Praise for *The Literature Review*

I love the 6 steps plan—it is doable! The structure of this book encourages readers to develop great research habits. The content material is excellently covered. The section on developing an argument is exceedingly strong . . . I loved the AI sections. These are the sections that I will go back to, which is really exciting. I learned so much!

Neil MacNeill, teacher and former principal
Scarborough, Western Australia

The book's organization along the timeline of conducting a literature review is the greatest strength. I like that it follows a logical progression from selecting a topic through the writing of the lit review. The AI sections are one of my favorite parts. They offer clear suggestions for how AI might be incorporated as a research tool.

Jennifer Shettel, professor
Millersville University of Pennsylvania
Lititz, Pennsylvania

The structure of the book is very comprehensive. The step-by-step process is clear. The integration of AI in the revised edition and other updates are an added bonus.

Kristopher Kwiatek, principal
Bob Hope Elementary School
Department of Defense Education Activity
St. Clair Shores, Michigan

The Literature Review

Fifth Edition

The Literature Review

Six Steps to Success

Fifth Edition

Lawrence A. Machi

Brenda T. McEvoy

CORWIN

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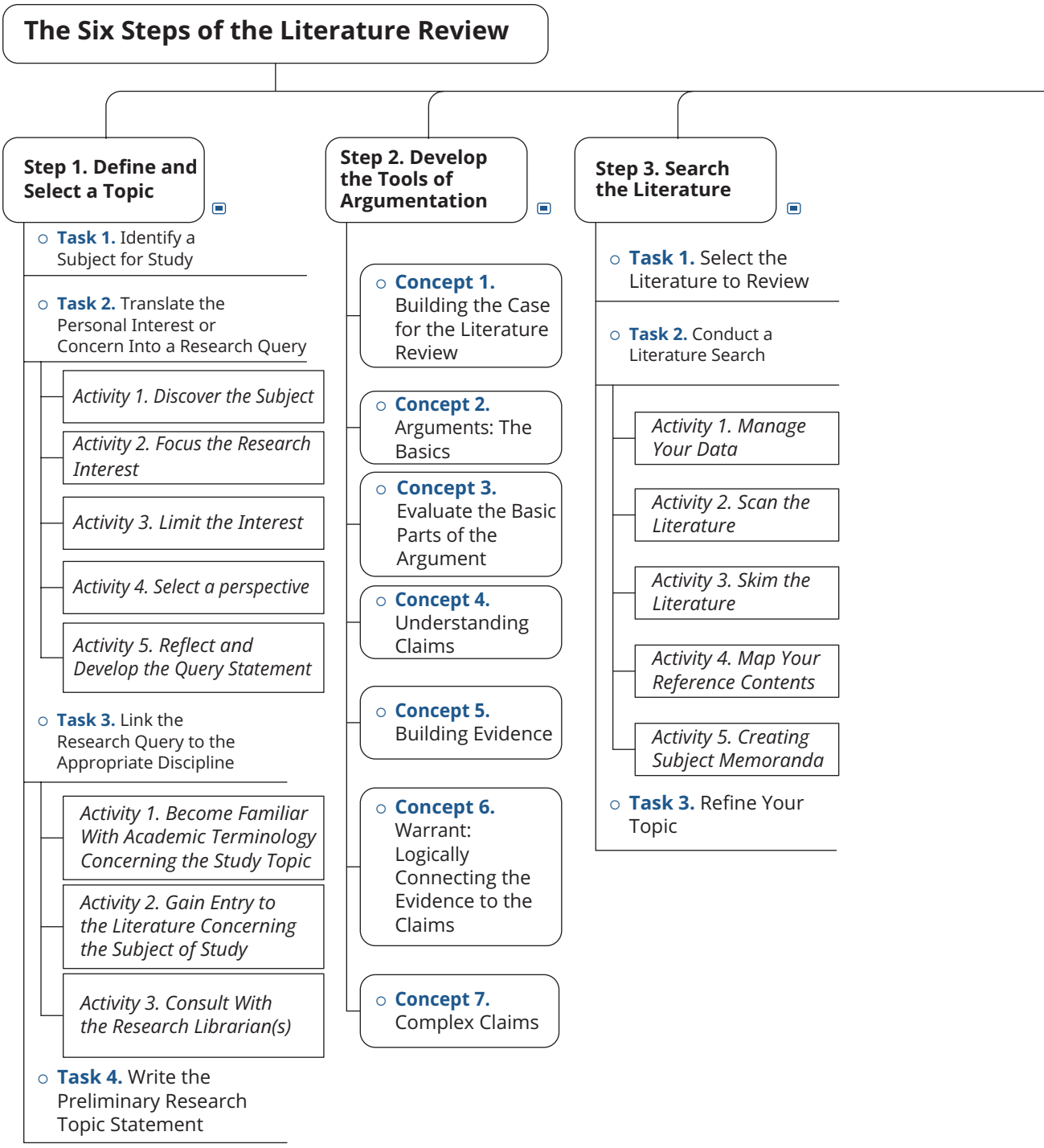
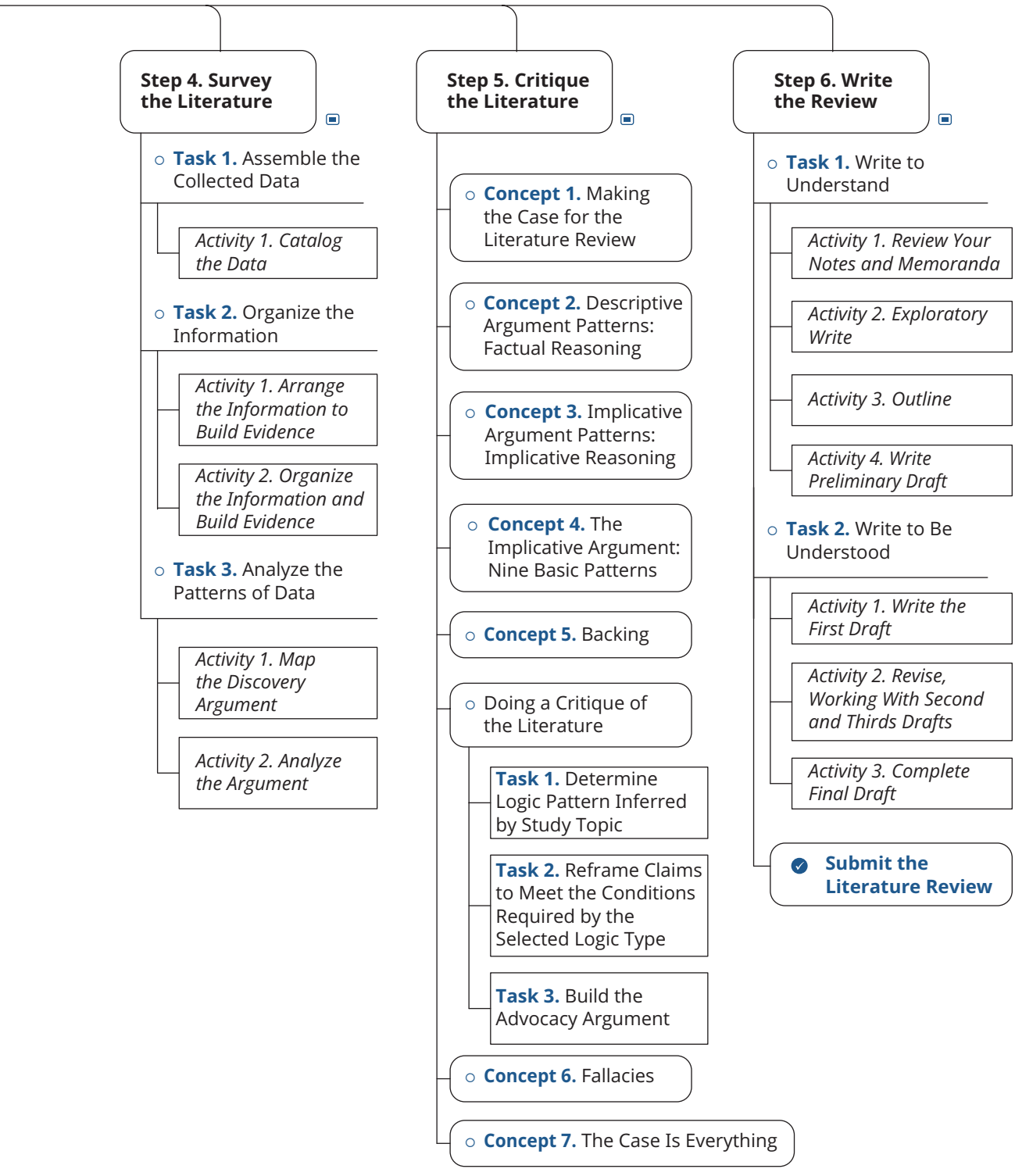
Brenda T. McEvoy taught high school English, history, and science for 36 years. Research skills were always part of her curriculum. For eight years, she worked for the California State Department of Education, leading groups of educators in improving their ability to edit and assess student writing. She has also served as a mentor for beginning English and history teachers. Participation in the California Writing Project extended her knowledge of writing and the difficulties students face when producing a major assignment. She has worked as an editor for several books, focusing on helping writers create work that is clear and logical.

Literature Review Flowchart





Preface

Creating a successful literature review is a complex project. This book serves as a logical road map to assist the researcher in finding a topic, researching, organizing, arguing, and composing the review. The many and varied skills needed for this project are sure to be more difficult to employ if learning is confined to trial and error. Here, gathered into one volume, are many of the strategies, tools, and techniques used by experienced researchers intent on building a high-quality literature review.

New to This Edition

Previous editions of expanded guidance for online resources included reflective activities and various learning tools to improve your comprehension and the addition of supplements to provide assistance in understanding that a literature review is a part of the research process.

New to this edition is the inclusion of directions for using AI when doing a literature review, specifically,

- Directions and suggestions for using AI responsibly when conducting a literature review
- Specific recommendations for using artificial intelligence during each of the six steps of the literature review process
- Suggestions for the selection and use of chatbots for each concept and task presented in this text

Additionally, the writing process explained in Chapter 6 has been revised.

Audience

- Novices wishing to learn how to successfully conduct and publish a systematized literature review will find this text provides a solid outline and practical guidance for the "first timer" to be successful.

- Students wishing to preview the completion of a required literature review will find this book helpful as a means of clarifying what will be expected.
- Beginning researchers can use the book as a tool for learning the craft of producing a successful research project.
- Advanced students may read this text to review their skills and perhaps discover a few new tips.
- Students interested in using AI when conducting a literature review will find this book very helpful.
- Those teaching the craft of research will find here an excellent class text for their students.

This book is mainly intended for two groups of researchers: those completing master's theses and those working on doctoral dissertations. For those doing a class research assignment or completing most master's degree projects, the text will address the type of literature review that summarizes and evaluates the existing knowledge on a particular topic. Some master's theses and all doctoral dissertations require a more sophisticated literature review. This book is also useful for the initial stage of completing a complex literature review, one that requires the student to argue and define a problem needing original research.

While much of the book uses the field of education as its context, the model, strategies, and tools presented apply to a much wider audience within the social sciences. Education is an applied science, so many of the examples and strategies contained in this book consider the literature from a variety of vantage points, including social and organizational psychology, sociology, and group psychology. Thus, students studying these disciplines will also find this text helpful.

