so that you can balance the needs of school, work, family, and other commitments.

To review the course learning outcomes and their relevance to you, see the *Your Roadmap to Success* feature at the beginning of this book. Best of luck on your journey to success!

The **format** is the way information is created, presented, and shared. Because information is generated for a range of purposes, it is available in a range of formats. The threshold concept *information creation as a process* acknowledges that the purpose, message, and delivery of information are intentional acts of creation. Experts look at the process of creation and the final product to evaluate the usefulness of the information. Let's expand on this concept by considering the news industry. The goal of news reporting is to inform the public quickly about the facts of an incident. Because of this, it is usually disseminated each day for print, the Web, radio, and television, as well as on journalists' blogs, Twitter sites, and so forth. Each medium requires a different format for the presentation of the information. In contrast, information on more than just the facts of a situation—and that includes analysis—often takes longer to research, write, and publish, which means it is not suitable to be shared through a news or media outlet. Traditionally, this type of expanded information is published in books and possibly scholarly journals.

The format of information required is determined by your research question. Additionally, if your research question is for an academic purpose, you most likely will have been provided with some assignment guidelines regarding what formats are required.

Students who are developing their abilities in the *information creation as a process* threshold concept




- understand that format and method of access are separate things.
- recognize that different creation processes result in the presence of distinct attributes.
- articulate the purposes of various formats, as well as their distinguishing characteristics.
- identify which formats best meet particular information needs (ACRL, 2015).

Let's explore a few different formats of information Irwin can use to help him write his paper.

Print Resources

Although the theme of this course is to explore information literacy skills in the digital age, it's important to consider the role the print format has in the research process. Print can be "characterized by its physical structure (e.g., binding, size, number of pages) as well as its intellectual structure (e.g., table of contents, index, references)" (ACRL, 2015, lines 283–284). Even with the amount of digital information currently available, resources found in print are still credible and should be considered. In fact, some information is still available only in a printed format. When it comes time to determine what types of information will be required to address your information need, don't neglect the usefulness print sources can play in your research (Table 1.4).


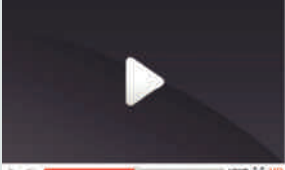


Table 1.4: Print resources for research





Resource format	Examples	Characteristics																																												
<p>Books</p>  <p><i>Fuse/Thinkstock</i></p>	<ul style="list-style-type: none"> • Fiction (e.g., novels, collections of poetry, childrens' stories). • Nonfiction (e.g., biographies, historical accounts, essays). 	<ul style="list-style-type: none"> • Familiar—almost everyone has been exposed to books from childhood. • Cover a wide variety of topics. • Easily accessible. • Because it takes several months to produce a book, it can become outdated quickly. Especially true for books in fields that change quickly (e.g., technology, health, science). 																																												
<p>Tips for using books for research</p> <p>Books are a good choice if . . .</p> <ul style="list-style-type: none"> • They provide <i>detailed analysis</i> of a topic. • They provide a <i>thorough background</i> on a topic. • Their bibliographies <i>can guide you</i> to other reference sources. • They are <i>academic</i>; these types of nonfiction books can be considered a reliable source. <p>Books are not a good choice if . . .</p> <ul style="list-style-type: none"> • Your research topic has a <i>very narrow focus</i>. • Your topic is dependent on the <i>most current and relevant information</i>. 																																														
<p>Reference works</p>  <p><i>Filip Fuxa/iStock/Thinkstock</i></p>	<ul style="list-style-type: none"> • Encyclopedias • Dictionaries • Almanacs • Atlases 	<ul style="list-style-type: none"> • Give basic answers to specific questions (e.g., population of a city, birth date of a well-known person). • Considered tertiary sources of information. Are meant to be consulted when a specific piece of information is needed. • Can be especially helpful for providing background information to help you understand a topic. • Can often be found in digital form. 																																												
<p>Tips for using reference books for research</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 40%;">For information about . . .</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 40%;">Choose . . .</td> </tr> <tr> <td>Words or definitions</td> <td>→</td> <td>→</td> <td>Dictionaries</td> </tr> <tr> <td>Synonyms or antonyms</td> <td>→</td> <td>→</td> <td>Thesauruses</td> </tr> <tr> <td>General information or an overview</td> <td>→</td> <td>→</td> <td>Encyclopedias</td> </tr> <tr> <td>Names and addresses</td> <td>→</td> <td>→</td> <td>Directories</td> </tr> <tr> <td>Places and maps</td> <td>→</td> <td>→</td> <td>Atlases</td> </tr> <tr> <td>Facts and statistics</td> <td>→</td> <td>→</td> <td>Almanacs</td> </tr> <tr> <td>Formulas, tables, how-to information</td> <td>→</td> <td>→</td> <td>Handbooks and manuals</td> </tr> <tr> <td>A person's work</td> <td>→</td> <td>→</td> <td>Reviews or criticisms</td> </tr> <tr> <td>Books and other sources</td> <td>→</td> <td>→</td> <td>Bibliographies or guides to literature</td> </tr> <tr> <td>Dates, outlines, historical timelines</td> <td>→</td> <td>→</td> <td>Historical tables, chronologies, historical yearbooks</td> </tr> </table>			For information about . . .			Choose . . .	Words or definitions	→	→	Dictionaries	Synonyms or antonyms	→	→	Thesauruses	General information or an overview	→	→	Encyclopedias	Names and addresses	→	→	Directories	Places and maps	→	→	Atlases	Facts and statistics	→	→	Almanacs	Formulas, tables, how-to information	→	→	Handbooks and manuals	A person's work	→	→	Reviews or criticisms	Books and other sources	→	→	Bibliographies or guides to literature	Dates, outlines, historical timelines	→	→	Historical tables, chronologies, historical yearbooks
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<p>Periodicals</p>  <p><i>svengine/iStock/Thinkstock</i></p>	<ul style="list-style-type: none"> • Newspapers • Magazines • Journals 	<ul style="list-style-type: none"> • Collections of articles published on a regular schedule, such as daily, weekly, monthly, or quarterly. • Information expected to be current and up to date. • Can be published in print, but many also have a digital copy that comes with a print subscription or can be purchased on its own. 																																												