Special Features and Text Organization

All students, beginning or advanced, can profit from a straightforward guide for maneuvering through the ambiguities of framing the topic, finding and managing information, developing the argument, and acquiring the composition skills needed to produce a successful literature review or a clear process for developing any research paper. There are definite tricks of the trade for making this project an efficient and rewarding experience. This text is organized using an applied critical-thinking model. The six-step literature review process guides the reader logically through the project, including ways to get help from specific AI bots. These steps are as follows:

- Step 1. Select and define a topic.
- Step 2. Develop the tools of argumentation.
- Step 3. Search the literature.
- Step 4. Survey the literature.
- Step 5. Critique the literature.
- Step 6. Write the review.

Each chapter addresses a specific step of this model and contains several learning aids to increase reader comprehension. These learning aids include the following:

- The verso page for each chapter provides the reader with a pre-set to learning. Recommended chapter reading and learning strategies, as well as suggested learning outcomes, are provided.
- Key vocabulary terms appear at the beginning of each chapter, allowing the reader to focus on key ideas.
- As a readiness tool, a chapter overview outlines the content of each chapter.
- A chapter subsection discusses the use of AI entitled A Bit About Bots.
- Exercises assist the reader through the more involved procedures. These guided practice opportunities and examples aid in making sure the reader understands the text.
- Specific references suggest software that can simplify the work of organizing material and revising the written composition.
- Specific suggestions and references to the use of chatbots for each concept and task are outlined in the text entitled AI Helpful Hints.
- Graphics and charts clarify the key topics under discussion, and models present pictures that tie together complex themes and procedures.
- At the end of each chapter, tips provide specific ideas for using the material covered in the chapter. These tips help the reader make immediate, practical use of the material.
- Each chapter has a summary that gives a brief recap of the chapter's contents and acts as an aid for the reader to review information.

- The chapters end with a reflective oversight exercise, which assists the reader in solidifying understanding of the chapter content.
- The end of the text contains a glossary of definitions of frequently used terms and a reference list of works for further reading.

When confronting the task of successfully producing a literature review, there are three choices. The researcher can proceed in an organized fashion using a book such as this one as a guide. It is also possible to search the internet or go to YouTube and play roulette with a myriad of entries and explanations, hoping to find legitimate guidance. Or one can plunge blindly into the project and try to find the time and resources needed while hoping for the best. Experienced researchers know that trial and error is frustrating, time consuming, and rarely successful. Learning the key ideas in this text will promote success while limiting frustration and lost time.

Some Basics About Using AI When Conducting a Literature Review

Artificial intelligence (AI) has fast become a term that everyone is using but which has little definitional meaning. So, we begin by providing simple definitions for AI and how it works.

> *AI, artificial intelligence,* is "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages". *(Oxford Dictionary of Fables and Phrases).*

These AI systems learn by gathering information according to the rules that direct them. They reason by using those rules to gather, analyze, synthesize, and draw conclusions about the data queried. AI systems are also self-correcting and will adjust based on additional and corrective feedback.

> *Chatbots* are AI applications designed to interact using human conversation. They use *natural language processing (NLP), machine learning,* and a *defined set of governing rules* to communicate with their human users.

Here's how chatbots work. The bot

- Receives a query in a text format
- Interprets and understands the text using the bot's natural language programming function
- Uses dynamic rules (algorithms) to gather and generate answers from large databases in response to the query
- Formulates responses based on the understanding of the original inquiry
- Defines its responses as more interactions occur and feedback is given; can learn and revise its responses

AI and chatbots are morphing and improving at an almost exponential rate. Regardless of this rapid pace of change, the following suggestions are extremely relevant for those new to using AI and/or new to conducting a literature review. Above all, remember AI and chatbots assist, they do not replace your thinking or your work. Chatbots are not your agents; they are aides and advisors.

Think Then Do

The old admonition, *garbage in, garbage out* especially applies to working with AI and chatbots. Whether framing the strategy or executing the simplest query, careful thinking and specificity of action are required to ensure a productive outcome. Taking the time up front to strategize, plan, and organize activities will definitely pay off. As suggested in the introduction of this text, *pack wisely before you begin*. Consider the following suggestions when you are initially setting up and beginning to use AI and when planning an activity, executing that action, and reviewing your work.

1. *Setting up to use AI*

   Selectively choose and have a working knowledge of the chatbots you will use during your literature review before you begin. Having a general plan for the use of specific bots before beginning your literature search will give you the opportunity to have a coordinated plan for executing your literature review. In addition to knowing how you'll search, survey, and critique, you will also have specific ideas about how to use AI in each of those

processes. Having a coordinated strategy is important because knowing how you're going to use AI through the literature review process allows you to have a comprehensive understanding of how to set up your search and how to organize and catalog your data. Good front-end planning reduces the need for unnecessary revision on the backend. It also prevents intake paralysis. Controlling the avalanche of data you will receive when working with AI requires a seamless transfer from data retrieval to data organizing, cataloging, and summarizing. Failing to do so will result in reams of information, either piling up in high stacks on your desk or having data gobbling up the gigs of free space on your computer drive or the cloud. The mental paralysis resulting from dealing with mountains of data is neither productive nor pleasurable. Taking the time to determine which bots to use, how they work, and how you will query them before you begin will pay off many times over as you proceed through your literature review.

2. *Planning an activity*

   When using AI, have a clear and concise understanding of the task you are working on before proceeding. Whether you're trying to *focus your research interest, understand how claims work,* or *build your advocacy argument* for the review itself, you need to have task clarity. Know the specific steps needed to complete that task. This is especially true when formulating the queries for the chatbots. Be specific. Clear task understanding is required so intelligent queries can be formed and AI responses can be understood and evaluated. AI relies on specificity. The more specific you are, the more accurate the response from AI. Specificity also provides a yardstick by which responses can be understood and evaluated. Clearly understanding the task provides a criterion for choosing the appropriate chatbot(s) for the activity. Finally, before embarking on your first task, have a clear plan for cataloging and organizing your work. Select and have a working knowledge of the reference manager and all-purpose bot applications to be used in tandem with them.

3. *Executing the task*

   Begin by developing clearly written query statements. The 5Ws work here. When formulating a question, include the who, what, where, when, why, and how elements as appropriate. Bots are very good at reading the English language, but they can't read your mind. At least not yet. So, unless you want to ask endless

questions for clarity, enjoy going on rabbit runs, or are content with general or nebulous responses, be specific. The more specificity in your query, the more specific the response. Using Boolean-type logic can also assist you in developing strong queries. Qualifying the question to what you want to know and what you don't want to know will help pinpoint the response. Having your queries in hand, select the appropriate bot for this exercise. Take a minute or two to picture what a preferred response would look like. If necessary, jot down some criteria points to refer to. Also, have your cataloging and organization strategy set up to record responses.

4. *Reviewing your work*

   Have a verification plan. Do due diligence. Crosscheck your references and triangulate responses. Validate the integrity of the data. *N.B. do not quote AI responses, but always review and site original sources*. Ensure that references are properly catalogued and organized according to plan. Keep detailed notes referencing the queries, responses, and evaluation. Include the processes and computer applications used. Code to note the entries for easy reference. Detailed notes provide the breadcrumbs for future referencing of this material.

Be Skeptical: Verify

Most creditable bots dealing with research and the literature review will suggest that you cross-reference the materials and the responses they provide. A good verification strategy requires double-checking the bot response and cross-checking responses by querying two or more bots with the same question. A process of triangulation (gathering data from three sources to pinpoint the accuracy of the response) should be used when engaging bots in any activity. As mentioned, each bot has its peculiar algorithm and is referencing a specific database. To ensure accuracy, gather data from three points and compare the similarities and differences. Accuracy can be checked by double-checking original references across the three sources. When surveying the literature, do not quote AI but always use original sources. AI summaries and synopses are starting points. Review them, then go back to the original sources, particularly when verifying your evidence. Beware of AI hallucinating false claims, sites, and research. Always check source credibility. When a bot makes a claim, the case and its evidence should be checked for source credibility. Validate all AI claims to avoid being fooled by AI making mistakes.

Kick the Tires

Take the time necessary to *kick the tires*. As with doing the literature review, there will be an urgency to dive right in and use the first chatbot you find. Time is always scarce; engaging in frivolous peripheral explorations can seem wasteful. Be mindful of the admonition, caveat emptor, or let the buyer beware, and you will be a prudent buyer. Bots can become expensive. They are a money-making businesses. Spending hundreds of dollars on subscriptions you may or may not be able to use can become a problem.

Budgets are not the only consideration. Chatbots have specific strengths and weaknesses. Each uses a particular format for inputs and outputs. Their algorithmic roles and databases vary, thus possibly providing different responses. Some bots have multi-purpose functionality, while others have a specific application.

Like buying a home or a car, it is prudent to look at the various makes and models of chatbots to determine which ones are best for you. A productive evaluation and analysis of chatbots requires you to know your strengths and weaknesses and to understand the tasks and processes of doing a literature review. Also know your competency for using AI-types of computer applications.

Before kicking the tires, take the time to do a self-analysis of your strengths and weaknesses. This analysis will help develop criteria for the type of chatbots you need. When choosing the likely chatbot candidates, you should confer with your research librarian, talk to the research faculty in your program, and check online for assistance. Develop criteria from your needs and wants to winnow the recommendations to a short list of likely candidates. Experiment with these bots. Develop practice queries and see how they respond. Then choose the ones that work best. Remember, there is *a pay-to-play* element with chatbots. When experimenting, use the limited time or free versions. Make sure you understand the budgetary aspects of the decision.

Set a Strategy

The general dictum for using AI in research is *AI assists; it doesn't replace*. Having a clear strategy for the use of AI in doing a literature review will accomplish three things. First, it can provide the guide rails to ensure that you are authoring not scribing your research. Second, these guide rails can also prevent AI rabbit runs and AI avalanches. Last, a clear strategy addresses the GIGO problem.

1. *Always have the first and last word*. From developing the initial research question to critiquing the final arguments, the initial thinking and final work belongs to you. You control the process. This means when initially formulating a task, you work independently of AI assistance.
2. *Each step of the literature review must be created and authored by you*. These rules begin with the process of exploration, where you create and refine your preliminary topic statement.
3. *Surveying the literature is a fairly straightforward process*. Assembling and organizing the literature can be greatly assisted by AI's various chatbots. However, at the point where analysis and synthesis are required, you must be the primary author.
4. *The critique of the literature is your responsibility and must be a product of your work*. As stated in the first chapter, you are the learner, and this knowledge is the essence of the learning. The person who needs to know must make the argument—must make the case. Both the arguments of discovery and advocacy are the reasoning and the evidence for your thesis. They are the essence and fundamental purpose for doing the literature review. The case made by the discovery and advocacy arguments is the "know" of the literature review. Since you are conducting and authoring the literature review, you must discover and create the "know" and be prepared to defend your case orally.
5. As stated in Chapter 6, you must take care to ensure that while bots may help you plan, write, audit, and edit, you are actually doing those processes on your own and using bot inputs in an advisory capacity only. Consider AI as one of your outside readers.

We suggest a four-step process to employ when engaging AI chatbots. It is *plan, query, compare, and verify*.

- *Plan*. Before attempting the task, have an idea of what an acceptable task outcome might look like. Perhaps criteria can be developed to measure the outcome. Now, develop the queries that can elicit a comprehensive response from the chatbots. Develop a line of questioning that can qualify and clarify the bot's response to be available if needed. Finally, consider questions that will enable you to drill down to provide more detailed responses and to explore the different aspects provided by the bot response. Organize your queries in written form, as they will need to be used across the bots you have selected.

- *Query*. Use the questions as written. Be skeptical, and use your common sense when viewing responses. Keep an open mind. Check the responses for relevancy, reliability, and accuracy. Look for errors and omissions. Follow up as necessary using your prepared lines of questioning. Repeat the same process for each bot you employ.
- *Compare*. When doing your comparisons, picture a Venn diagram. The strategy here is to verify those responses in common and to explore and validate those sources particular to an individual bot. Once this analysis is completed, you can now formulate how to use the bot responses, what to include, and what to exclude.
- *Verify*. Having the final information obtained from the bots determined, go back to their original sources and verify their arguments and conclusions. Check to see they have been properly vetted. Ensure they are in complete alignment with your analysis. This is particularly true when using citations provided by chatbots. Look for biases, misinterpretations, and gross generalizations. Be wary, as stated before, bots can hallucinate. Remember, bots provide hearsay and secondhand analysis. It's your job to go to the source and validate the specifics.

Something to Think About

The widespread use of artificial intelligence has environmental implications. The energy needed to produce and power artificial intelligence operations is growing at an alarming rate. Energy use will surely increase exponentially as AI usage becomes commonplace. This will put an additional strain on our already burdened energy matrix and will place further demands on our presently depleted and scarce natural resources. The need for conservation is a pressing issue. AI usage can only add to our existing environmental crisis. The major threats to our fragile ecosystem, such as greenhouse gases and air and water pollution, can only become more calamitous as AI usage increases. Stressed renewable and non-renewable energy resources will become even more stressed. So as with other major drains on our natural resources, adopting and applying practical rules of conservation must become a way of life. While you may not be able to address these macro issues, you can personally conserve by using AI reasonably and responsibly. If nothing else, keep aware of the energy you are expending and budget your usage accordingly. Practicing individual conservation is one step in the right direction. If we all conserve, we can be a small part of the solution and not a big part of the problem. Please use AI conscientiously.

Introduction

Doing and Producing a Literature Review

An Overview

If I have seen further, it is by standing on the shoulders of Giants.

—Isaac Newton letter to Robert Hooke, 1675

Key Vocabulary

- **artificial intelligence:** A mechanical intelligence that mimics the working of the human brain. It has the ability of a computer to perform tasks fundamentally conducted by human beings. It can reproduce human learning and can recall, comprehend, and problem solve. Evolving and generative in its learning capacity, AI uses neural networks to process and generate.
- **chatbot:** A computer software application designed to simulate human conversation by interacting through voice or text to provide humanlike responses to questions posed to it. Chatbots answer questions, provide information, and do tasks. They use AI to process, understand, and respond to user input.
- **disposition:** The tendency of someone to act in a certain manner under given circumstances; a prevailing tendency or inclination.
- **literature review:** A written document that develops the case that argues a thesis. This case is based on a comprehensive understanding of the current knowledge of the topic. A literature review synthesizes current knowledge pertaining to the research question. This synthesis is the foundation that, through the use of logical argumentation, allows the researcher to build a convincing thesis case.
- **narrative literature review:** A written document that critically reviews the relevant literature on a research topic, presenting a

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logical case that establishes a thesis delineating what is currently known about the subject.

- **problem identification review:** A review that extends the work of the narrative review to identify and define an unanswered question requiring new primary research.
- **rational thinking:** Acting based on logic, as opposed to impulse, not using reason and logic.
- **reflective oversight:** A contemplative thought process that critically regulates, assesses, and corrects the personal knowledge, skills, and tasks used to conduct the literature review.
- **topic:** A research area refined by interest, an academic discipline, and an understanding of relevant key works and core concepts.

A literature review might be a class assignment, a thesis for a master's degree, or the foundation for doctoral research. Whether approaching this task for the first time or as an experienced researcher, doing a literature review should build the research, enhance your knowledge of a subject. and enable you to confidently share what you have learned with others. It should also provide you with the satisfaction of completing a successful project. Most importantly, the literature review presents a unique opportunity to engage in a deep learning experience about a subject. To succeed, avoid the problem mentioned by a colleague of the authors: "Some people do not have the patience and foresight to do it right the first time, but have infinite patience and capacity to do it over, and over, and over again."

The good news is that you do not need to depend on the trial-and-error approach. There are known procedures and skills to make this task easier and more efficient. This book provides a road map to guide you in producing a literature review that will contribute to your field. Conscientiously using this book will help you arrive successfully at your destination. Each chapter offers tips and tools from many sources, including ones from the authors' experience. Using the six-step process offered here will make it possible to plan and complete a successful literature review without wasting time and effort.

To Begin

This overview presents the key concepts to be mastered to produce a quality literature review. They are procedure, disposition, and reflection.

The chapter begins by defining what the basic literature review is, its purpose, and the procedure for doing a basic literature review. However, simply knowing correct procedure will not guarantee success. How you are disposed to engage in this endeavor and how you are able to self-evaluate the quality and accuracy of the work are also necessary to produce success. The personal dispositions necessary to complete a project of this scope are described in the following pages. A self-reflection process used to assist in managing and evaluating the quality and accuracy of the work is outlined. This chapter concludes with a brief discussion of what needs to be done to prepare to do a literature review.

The fundamental concepts and procedures presented provide the framework for successfully conducting a basic review and provide the reader the necessary foundation that serves as a basis for taking part in advanced reviews. A brief introduction to these advanced reviews will be covered in Supplement B.

The Purpose of a Literature Review

Isaac Newton didn't write, *if you have seen further . . .* or, *if it has seen further . . .* ; he wrote: "If *I have seen further, it is by standing on the shoulders of others."* Research is first a personal endeavor.

The major reason for conducting research, particularly a literature review, is for you to *come to know something*, to learn about something. A literature review is a formal inquiry conducted by you to gather and obtain knowledge. Mastering this content brings expertise and the power to converse with others about the **topic**, as well as the power to conduct research to extend or expand the knowledge about the subject.

The first step of an inquiry is learning what we already know about a topic. It is only then that you, the researcher, can present a case about what has already been learned as well as what we yet need to learn.

This *coming to know* is not based on whim or serendipity but guided and curated by the rules previously set forth by experts. These rules are based on good sense. They are based on the use of rational argument and prescribed procedure. They are designed to establish facts, not unfounded opinion; science, not alchemy.

The primary purpose of doing a literature review is for the reviewer to become competently conversant in the subject and competently skilled at doing research about it. These competencies create a subject expert and an individual capable of applying that knowledge in the field.

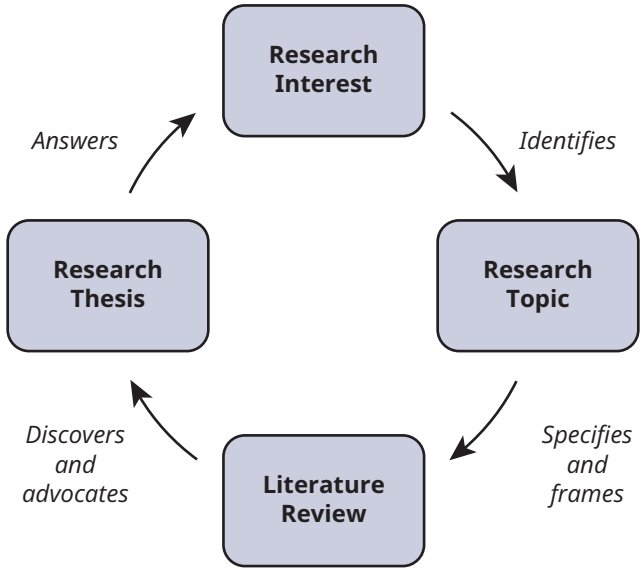
What Is the Endgame?

Before going headlong into the task, it is time to *stop and think*. What do you need from this literature review? What are you trying to find out?

Ask yourself, "Am I trying to present a position, *a thesis,* that defines the current state of knowledge about a topic, or am I using the current knowledge about a topic as the basis for arguing a thesis that defines a research problem for further study?"

Literature reviews have different purposes depending on the nature of the inquiry. If the purpose of the inquiry is to argue a position about the current state of knowledge on a topic, then the inquiry is a basic **narrative literature review**. The narrative review (Figure I.1) documents, analyzes, and draws conclusions about what is known about a particular topic. Its purpose is to produce a position on the state of that knowledge; this is the *thesis statement*. Notice the narrative review process is cyclical. It begins with a research interest, which is developed into the research topic. The **topic** provides the parameters for conducting the literature review. The review discovers and defines what is known about the topic, leading to the formulation of conclusions, the research thesis. The thesis answers the research interest.

Figure I.1 The Basic Narrative Literature Review



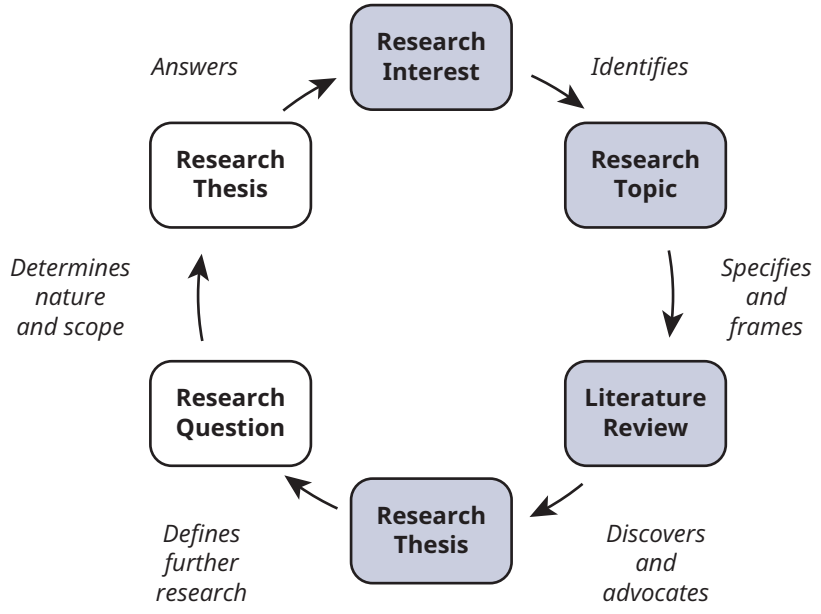
If the purpose of the inquiry is to review the literature to uncover a research problem for further study, then it is a **problem identification review**.

The narrative review begins by selecting and identifying a research interest for inquiry. This is the preliminary study question. As you proceed, you will narrow and refine this interest into a research topic based on an initial

exploration of the literature. The research topic must be a clear and concise statement that defines and describes what will be researched. It identifies and frames the scope of the literature review. The literature review canvasses the literature while documenting and cataloguing pertinent knowledge. From this information, it presents an evidence-based analysis of the present understanding of the topic. The product of the narrative review is a case that argues what is known about the topic. The case's conclusion is a thesis statement that answers the question posed by the research interest. Many class research assignments and master's degree thesis projects require a basic narrative literature review.

The problem identification review (Figure I.2) has a different purpose and additional demands. It not only presents the current state of knowledge about a topic (the darkened four boxes of Figure I.2) but must also argue how this knowledge reasonably leads to a problem or to a question requiring original research. As shown in the figure, the problem adds to the cyclical process presented in Figure I.1. As with the narrative literature review, the review begins with a research intent leading to the research topic, which frames and specifies the work of the literature review. The product of the review is a research thesis that identifies the question for further research and the methodology for the research project. As with any good research, the results of the research include questions for further study, a new research interest.