Electronic Resources

Electronic text-based resources can be used the same way you would use their traditional print counterparts (Table 1.5). Some of the resources described in this section can be accessed only through libraries, whereas others are freely available on the Internet.


Table 1.5: Electronic resources for research

Resource format	Characteristics
<p>Electronic graphics and images</p>  <p>AndreyPopov/iStock/Thinkstock</p>	<ul style="list-style-type: none"> • <i>Electronic graphics</i> are computer-generated visual depictions that are often used to enhance the understanding of information. • <i>Electronic images</i> are pictures that are stored in an electronic format, also often used to enrich or support text information. • Graphics and images share the same types of file formats (e.g., jpg, gif, png). • TIP! Citing visual sources is just as important as citing a journal article or book. Module 5 provides information on how to do this correctly.
<p>Videos</p>  <p>MrsWilkins/iStock/Thinkstock</p>	<ul style="list-style-type: none"> • Services such as YouTube, Netflix, and Hulu have expansive collections, including for academic research. • Many libraries carry their own collection of educational videos from vendors like Films on Demand. • TIP! Videos can be a valuable resource because they often provide information (e.g., interviews, how-to guides) that are not in written form.
<p>Podcasts</p>  <p>mishabokovan/iStock/Thinkstock</p>	<ul style="list-style-type: none"> • Audio recording or broadcasting that can be downloaded, most often as an MP3 file, and listened to without a Wi-Fi connection. • Podcasts on almost any topic can be located by conducting a basic Internet search. • Derived from the words <i>iPod</i> and <i>broadcast</i>. • TIP! Many podcasts contain educational or informational content, which can make them valuable resources for research.
<p>Scholarly e-journals</p>  <p>http://ldm.sagepub.com/</p>	<ul style="list-style-type: none"> • Print journals that have been digitized or have launched in a digital form without a physical counterpart being produced. • Rarely found for free on the Internet. Libraries purchase subscriptions to journals, and access is provided to students and faculty through the library website. • Typically, the same content available in the print journal will be offered in the digital version. • TIP! Sometimes a particular e-journal delays the release of some or all of the digital content, including articles. This is called an <i>embargo</i>, and could be the reason the most recent information from an e-journal is not available in your library. Embargos can last anywhere from a month from the publication date of a journal up to a year or two.