Figure I.2 The Research Problem Identification Literature Review



In the problem identification review, the researcher first addresses the current state of knowledge about the study question. Then, based on these findings, the researcher proposes a thesis defining an issue for further study. This thesis becomes the problem or question of a new research study. The conclusions drawn not only define the research question but also frame the appropriate methods to be used for conducting the research.

Advanced master's theses and doctoral dissertations use the problem identification review as the basis for providing the background statements and the argument for the research study. The problem identification literature review is used to write Chapter 1 ("Introduction") and Chapter 2 ("Review of the Literature") of the standard five-chapter dissertation document. Not having a quality literature review in hand when developing these chapters will surely result in numerous unsuccessful attempts: "You can't write what you don't know." The problem identification literature review is the starting point for research projects such as dissertations.

While narrative reviews and problem identification reviews seek different outcomes, the manner in which they uncover knowledge and produce a thesis is similar.

The Literature Review Defined

A **literature review** is a written argument that supports a thesis position by building a case from credible evidence obtained from previous research. It provides the context and the background about the current knowledge of the topic and lays out a logical case to defend the conclusions it draws. Here is the definition of a literature review:

> *A literature review is a written document that presents a logically argued case founded on a comprehensive understanding of the current state of knowledge about a topic of study. This case establishes a convincing thesis to answer the study's question.*

The Literature Review Process

Producing a literature review is an exercise in applied critical thinking.

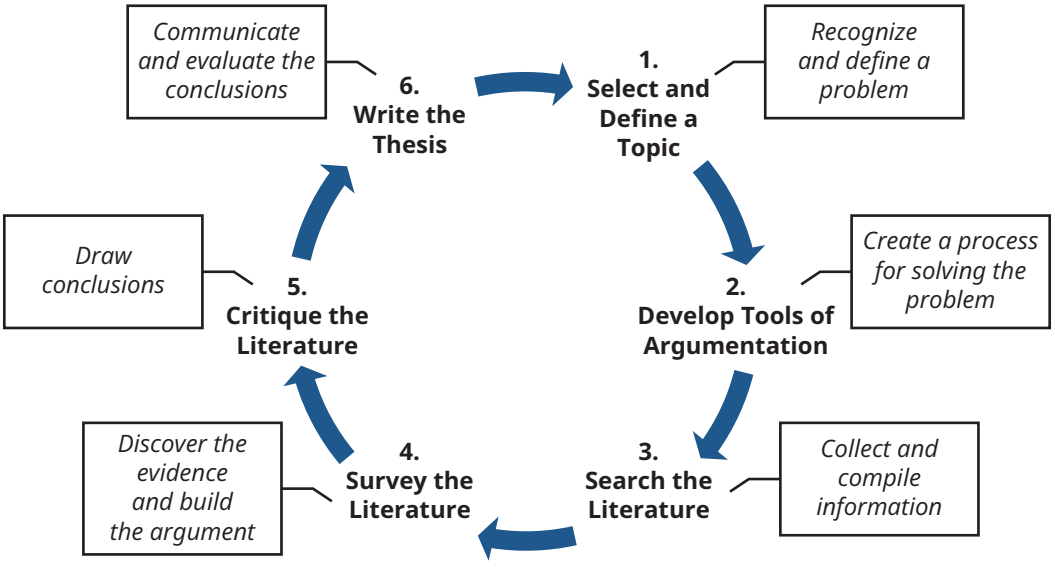
Dewey, in his text *How We Think* (1909), codified the critical-thinking process in five steps: *"(i) a felt difficulty; (ii) its location and definition; (iii) suggestion of possible solution; (iv) development by reasoning of the bearing of the suggestion; (v) further observation and experiment leading to its acceptance or rejection; that is the conclusion of belief or disbelief."* Dewey saw these five distinct steps as the process of reflective thought, what we call critical thinking.

Critically thinking is a deliberate process. Here are a couple of examples. You might recall learning the scientific method in a high school science class. *Collect the facts. Construct the hypotheses. Do an experiment, and test the hypotheses. Analyze the results. Draw a conclusion, and report your results*. Or you might have used a formal problem-solving process as part of a decision-making activity in your workplace. Most likely, the following steps were used: *develop a mindset; define the problem; create solution criteria, consider possible solutions; choose a solution; implement it; and evaluate it*. Notice both the scientific method and problem-solving process align. They follow the same basic steps and sequence. Both processes are applications of Dewey's critical-thinking process. This is also true for the literature review.

A literature review is an organized, systematic way to research a chosen topic. First, the subject of the inquiry must be recognized. It must be clearly defined and described. Once a researcher has a clear definition of the subject in question, information can be collected about the topic. These data are catalogued and organized in such a fashion that some sense can be made of them. The data can then be interpreted and analyzed to build the evidence or reasons to form conclusions. The conclusions formed present the logical case for answering the question first inquired about. Finally, the argument is examined; the researcher looks for holes in the reasoning and weighs the conclusions drawn against competing alternatives. Once this process is completed, the answer can be shared with others.

Figure I.3 shows the steps for conducting a literature review, as matched to the applied critical-thinking process.

Figure I.3 The Literature Review Is an Applied Critical-Thinking Process



As with any critical thinking, doing a literature review is a developmental process in which each step leads to the next (Figure I.3). Following is a brief explanation of the six steps of this process.

Step 1. Select and Define a Topic—*Recognize and Define a Problem*

A topic of the research problem can emanate from a problem occurring in the workplace or a situation in the community, or it can arise in the course of your studies. It is an issue that has grabbed your attention. To capture it, reduce it to writing. Once done, you have created an interest statement. The interest statement is the broad recognition of a potential topic and, when recognized, must be reshaped appropriately. Its concepts must be parsed and defined specifically. Its language must be converted from initial generic wording to specific academic parlance to allow the researcher to successfully identify the appropriate literature in the pertinent academic discipline. Refining the terms used, accurately framing the focus of the interest, and selecting the appropriate academic knowledge base are the tasks to be completed to define a research topic.

Step 2. Develop Tools for Argumentation—*Create a Process for Solving the Problem*

Since a literature review must present a logically argued case founded on a comprehensive understanding of the current state of knowledge, then the rules and tools for building an informal argument must be employed. A credible case is not simply reporting about a collection of information or presenting an opinion about the topic. A credible case produces conclusions resulting from a logical presentation of supporting evidence. The tools for evidence building, argument development, and logical reasoning are the building blocks used to make a credible case.

A literature review uses two types of argument to build its case. The first argument builds the findings of the case. The second argument forms the case's conclusions. The result is a well-argued thesis. Both arguments are based on sound reasoning and logical construction.

Step 3. Search the Literature—*Collect and Compile Information*

A literature search determines the data to be included in the review. It does this by winnowing the research information to only the data that provide the strongest evidence to support the thesis case. A literature search should preview, select, and organize the data for study by using the skills of skimming, scanning, and mapping the data. Next, the researcher catalogs and documents the relevant data.

Step 4. Survey the Literature—*Discover the Evidence and Build the Argument*

The literature survey assembles, organizes, and analyzes the data on the current knowledge about the topic. The data are logically arranged and patterned as evidence to produce a set of logically defensible findings about what is known concerning the topic.

Step 5. Critique the Literature—*Draw Conclusions*

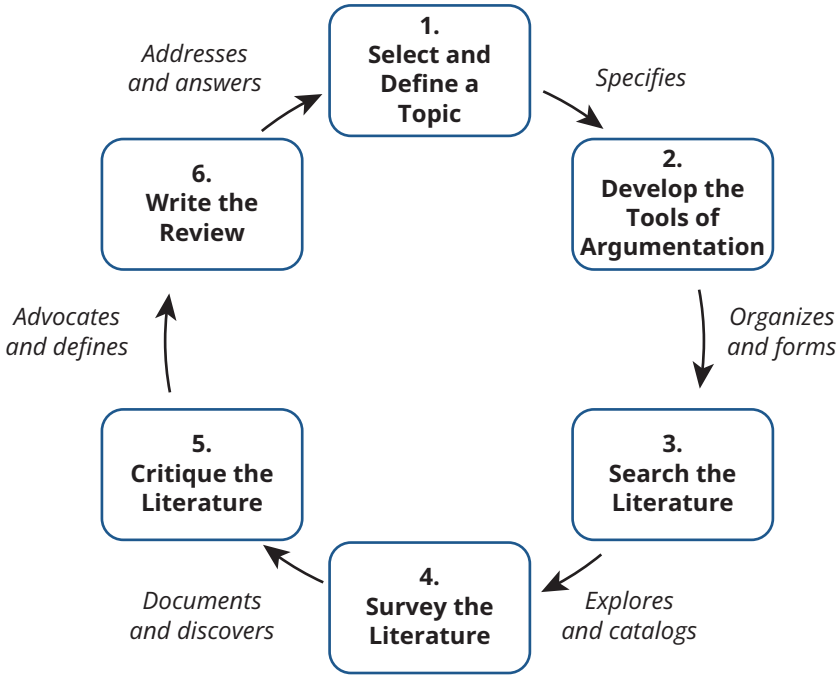
The literature critique analyzes and interprets the findings gained from the survey of literature to produce a response to the research topic. The findings are logically arranged as conclusions to form the argument that justifies the thesis statement. The literature critique analyzes how current knowledge answers the research question.

Step 6. Write the Thesis—*Communicate and Evaluate the Conclusions*

Writing the thesis produces a document that communicates the results of the project. Through a process of composing and refining, the literature review document becomes a work that accurately conveys the results of the research to its intended audience. This composition requires writing, auditing, and editing over the course of multiple drafts to produce a polished final product—one that is accurate, complete, and understandable. Writing done in the first five steps of the literature review is used as the foundation for writing the review.

The preceding discussion, although condensed, relates the procedural steps necessary to complete a literature review. The following chapters will fully describe each step and will provide help in completing each of the tasks necessary for building a strong thesis case and conducting a good review, and is depicted in Figure I.4.

Figure I.4 The Literature Review Model



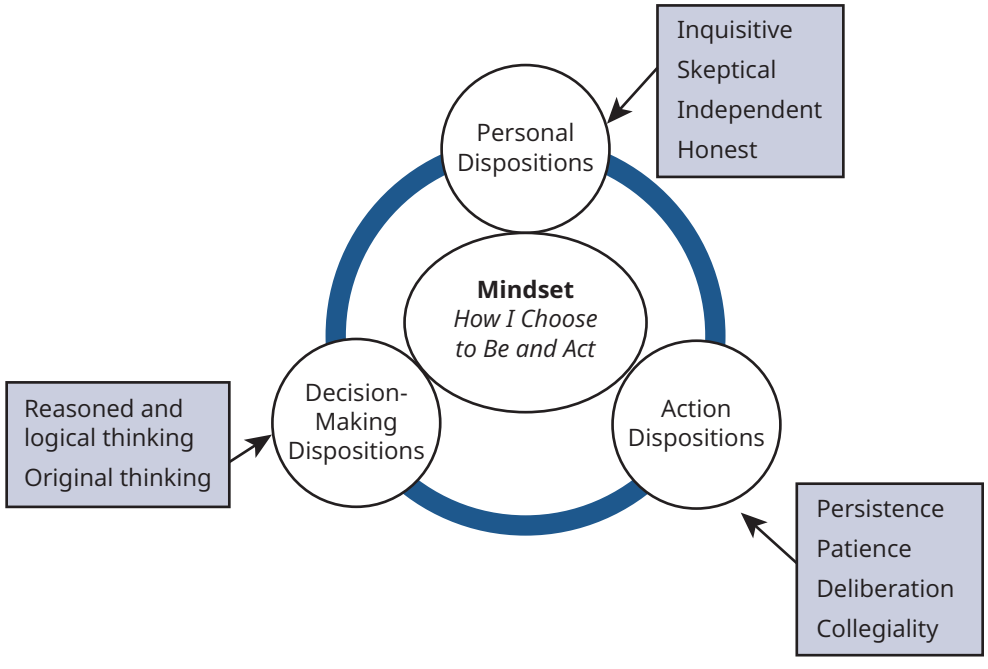
Next, consider the mental attitude necessary to complete a project. The following two sections of the introduction will discuss the personal dispositions required to take on this task and the reflection process used to manage and evaluate the quality and accuracy of the work.

Mindset: Personal Dispositions on Thinking, Doing, and Deciding

Your mental and emotional frame of mind play a crucial role in the quality of your work. The choice to think critically when confronting a problem is not automatic. First reactions are emotional ones. You must choose to put your emotions in neutral in order to choose to think critically. A researcher must reflect, think rationally, and then move ahead. This mindset, or disposition, defines how you choose to be and to act before working on an analytical task, such as a literature review. Mindset provides the context and the venue for critical thinking.

You must be disposed to use a particular mindset to guide how you will behave, make decisions, and act. This deportment is critically important now in the age of the overpowering capabilities of AI. As depicted in Figure I.5, the critical thinker's mindset is categorized into three disposition types: personal, action, and decision-making. Each disposition identifies the traits and behaviors of the researcher, directing the quality of learning, the accuracy and authenticity of the product, and ownership of the work.

Figure I.5 The Critical Thinker's Mindset



Personal Dispositions

As topically depicted in Figure I.5, the personal dispositions describe the type of intellectual qualities and actions the individual uses when engaging in a task. The critical thinker is disposed to the following personal characteristics and behaviors:

- ***Inquisitive.*** You must have an inquiring mind, a natural inquisitiveness, and a fundamental need to learn and to discover new ideas.
- ***Skeptical.*** Proceed with skepticism and question everything.
- ***Independent.*** Do not blindly accept the positions and conclusions of others but think for yourself. Be an active and independent learner.
- ***Honest.*** Value being truthful to yourself and to others. Hold yourself accountable for your biases, viewpoints, and the conclusions you make. Continually examine and reflect on the veracity of your positions, weighing them against new facts and ideas. Suspend judgment until all facts have been gathered and considered. Be able to adjust and reject your opinions and positions when new facts become known.

Action Dispositions

Intentions are one thing, but actions are another. When you are under pressure, when the stakes are high, and when you are unsure and you must solve a problem in real time, what are you inclined to do? Do you give yourself time to carefully and calmly ensure that you have gathered all the relevant information necessary to have a complete understanding of the situation? Do you approach the question and your thought processes in an orderly fashion? Do you take the time to review all your information, and are you confident enough to share your thinking with a trusted colleague? Do you choose to act rationally or choose to act from emotions? Do you want to get it right or just get it done? You are not to allow other humans or artificial intelligence to do it for you.

Decide to get it right the first time. You know you must accomplish this task in real time. Realize that solving problems can be a vexing and difficult experience, so come pre-armed to the problem. The action dispositions describe the qualities of the critical thinker when engaged in a task. Exhibit the following characteristics:

- ***Persistence.*** Be diligent. Regardless of the time spent working, the confusion and miscues encountered, or the magnitude of the task, stay with it until it is completed.
- ***Patience.*** Take the time necessary to carefully and thoroughly complete the work before you.
- ***Deliberation.*** Take care to focus on the task at hand. Strive to maintain orderliness when working with complex tasks.
- ***Collegiality.*** Be able to share ideas and conclusions with others for feedback and evaluation. Seek out the criticism of others, knowing that sharing knowledge confirms or improves your work.
- ***Ownership.*** You are the researcher. You own and control the learning process. You make the decisions for each step of the process and the content of the work. You are the synthesizer and analyst. You are the author. You are the owner of the work. There is no equivocation here.

Decision-Making Dispositions

Decision-making dispositions are the thought processes used when solving problems and deciding the directions to pursue when engaging in a task. At this point in the problem-solving process, be firmly committed to rational thought. Consider different viewpoints and weigh all the evidence and positions. That done, decide.

- ***Reasoned and logical thinking.*** Employ **rational thinking,** weighing all data for its veracity and value. Seek evidence, examine the pros and cons of any question, and take positions based on strong evidence.
- ***Circumspect thinking.*** Approach your task with an open mind; consider and learn from divergent viewpoints. Strive to maintain objectivity and guard against having any predetermined conclusions.
- ***Original thinking.*** The process of coming to know, the argument making, evidence organization, and the thesis conclusion are done by you. How the argument is presented and how it's written are done by you. Original thinking creates original work. This is your literature review, you're coming to know, you're thinking.

The Ethics of Reviewing the Literature

> Every man carries about him a touchstone, if he will make use of it, to distinguish substantial gold from the superficial glitterings, truth from appearances. And indeed, the use and benefit of this touchstone, which is natural reason, is spoiled and lost only by assuming prejudices, overweening presumption, and narrowing our minds.
>
> —John Lock, *An Essay Concerning Human Understanding*

Remember, your literature review is first a scientific inquiry. Science seeks to uncover truth. It uses critical thinking and scientific reasoning to formulate its conclusion. The practice of good science requires constant impartiality, a precision in all efforts, and the tenacity to develop work according to acceptable standards of quality and quantity. As with any scientific endeavor, a literature review must, above all, be objective, accurate, and adequate.

As a scientific inquiry, a literature review must be an unbiased search for the unvarnished truth. Impartiality means neither privilege nor prejudice has a place in its workings. Shades of cultural leanings and personal beliefs hamper the question of impartiality and as such, must be both consciously and subconsciously recognized and avoided. You, the reviewer, must actively subjugate individual opinion and personal belief, for they invariably lead to predetermination and presupposition.

Accuracy of the inquiry means precision of observation, fact-finding, and evidence building and the adherence to the principles of sound reasoning. Haphazard or careless dispositions, disregard for accepted standards, or an uneducated method will not only nullify the quality of the endeavor but could also promulgate false conclusions.

Adequacy of inquiry means the subject of inquiry has been correctly observed and accounted for. The accounts and observations accurately portray all aspects of the subject. No observations and accounts can portray something other than the subject of inquiry. If the collecting and surveying of the literature is clouded by bias of perception, selection, or prejudgment, the inaccuracy of the findings will lead to false accounts and conclusions. When analyzing and interpreting, do not deceive nor be deceived by fallacious thinking or faulty reasoning. Maintain the highest standards of sound reasoning and warranted judgment. Do not entertain implications, for they can be founded in either fallacy or fact. Assumptions and suppositions are not allowed. What you conclude must be based on

strong evidence logically leading to your conclusions. Inferences can only be made when you can logically connect them to the facts.

Since the literature review has a specific task within scientific inquiry, it also has specific tenets of conduct to be followed. They are the following:

- You may not manipulate data to defend a preferred outcome. Do not fabricate data, extend its value, or take it out of context.
- Do your own research. AI, librarians, and other assistants point you in the right direction but do not do your work for you.
- Present only what you believe to be factual. Do not use fallacious arguments to try to prove a case.
- Present all sides of the question. Do not be tempted to strengthen a case by omitting divergent evidence. Search for the truth rather than confirm a personal opinion.
- Plagiarism can easily sneak into a review unless it is carefully avoided. Remember that plagiarism is not just using another person's words. It also includes presenting ideas as your own when they are actually from another's research source. This is particularly the case when using AI to provide the complete work rather than providing data from which the work can be completed.
- You must be the sole writer of your literature review. Outside readers and editors must maintain an advisory role.

Ethics determine the principal criteria for conducting research. Ethical behavior is an essential quality of the good reviewer.

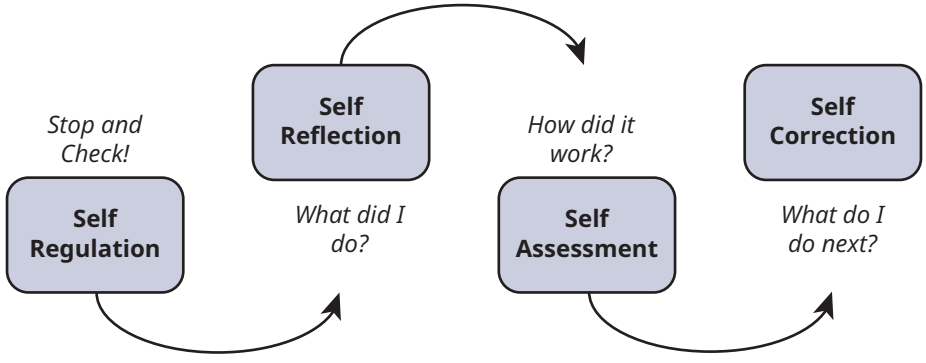
Reflective Oversight

After consideration of the procedures and dispositions required for doing a literature review, next consider how to manage and evaluate the work. You might define this concept as metacognition; we call it **reflective oversight**. Reflective oversight is the continuous reflection an individual uses to regulate, assess, and correct the processes we use to take on a task.

Defining Reflective Oversight—Metacognition

Reflective oversight is a four-step process of self-regulation, self-reflection, self-assessment, and self-correction and can be exercised by triggering a reflective time out and asking three questions. What did I do? How did it work? What do I do next? The process is pictorially presented in Figure I.6.

Figure I.6 The Reflective Oversight Process



Step 1. Self-Regulation

Stop and think. Taking a "time out" triggers a frame of mind. You stop tasking for a time to think about what occurred. The "time out" allows for an invaluable check for understanding, recalling what you know and how you came to know it. Here, the right attitude about your work is essential. Be skeptical and honest, persistent and deliberate, reasoned and circumspect. Now that you have completed this step and finished this work, did you do it right? Did you come up with the answer you expected? Continually question yourself. Be critical about your work. Expose and learn from your errors. Avoid biases, preconceived notions, and points of view that can taint or at worst, corrupt any work.

Step 2. Self-Reflection

What did I do? This is your recall exercise. You are doing an examination of what you now know. What did you do? How did you get here? What mental processes did you use to create this new knowledge? Did you use AI as a resource or an author? Be a close observer. Methodically examine the work done, the facts stated, the conclusions drawn, and the process that produced them. Make sure you're the author of that work. Examine any opinions taken and the reasons for holding those opinions. Expose inferences for clarification. Look for the presence of stereotypical thinking, unconscious prejudices, emotional slants, or deficiencies in prior knowledge that could constrain objectivity and affect the validity of the outcome. Look at your completed work. What might have been left out? Have all points of view been considered? What opposing interpretations

exist? Finally, put your work in perspective. Are you where you thought you would be? Is your thinking progressing as planned?

Step 3. Self-Assessment

How did it work? Here, you assess the quality of your work and evaluate the quality of the outcome. Check on the strength, veracity, and totality of your work. Are your ideas and concepts clear and logically constructed? Review the orthodoxy of the mental processes you used to produce your work. Did you correctly apply procedures and processes you selected to do the task? Finally, judge the extent to which your thinking was influenced by deficiencies in knowledge, by stereotypes, prejudices, emotions, or any other factors that constrain objectivity and rationality. Analyze the degree to which your affective dispositions influenced the creation of an unbiased, fair-minded, thorough, and objective interpretation of the work. Ensure the work produced was yours.