<p>E-books</p>  <p>AleksVF/iStock/Thinkstock</p>	<ul style="list-style-type: none"> • Digital versions of books that can be downloaded onto various electronic devices (e.g., basic e-readers, smart phones, iPads, tablets, laptops). • Approximately two million titles are online for purchase at affordable prices. • As with e-journals, libraries may provide free access to e-books. • TIP! As with e-journals, embargos may delay the library's access to some e-books for a certain period of time. • When it comes to research, you can use e-books in the same manner you use physical books.
<p>Blogs</p>  <p>Kubkoo/iStock/Thinkstock</p>	<ul style="list-style-type: none"> • A website where an individual can post information and receive comments from readers. • Used to share ideas, information, and opinions on topics important to the blogger. • Millions of blogs exist, and you can find them by using a search engine. • The term combines the words <i>web</i> and <i>log</i>. • TIP! Bloggers often use a more relaxed voice and vocabulary than scholarly article writers do, sometimes making difficult topics easier to comprehend. When you are conducting background research or trying to understand a complex concept, reading a blog on the topic might help. • When using blogs to conduct research, be careful, because the information is usually subjective and may not be suitable for an academic paper.
<p>Google Scholar</p>  <p>36712489/iStock/Thinkstock</p>	<ul style="list-style-type: none"> • Google Scholar searches a wide variety of scholarly articles, in addition to legal documents, unpublished articles, abstracts, citations, books, and other types of resources. • Not everything you find on your results list will be available in free, full text. Many of the results will be only links to abstracts, with the option to pay for access to the article. • TIP! Try checking the databases at the Ashford University Library or your local public library to see if a copy of a full article exists that you can access for free.
<p>Wikis</p>  <p>™ Wikimedia Foundation, Inc.</p>	<ul style="list-style-type: none"> • A type of website that encourages collaboration among its users. Wikis have a set of permissions in place that control access to the content and who can create information. • The best-known wiki is Wikipedia, the free online encyclopedia. From experts in a field to members of the general public, anyone can offer knowledge and contribute to the creation of articles. • Wikis may be helpful for background research, but the quality of the content can be difficult to evaluate, and it can be unclear who is contributing to the information. • The word <i>wiki</i> is Hawaiian for "quick." • TIP! High-quality wiki pages cite primary sources, which you can typically access via an embedded link. • Although you may begin your research from a wiki, be sure to use and cite the primary source, not the wiki.

(Continued)

Table 1.5: Electronic resources for research (Continued)

Resource format	Characteristics
Social media  <i>Anikei/iStock/Thinkstock</i>	<ul style="list-style-type: none"> • Billions of people use social media for engaging with friends and loved ones (e.g., Facebook), for keeping up with local and world events (e.g., Twitter), for interacting with clients and customers (e.g., by professionals, businesses, and nonprofits), and for professional networking and idea sharing (e.g., LinkedIn, Academia.edu, Scribd). • TIP! As with blogs and wikis, make sure you check primary sources before using information you find on social media sites. For more information, see Module 3.

After gaining a better understanding of the different formats of information available to him, Irwin began considering which of these formats will not only help him meet his research requirement, but will also contain the best information on his topic. He then goes back to filling in the H section of his KWHL chart with his ideas on which formats of information may be helpful (Table 1.6).

Table 1.6: Irwin's KWHL chart, adding sources of information

K	W	H	L
What do I know?	What do I want to know?	How do I find out?	What have I learned?
Social networking has been around for at least 10 years. It's useful for staying in touch with friends and family. It helps me keep up with groups and organizations I'm interested in. Some of the gaming systems I use have social networks built in.	How do others use social networking? Has it been around for longer than 10 years? Does it impact my life the same way as it does others in society? What are popular social networking tools? Has social networking evolved with society? What are popular social networking tools in the workplace? How are companies using social networks to enhance their organizations?	Background research: Wikipedia and Google Scholarly sources from the library: books, articles Internet sources: websites, blogs, podcasts	

Modules 2 through 5 continue to follow Irwin on his journey to complete his research paper. His next stop will be to set up a research consultation with his librarian (Module 2).

Think!

As you progress through this textbook, reflect on the new knowledge you are acquiring.

- Consider how you can apply information literacy to your academic, professional, and personal life. What do you need to do differently to become information literate?
- Did you come across any perceived challenges to incorporating information literacy into your life? If so, what ideas do you have for overcoming these challenges?
- Which steps in the research process do you do well? Which steps do you need to develop more skill with?
- Remember to consider using various types and formats of information to address your research need.

Continue to reflect on your current information literacy skills. Be sure to critically assess your current levels, and seek out opportunities to grow in areas that need some strengthening. Your goal should be to increase your information literacy far beyond your recollection of reading this textbook.

Section 1.5 Knowledge Check Quiz

1. A technical journal or magazine is an example of a _____ source.
 - A. periodical
 - B. reference
 - C. book
2. When using wikis for an academic paper, verify information with
 - A. blogs.
 - B. LinkedIn.
 - C. primary sources.
3. For quick facts and statistics, which resource is best?
 - A. An almanac
 - B. A thesaurus
 - C. A dictionary

Answers: 1 (A), 2 (C), 3 (A)

Summary & Resources

Key Concepts

- Information literacy involves being able to recognize when information is needed and then effectively and efficiently locating, evaluating, and using that information to communicate in a variety of settings.
- Information literacy is a critical skill you will need to develop to be successful in school, in your career, and throughout your life. Developing information literacy will set you on the path to becoming a lifelong learner.
- The four main skills needed to be information literate are critical thinking, creative thinking, problem solving, and higher-order thinking.
- The research process has five steps. The first step is recognizing what information is needed and understanding the audience to whom you will be presenting the information. This includes formulating a research question. The second step is finding and accessing the information you need to answer your research question. The third step involves evaluating the information. The fourth step is organizing the information you've gathered and evaluated. The final step is effectively communicating the information to your audience.
- The two main types of information are scholarly (which includes peer-reviewed research) and popular.
- Information sources can be primary, secondary, or tertiary in nature.
- Information sources are generally characterized as being subjective or objective, and factual or analytical.
- Information is available in a variety of formats. Print resources include books, **reference texts**, and periodicals. Electronic resources include graphics and images, videos, podcasts, scholarly e-journals, e-books, blogs, Google Scholar, wikis, and social media.