Step 4. Self-Correction

What do I do next? Self-assessment has revealed deficiencies. Now you create and execute reasonable solutions and corrective measures to remedy the problems found. Where factual errors were found, make corrections. Where information is missing? Find the new information required and integrate it into your work. Clarify ideas. Correct information collection and compilation. Correct any faulty evidence used to build the argument. Reorder any misplaced information and sequence it in a logical manner. Check the logic of the argument built to ensure its reasonableness and clarity. Adjust any conclusions being drawn to ensure a logical follow-up from the evidence. Revise and adjust any deficiencies in knowledge or in the thought processes. Adjust the personal attitudes and actions as needed. To ensure that the work is progressing in a logical fashion, adjust your thinking and doing for the next steps of the work as needed.

While there is no specific formula or timeline for engaging in the reflective oversight process, there are some logical places where it should occur. Whenever the work reaches a benchmark, the completion of a unit of work, a step in a thought process, or a defined time period, reflective oversight should be used. The oversight process can also be used when a new idea is being considered or when difficulties in moving the work ahead occur. In both of the latter cases, the self-reflective process gives you the ability to examine past work with a critical eye, looking for new ways to think about the work and new strategies to move the ideas or the work forward.

Plan Wisely Before You Begin

The secret of any successful journey—and a literature review *is* a kind of journey—is planning and preparation. The successful reviewer must be physically, mentally, and emotionally ready. The road to success begins with sound plan of action. Conducting a literature review successfully demands a commitment of focused time and effort, which will probably require a fundamental reorganization of daily life. A project such as a literature review cannot take place "when time allows," because time will probably never allow. Rather than trying to fit this new work into the already-busy day, you should seek creative solutions to reorganize the work schedule and the workplace. Here are a few ideas that might help.

First, organize a workspace free from distractions. You will need a computer with an internet connection, copying and printing capability, notepads, writing instruments, and filing space. You will also need at least one high-quality dictionary and a thesaurus. Reference works on research methods and writing skills can also be useful. Reference tools, while available in hard copy, can now be found in abundance on the internet and in your institution's virtual library. Plan the space and arrange it before you begin. As with any complex project, the literature review demands concentrated mental focus. Mental discipline, in turn, demands emotional balance. Make sure that your workspace supports this frame of mind.

Having a plan decreases anxiety and ambiguity. It also increases productivity. Develop a three-tiered plan. First, create an overall project plan and timeline. Second, subdivide the overall plan into sections that act as intermediate goals for the project. Finally, build daily plans from the subsections to schedule the work for each daily session. Remember, a plan implies a goal. Give yourself permission to modify your plan but never proceed without one. Plans provide direction and organization. They build a structure to address the ambiguous and complex world of the literature review. Following are some suggestions for planning:

1. Use the literature review model, Figure I.4, to form the overall plan. First, estimate the available monthly project time. Calculate this in hours. Then, estimate the number of hours it will take to complete the tasks for each step of the literature review. If you are not comfortable assigning task times, consult with colleagues or faculty experienced in literature research to assist you. Next, build an overall plan and timeline for the research. Be sure to include extra time for unplanned eventualities.
2. Subdivide the plan by benchmarks to serve as intermediate goals for the research. These benchmarks can be time or task driven.

A monthly design is one choice if time is the measurement for progress. Use the steps of the literature review model if you use task completion as the measure of progress. Put the benchmarks on a timeline and readjust the overall plan as necessary. The benchmark division drives the work. It provides a solid schedule that addresses the tasks. At this point, the work becomes tangible.

3. Build daily plans for action. Each work session must have its goals. If possible, schedule at least a 2-hour block of time for any work session. Early morning works best for many accomplished writers, allowing the reviewer to focus and concentrate more easily. Schedule quiet time with no interruptions. We recommend daily sessions. While 2-hour sessions each day may be impractical, daily work on the project is advantageous. Allowing extended time between work sessions will blur your focus. The literature review is a serious undertaking that builds one day at a time. You cannot succeed by leaving the work for the last minute. Of course, as you use the daily schedule, the benchmarks and the overall plan may need to change.

Harnessing the Power of Artificial Intelligence

As with many other technological innovations, **artificial intelligence** is an irreplaceable aid for the advancement of human learning. Whether or not AI will be used in doing the research is not the question. The question is, "How will the researcher use AI responsibly?" To be appropriately used, guardrails must be set. These rules norm the researcher's behavior when interacting with AI. The rules are based upon this simple question, "Are you doing the learning?"

Sound planning should also address this question. When planning your research, and specifically your literature review, reflect on how AI will assist in producing data and strategy, while allowing you to maintain ownership and authorship of the work:

1. Set the rules for how you will control the synthesis, analysis, and theory making.
2. Determine the procedures you will use to authenticate and validate the product of an AI query. Always be skeptical and verify.
3. Choose the rules for being a wise consumer of AI. Determine the criteria you will use for selecting the **chatbot** and AI databases you will use.
4. Finally, consider the line of questioning you will employ to achieve the most accurate responses. The tenets of the courtroom oath

apply here. You want the truth, the whole truth, and nothing but the truth. In this case, you want the facts, all the facts, and nothing but the facts.

As with the other facets of your plan, do your homework. Outline how you intend to use AI when doing each phase of your literature review. Make yourself familiar with the various chatbots that assist in doing research, and thoroughly vet the applications before using them. Most importantly, have a plan in place that ensures proper use and oversight of the AI you use. Stick to that plan.

Tips

1. Study the literature review model (Figure I.4). Memorize it if possible. Use this figure to keep yourself on track.
2. Select a topic that is important to you. A subject of true concern or curiosity will produce better work than a topic chosen for expediency.
3. Writing starts now. Write out the topic. Include in this earliest writing what you already know or think you know about the topic. This writing will be the beginning of the project journal. Using a computer to keep the project journal will allow for easy additions and changes as they become necessary.
4. Plan each step and write it out. Completing the work diligently and in order takes far less time than going back to pick up missed steps.
5. Try to make blocks of time available. It is much easier to stay in the proper mindset if you don't have to go through the thought process to arrive at your starting place for only a short period of work time.

Summary

The purpose of this opening was to provide a general introduction to both the conduct and the product of a literature review. These pages also provide a discussion of the dispositions and reflective oversight required to guarantee the success of the project. The preparation tips will help launch a successful literature review. With a preliminary understanding of the project, a thoughtful mindset, and a plan, you

are ready to tackle developing the research topic, which is the subject of Chapter 1.

Checklist

Write your responses to the checklist below. Review what you have written for accuracy and feasibility.

Task	*Completed*
1. Write the definition and the purpose of a literature review.	☐
2. What general interest are you going to explore? Be specific	☐
3. Describe your plan to use the six steps needed to create a successful literature review.	☐
4. Describe the tools and workspace you have planned. How will you create your space?	☐
5. Write up your plan for the use of AI.	☐

Reflective Exercise Concept

The purpose of reflective exercise is to examine what you have learned and self-correct any deficiencies in your understanding of each chapter. As with the concept of reflective oversight, the exercise includes four steps. ***Step 1. Your mindset*** *is an examination of the mental dispositions you had while reading and studying the chapter.* ***Step 2. Check for understanding*** *is a recounting of what you've learned and what tasks you are able to accomplish.* ***Step 3. How am I learning:*** *Here, you think about your thinking. Reflect on the learning processes and strategies you used to understand this chapter.* ***Step 4. Self-correction*** *is a gap analysis. Using the responses from the previous three steps, analyze the difference between what was successful and what wasn't to determine what needs to be done. Build an action plan to address the issues to be remediated.*

This is the time to begin your research diary. This diary will be your daily account of the work you are doing while learning about and conducting your literature review. You will use it as a

planning tool, a source of data, and a personal account of your reflections as you journey down this path. As you do your reflective exercise for this chapter, record its results in your diary. For a full explanation of the use and design of a research journal, see "Writing a Journal" in Supplement C in the reference section of this text.

Reflective Exercise

A. Your mindset
   - Did you approach this chapter with curiosity and an honest need to learn?
   - Did you question foreign ideas or concepts?
   - Do you feel you are beginning to understand what a literature review is and how to build a literature review?

B. Check for understanding
   - Do you have a definitional understanding of the steps for conducting a literature review?
   - Do you know the type of literature review needed for your research?
   - Do you understand the ethical tenets required for conducting a responsible literature review?

C. How am I learning?
   - What thinking and doing helped you to understand this chapter?
   - What steps are you taking to prepare wisely before you embark on conducting your literature review?

D. Reflect to correct
   - What more do you need to know about the purpose and process of literature reviews?
   - What do you have to do next to succeed at creating your literature review?
   - What do you do to create and maintain a healthy attitude and constructive actions?

Step 1. Select and Define a Topic

- **Task 1.** Identify and Define a Subject for Study
- **Task 2.** Translate the Personal Interest of Concern Into a Research Query
  - *Activity 1. Discovering the Subject of Your Interest or Issue of Concern*
  - *Activity 2. Focus a Research Interest*
  - *Activity 3. Limit the Interest*
  - *Activity 4. Select a Perspective*
  - *Activity 5. Reflect and Develop a Query Statement*
- **Task 3.** Link the Research Query to the Appropriate Discipline
  - *Activity 1. Become Familiar With the Academic Terminology Concerning the Study Topic*
  - *Activity 2. Gain Entry to the Literature Concerning the Subject of Study*
  - *Activity 3. Consult With Research Librarian(s)*
- **Task 4.** Write the Preliminary Research Topic Statement

Chapter Reading and Learning Strategy

This chapter contains both critical concepts and detail-directed activities. To maximize your learning capacity, employ the SQRRR* strategy when studying the text. Mind map the steps given for creating your preliminary topic statement. Journal your responses to the activities provided in your research diary. Use the entries in your research diary when you are consulting with the research librarian.

*See Supplement D in the reference section of this text.

Chapter Learning Outcomes

At the completion of this chapter, you should

- Understand and apply the developmental steps for creating a preliminary topic statement
- Construct a preliminary topic statement that is researchable, relevant, and of significance
- Be proficient in accessing appropriate reference texts
- Be able to independently access and retrieve all necessary material from both your library stacks and online resources
- Be able to identify and select appropriate AI tools to assist in selecting and defining a topic.

Step 1: Select and Define a Topic

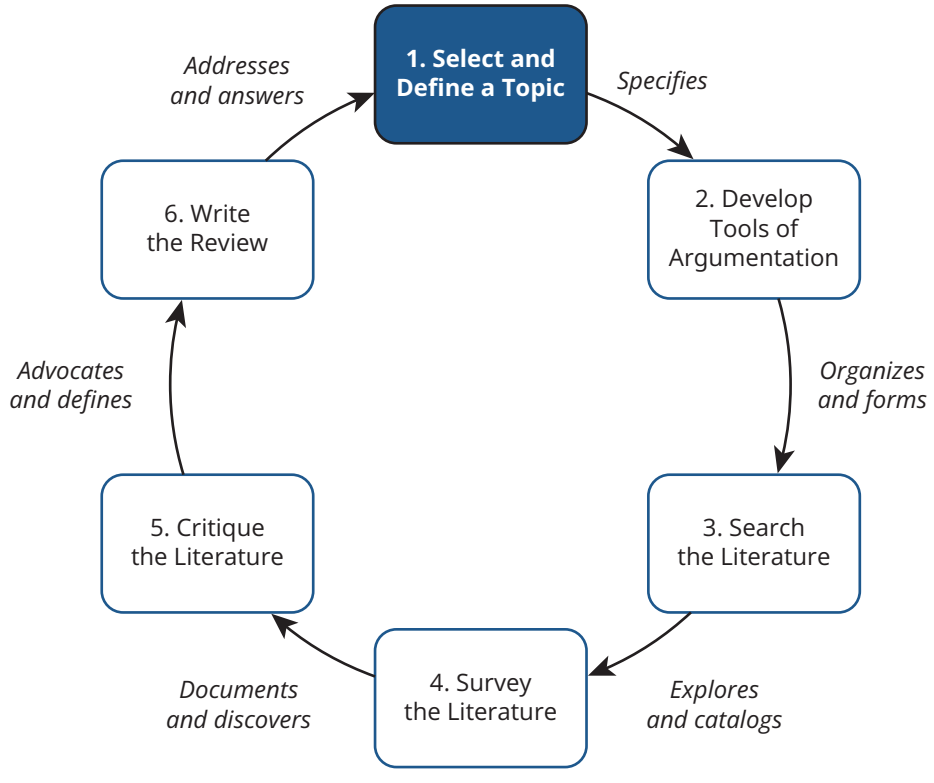
1

From Personal Interest to Formal Research Topic

All there is to thinking is seeing something noticeable, which makes you see something you weren't noticing, which makes you see something that isn't even visible.

—Leo Strauss

The Literature Review Model



Key Vocabulary

- **apprehension:** An act of learning, a need to grasp the knowledge to solve a problem or issue, either through a sensory perception or a grasping with the mind.
- **bias:** A strong feeling in favor of or against one group or one side of an argument, often not based on fair judgment.
- **grey literature:** materials, reports, and research output produced by organizations or individuals that is published outside of traditional commercial or academic publishing channels.
- **personal interest or concern:** The subject or question that provokes the need to inquire. This should not be confused with a preliminary topic.
- **preliminary topic:** A research interest statement that has been defined, limited to one subject of study, and linked to an appropriate academic discipline, enabling access to the relevant literature.
- **research query:** A personal interest or concern that has been refined by focus, limit, and perspective.

Chapter Overview

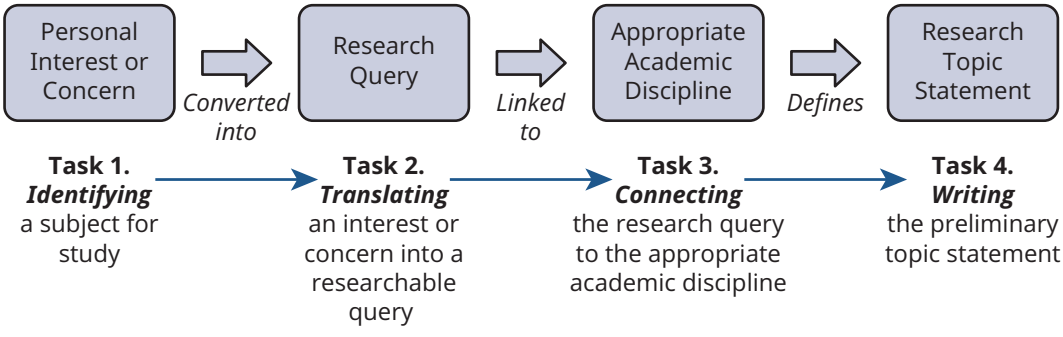
Recognizing and defining a subject for study is the first step of a literature review. Subjects for study in the social sciences usually originate from the conflicts, issues, concerns, or beliefs encountered in daily life. Why do some actions in the course of work succeed while others fail? Why do some strategies or tactics succeed more than others? Why do people think, learn, and act in certain ways? In the social sciences, the issues or concerns tend to focus on questions about individuals, groups, or organizations and seek to examine some attitude, belief, behavior, or task. These questions stem from curiosity. They stimulate the need to seek answers, to do research. Notice that when you ask these types of questions, both emotional and intellectual capacities are in play.

Emotions trigger a curiosity that provides personal energy and the motivation, the *how* and *why,* to act on the question. Appropriate motivation and energy are a matter of disposition. How you are disposed will determine the effort and commitment put toward any action. As discussed in the introduction, a proper mindset is crucial to a successful inquiry.

Intellect identifies the subject, the *what* of the question, and directs the course of action. The *what* is defined as a **personal interest or concern**. When doing a literature review, defining and clarifying the subject, the *what* of the research, is the first order of business. The question that initially provoked curiosity must evolve to become a suitable subject for study.

Four tasks are required to create a research topic statement. They are (1) identifying a subject for study, (2) translating this personal interest or concern into a **research query**, (3) connecting the research query to the appropriate academic discipline, and (4) writing the **preliminary topic** statement. These tasks are the subject of this chapter. Figure 1.1 illustrates this process.

Figure 1.1 The Process of Creating the Research Topic Statement



A Bit About Bots

There are numerous chatbots that deal with field research and, in particular, a literature review. They address a myriad of tasks and cover an inexhaustible range of information. So how does the researcher navigate this ocean of data without being drowned in an ocean of information? Here are some rules to consider.

Go slow to go fast. Do not rush into *ChatGPT* shooting questions from the hip. Random and general questions will provide reams of general responses, which will lead to floundering in a sea of information with no lifeboat in sight. Be methodical when you're choosing your AI options. Take your time; go shopping for your bots. Find the right bot for the task. Be specific when initially planning. Note the tasks and content of your research. A well-developed plan provides the specifics to identify appropriate chatbot types and queries for the task at hand. Having clearly identified tasks makes it easy to search for the chatbot functions that fit your needs.

Be a wise consumer; use what works. Chatbots vary in quality in terms of their ease of use, databases, and reliability. When choosing chatbots, ask others. Take the time to talk to your research advisors and research librarians for their recommendations. Check with other researchers in the field to find out what works for them. Here's a trick: Even ask the all-purpose chatbots like *ChatGPT* or *Copilot* for their recommendations. Gather the information from all of the sources and compare notes. Test drive the chatbots you are interested in. Then make your selection.

Trust but verify. Limiting queries to only include data sources that are vetted, peer reviewed, and empirically verified is always the standard. That, however, is not enough to guarantee authenticity, reliability, or the validity of the data. Some AI datasets cannot distinguish between legitimate and fictitious data. They can include alternative universes where hoaxes abound. Fake research, including citations, can be a part of those datasets. To ensure the data you are retrieving are authentic and contain valid information, use an interrater process to confirm your findings. Your validation rules are simple. You want the real facts, nothing but the facts, and all the facts. The rules for *Data Appraisal,* assessing the quality of data being collected, apply here. (See Supplement B for a full explanation.) Here's how the interrater works. Multiple bots that perform the same task are used. Query them with the same question and compare their responses. Which of their responses are the same? Which differ? Confirm the similarities and check the outliers. If responses seem to be contradictory, use an additional bot to validate. This might seem like an extra step. Given data retrieval is lightning fast and data comparison is an easy task, the comparisons are easily made and well worth the effort.

Check under the hood. Make sure the bot works as advertised. All AI datasets are not equal. Different datasets can leave out important information needed for your research. Make sure the AI dataset you are using contains the information relevant to your research. Chatbots use different algorithms to query AI data. You may have an AI dataset that is robust and addresses your research, but if the chat box algorithm is not designed correctly, it can miss or distort the responses it gives to your query. Here's where a test drive can serve you. Using the chatbots in question, ask a question about your research topic that you know the answer to, and see what responses the chatbot gives. Check the response given against what you know is fact to determine the accuracy of the response. Additionally, engage an expert to check the response's quality and veracity.

Remember GIGO. Garbage in, garbage out. Using AI data of poor quality will set a weak, if not false, foundation for your review and your research. No good can come from that. An old adage applies here: "Hoe in haste, harvest in tears." Rushing through the process of bot selection without proper care and attention will only lead to poor results and setbacks.

One last suggestion. How you question the bot will determine the quality and accuracy of the response given. So the structure of your question is important. Generally, when you are framing your question, consider the 5Ws (who, what, why, where, and when). Don't forget the *H* as well. Many times, your bot query will begin with how. When working with a chatbot, you really are having a conversation with another individual. Also remember that the chatbots you are using are designed to produce iterative responses. They will usually ask you if you want examples of elements of a response, ask if you want more specifics, or ask what question you would have next. You can also ask to clarify, define, or provide examples of an element in the response. Narrowing or expanding the next query based on a response can be helpful. You can also ask the bot to exclude an element in response while expanding others. Since bot responses are iterative, keep the conversation going until you get what you need.

To help you get acquainted with using AI as part of your research arsenal, this text includes an AI Helpful Hints section for the tasks and activities used in the Six-Step Literature Review Process. These tips suggest concrete uses for chatbots and AI to be used when completing that task.

Building bots is a cottage industry. It is growing and changing almost exponentially. We have included the most popular chatbots in the *Helpful Hints* sections of this text. We have taken pains to ensure they are the latest iterations. Probably sooner rather than later, however, they will morph, and some may disappear. Rather than avoiding the problem of obsolescence by generalizing about chatbot uses, we thought it better to refer to actual bots, so you, the reader, can see how a chatbot can assist you in the task you are working on. Where the bot has changed, it is hoped, you will be able to use the identification information provided in this text to identify a similar bot providing the same assistance.

Task 1. Identify a Subject for Study

A typical applied research project in the social sciences begins by selecting an everyday problem, interest, or concern for further study. Selecting a suitable interest for research requires great care and forethought. "Hoe in haste, harvest in tears." A hasty choice of topic can have catastrophic consequences. Since the subject of study determines and directs the

course of the work, employing good decision-making skills when making this selection is a must. A subject for study should ignite curiosity, engage emotions, and challenge thinking. Choose accordingly.

Personal reflection and introspection will uncover potential interests. For example: What is the learning style that best fits the high-achieving independent learner? What are the characteristics of leaders who successfully lead organizations through a crisis?

Professional and public settings also provide a rich context for this introspection and supply fruitful opportunities for the discovery of a possible research topic. Examples from the workplace can identify both interests and concerns. Examples include, What causes the conflict among members of committee workgroups? How accurate are standardized test scores in measuring individual student achievement?

Organizationally, each of the following questions might provide a great beginning for topic development: What is the recipe for creating successful change? Is having a forceful leader a precondition for a successful group? How does a school principal guide a teaching staff toward improving student performance?

If introspection about the workplace does not provide an interest or concern, other sources can be used. Topic suggestions can come from experts knowledgeable in academic disciplines or from skilled practitioners in the field. Seek out those professionals you respect and ask them their thoughts about potential topics.

Perhaps reading various academic and professional trade journals can provide potential subjects. Journal articles frequently suggest topics for further research.

Tapping into media and professional association reports about current issues can also uncover research alternatives. The current national, state, or local debates and initiatives concerning your professional field can produce research interests as well.

You can also identify the theoretical debates occurring in a chosen academic field. Weighing into the debate by applying applicable theory to argue the issue can very well be a subject for research. What theories in cognitive psychology speak to the developmental learning abilities of students? What does sociological theory predict about group behavior? How does theory in cultural anthropology provide an understanding of the culture of the work community? Theoretical models in the various social sciences can always provide new insights to both practical and theoretical questions. Potential subjects of study abound here.