Key Terms

analytical information Information that examines and interprets factual data, often to form an opinion or draw a conclusion.

blog A website where an individual can post information, ideas, and opinions important to that individual (the blogger) and receive comments from readers. Derived from the words *web* and *log*.

creative thinking Thinking that engages with information imaginatively, exploring a wide range of possibilities and coming up with ideas.

critical thinking Thinking that requires the use of a specific set of skills to determine the value of an information source: inference, analysis, evaluation, interpretation, explanation, and self-regulation.

factual information Information that is simply a statement of fact, containing no analysis or extra explanation.

format The way in which information is created, presented, and shared, often based on its purpose and audience.

growth mindset The ability to seek out opportunities to learn new things and put forth the effort to do so.

higher-order thinking Thinking that is reasonable and insightful, using questioning, investigating, observing, comparing, and connecting to make decisions. The hierarchy of higher-order thinking (from low to high) is knowledge, comprehension, application, analysis, synthesis, and evaluation.

information literacy The ability to identify a need for information and successfully locate, evaluate, and use that information ethically and legally for a determined purpose.

lifelong learner A person who deliberately chooses to learn new ideas and concepts throughout her or his life.

objective information Information that is unbiased, carries no judgment, and is based on evidence that can be observed, measured, and verified by others.

peer-reviewed A resource whose information was evaluated, or vetted, by scholars to ensure that it is accurate and suitable for publication.

periodical A collection of articles that are published on a regular schedule and whose information is expected to be current and up to date, such as newspapers and journals.

podcast An audio recording or broadcast that can be downloaded, most often as an

MP3 file, and listened to without a Wi-Fi connection. Derived from the words *iPod* and *broadcast*.

popular information Sources that are considered nonscholarly, usually intended to inform or entertain the public.

primary sources Unedited and unevaluated information that is generally firsthand or an original account of an event.

problem solving The process of effectively working through an issue or question to find a solution: (1) understand problem, (2) identify problem cause, (3) brainstorm solutions, (4) evaluate solutions, (5) apply best solution, and (6) evaluate outcome.

reference text Information source such as an encyclopedia, dictionary, almanac, or atlas that gives basic answers to specific questions.

scholarly information Information in the form of academic journal articles and books, written by scholars and usually reporting on original research, experiments, theories, or studies.

secondary sources Information sources that interpret and analyze a primary source by attempting to explain or summarize it.

subjective information Information based on someone's belief, opinion, or judgment on a particular topic.

tertiary sources Information sources such as encyclopedias and databases that provide general overviews, summaries, or data and statistics related to a topic.

wiki A type of website that encourages collaboration between its users, such as Wikipedia. The word *wiki* is Hawaiian for "quick."

Putting It All Together

Module 1 Quiz

1. Information literacy is the ability to identify a need for information and successfully _____, evaluate, and use that information ethically and legally for a determined purpose.
 - A. differentiate
 - B. dictate
 - C. locate
 - D. operate
2. Information literacy requires several skills, but you will need to use _____ to assess the accuracy of different information sources for your school paper.
 - A. creative thinking
 - B. critical thinking
 - C. problem solving
3. A video clip documenting the Japanese internment during World War II fits into which of the following source format categories?
 - A. Electronic
 - B. Multimedia
 - C. Print
4. A video clip documenting the Japanese internment during World War II fits into which of the following source categories?
 - A. Primary
 - B. Secondary
 - C. Tertiary
5. A PDF document from the U.S. Census Bureau that contains data on educational attainment numbers fits into which of the following source format categories?
 - A. Electronic
 - B. Multimedia
 - C. Print
6. Which of the following categories would not describe a PDF report from the U.S. Census Bureau that contains data on educational attainment numbers?
 - A. Factual
 - B. Analytical
 - C. Objective
7. The National Health Institute's almanac reference book containing the NHI's legislative chronology fits into which of the following categories?
 - A. Primary
 - B. Secondary
 - C. Tertiary

Answers: 1 (C), 2 (B), 3 (B), 4 (B), 5 (A), 6 (B), 7 (C)