Finally, ask "Dr. Google." Chatbots such as *ChatGPT* can be used to focus and clarify your interest. These AI tools can search the literature to identify specific keywords or phrases relevant to your issue, themes, topics, and gaps in the research to crystallize study interest and develop the topic for research.

The following is a list of possible resources to assist in identifying a subject for study:

- Workplace observation
- Professional experience
- Suggestions from experts
- Academic journals
- Topical debates within your profession
- Examinations of academic theory in your field
- AI queries

Activity 1. Discovering the Subject of Your Interest or Issue of Concern

Think back. Have you ever been confronted by a foreign idea, an unexplained issue, or a lack of knowledge about your studies or an issue in your workplace? This is an incomprehension, a not knowing, and should trigger an **apprehension**, a need to gain an understanding about this unfamiliar reality. Now, being aware that something is awry triggers you to stop and think. Something is off, but you aren't sure what it is. You are vaguely able to point at it, give it a name, depict it, or see that it operates differently than expected. You see something, but it's not clear. What are you seeing? You have consciously uncovered a possible research interest.

AI Helpful Hints

Task 1, Activity 1

AI applications such as *Google Scholar* and *Semantic Scholar* can assist in identifying trends, gaps, and debates about your interest; many are not immediately seen. These analytic search engines can identify both predominant and emerging topics for your interest area.

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The multipurpose bots such as *ChatGPT* are valuable tools that can access and analyze vast amounts of information based on your research parameters and keywords. Here are some of the particular uses where they can assist:

Trend analyses to identify emerging niche and gaps in the present research.

- Summarize publications, such as books, articles, and research studies, to produce key points and major concepts to identify possible research interests.
- Generate keywords, topics, and possible hypotheses by synthesizing existing research to identify possible research interests.
- Engage in interactive brainstorming to develop research interests, topics, and possible research questions.
- Assist in organizing initial resources to help organize thinking.

Exercises

Exercises are found throughout this text to help with the various tasks of developing a literature review. The first four exercises in this chapter will employ free writes. A *free write* is spontaneous writing done without reference to notes or outlines. Its purpose is to explore what you have already internalized about a subject. Free write exercises will lead you through the four tasks; one will appear at the end of each of this chapter's subsections. The subject statement for each exercise is followed by guiding questions to help you free write. Respond to each question by writing ideas as they occur to you.

Use a separate page for each session. Write the topic and the questions for that exercise at the head of the paper. Then, answer each question in descending order. Read the question aloud, and then act quickly, allowing ideas and written responses to flow. As ideas come to mind, write them as simple, independent, declarative statements, one after the other, as quickly as possible. Do not be concerned with spelling, grammar, or composition.

Allow no more than 15 minutes for each session. If you have exhausted your responses to the questions before the end of 15 minutes, wait for a minute, and then push yourself to find three more responses. After the

exercise, leave the page, without reading it, for about a day. At the end of the 24-hour period, go back to your writing for that exercise. Read, review, edit, delete, and add whatever comes to mind. Follow this pattern for the exercise in each of the next four subsections.

Exercise 1.1

This exercise is asking you to stop and reflect. Think deeply; consider an issue or concept that caused you to feel apprehension about what you experienced. Once you can picture the disconnect, use the following questions to assist you to fully uncover this possible research interest:

1. Describe your personal interest or issue.
2. What are the component parts of this interest?
3. Why did you become curious about this question?

Researcher Bias, Note Well

Researchers have opinions about the problems in their field and often have pet viewpoints to which they are committed. These preconceptions and personal attachments are both strengths and weaknesses in a research effort. Personal attachment to an interest provides the passion and dedication necessary for conducting good research. However, personal attachment can also carry **bias** and opinion, causing researchers to jump to premature conclusions. Rather than arriving at a conclusion based on methodical scholarly work, it is easy to succumb to bias. While bias and opinion can never be removed completely, they must be recognized and controlled.

How does a researcher control bias and opinion? First, careful introspection can bring these personal views forward where they can be identified for what they are. By rationally identifying and confronting these views, the researcher can control personal bias and opinion and commit to being open-minded, skeptical, and considerate of research data. If these attachments remain embedded and unidentified, the research can be severely compromised. A researcher hobbled by unchecked bias can only produce biased findings.

Everyone has opinions and biases. Reflect beyond the commonly recognized ones, such as race, religion, politics, and gender, and consider also the endless variety of each individual's life experiences that influence viewpoint and decision-making. For example, was your

upbringing urban or rural? What and who were your early influences, and how have they formed your thinking? Is your view of the world formed by where you were raised? Whether we grew up in the desert, plains, forests, coasts, cities, or farms, none of us arrives at research as a blank slate. Honest, accurate research demands awareness of where there might be potholes that can throw the path of discovery off course.

Also consider the hidden biases. AI is as accurate as the database it is relying on. Be careful to avoid the hidden biases born from the bot's selection of sources. Responses based on non-embedded or an incomplete set of sources can provide skewed and possibly biased responses. Moreover, be extremely critical of all information travelling on the main highways of the web.

Be it a query on the web or the daily conversation over the backyard fences of social media, biased thought and erroneous information pervade our conversations. **Grey literature** abounds and is seamlessly woven in with vetted publications. Research hallucinations are present. Biased and slanted texts are commonplace.

Intentionally oblivious, the media today with its targeting algorithms draws and captivates us like the ancient sirens. All things seem to look credible, and as Caliban reflects in *The Tempest*: "Be not afeard; the isle is full of noises, sounds, and sweet airs, that give delight and hurt not monsters." Today's World Wide Web is a lawless place and like the old West has no civilizing rules or marshals to protect its inhabitants. This particularly holds true for researchers. The researcher's work is done in the protected confines of vetted communities such as *Gale*, *JSTOR*, *ProQuest*, and *EBSCO*, to name a few. Be reminded of the old Latin warning, caveat emptor, let the buyer beware.

For example, while grey literature is lauded as avant-garde, at the forefront of research, and free of publisher bias, the bottom line is that grey literature is neither published nor vetted. A general rule applies to anything gathered from the web and particularly here. When dealing with grey literature, presume it to be unreliable or untrustworthy until proven otherwise. Remember, good research begins with laying a strong foundation for what we know as fact and understanding what we yet need to find out. This is the purpose of the literature review. This is how research is done. Turning a blind eye to the quality or veracity of the information being gathered is building a case for research for the sake of convenience. Doing otherwise is not just bad science, it's academic lawlessness.

Exercise 1.2

Understanding the Personal Viewpoint

1. What previous knowledge do you have about your interest?
2. What personal experience do you have that influences you about this issue or interest?
3. What are your beliefs, biases, and opinions about this interest or issue? Stop and think. Be honest with yourself.
4. What predisposes you to certain conclusions about the issue or concern of study?
5. How will you identify and isolate your personal bias, opinion, feelings, and intuition to preserve a neutral position as a researcher?

This exercise should uncover some caveats. Preconceived ideas are unavoidable but must not be allowed to control or influence the research. They can, however, be a point of entry to the significance, the *why*, of the research.

Task 2. Translate the Personal Interest or Concern Into a Research Query

After successfully identifying a personal interest or concern as a subject for study, turn to Task 2.

Consider which of these two statements would be easier to research: "How does the weather change from season to season?" Or, "To what degree is March weather in coastal Northern California influenced by an Arctic flow of air?" The second statement plainly works better because it provides a clear definition of the subject. A clear definition allows a direct path to the available literature. Early considerations of a research interest are often stated too broadly. They lack subject focus, limitation, and perspective and are, at best, ill defined.

Activity 2. Focus on a Research Interest

When asked to select a research interest, many beginning researchers will provide a generalized statement. One such statement might be, "To what degree do standardized test scores predict actual student achievement?" The problem with this example is its lack of specificity. Given this statement as presented, could a researcher see and measure the

concern? Of course not. The interest, as expressed, is too broad. Its terms are not clearly defined.

The subject of any interest is defined by its key ideas, those words and phrases creating its meaning. A too-broad interest statement tends to be ambiguous and wordy, in need of precise definition. A hazy interest statement may contain assumptions and inferences that must be clarified. Broad scope and lack of a clear description of key ideas demand revision to sharpen the focus necessary to access the literature.

Examine the question about standardized tests scores stated earlier. What are its key ideas? To identify them, look first for the subjects, verbs, and objects of the sentence. In this interest statement, the subject is *scores*, the verb is *predict*, and the object is *achievement*. These are the key ideas to be examined. When taking apart this interest statement, it quickly becomes clear that this subject is too broad. What type of scores? What content do these test scores assess? What does the verb *predict* mean? How can we measure it? What does the object *achievement* mean? This interest needs to be more precisely defined. If the subject statement is ambiguous, the researcher cannot identify the actual subject of the review. Developing exact definitions for each of the key ideas that make up the interest statement brings the statement into focus. Once the subject is in focus, ensure its topic is limited.

AI Helpful Hints

Task 2, Activity 2

A number of chatbot applications employ various strategies to narrow and focus an interest. Tools such as *Google Trends* can review and analyze research publications, social media, and popular articles to uncover emerging trends. This application also does topic modeling, breaking down broad topics into smaller subjects for research. *Semantic Scholar* can summarize related research and suggest papers to review to focus a researcher's interest. Uncovering redundancies in research can be done with bot applications such as *ResearchRabbit*, which analyzes information and provides responses to help visualize a connection between research articles.

ChatGPT can assist in all of these areas. When using the proper queries, it can do key analysis, topic modeling, research gaps, and trend analysis, and it can suggest research topics and questions based on the literature and data analysis provided.

Activity 3. Limit the Interest

The second refinement limits the subject of interest. Limiting the interest means narrowing the study to one clearly defined subject. Does this interest contain multiple subjects for study? You must choose one subject to study, one that can be examined clearly.

Broad interests often contain multiple subjects that could be studied, each of which could provide important contributions. The trick is to settle on one interest. "I am interested in why students are not achieving," is one such case. This interest could be studied from an individual, group, or organizational perspective. For example, the research perspective could focus on the student, specifically on individual student behavior, attitude, skills, or knowledge. How can a change in student behavior affect performance on an achievement test? How do student attitudes affect performance in certain achievement assessments? Alternatively, the research perspective could focus on group behavior. How does a certain group respond to certain testing conditions? What are the effects of this kind of test on group performance? From an organizational viewpoint, a researcher might ask what effect providing pretest review time has on individual student achievement scores.

AI Helpful Hints

Task 2, Activity 3

Here are a number of chatbots to assist in limiting the research interest. One of the most effective ways of narrowing a research interest is to expose the gaps in the present research. Bots such as *Semantic Scholar* or *Scite.ai* can review the present literature pertaining to your interest to expose research gaps, suggest future work, and determine topics that have been well researched. *Scite.ai* also does topic modeling, breaking down broad topics into smaller subjects for research. Apps such as *Voyant Tools* connect key terms from selected literature to extract key terms that can limit an interest. *ResearchRabbit* and *Semantic Scholar* can also assist in determining research feasibility by reporting the amount of research available to address the interest, as well as the strength of the supporting literature.

Elicit can gather evidence from multiple studies, creating a comprehensive view of a topic. *ChatGPT* can assist in all of these areas.

Exercise 1.3

Limiting the Interest of Your Study

Remember to write your answers in detail so that you end up with a useful reference page:

1. Clearly identify the subject of the study interest.
2. Are you looking at individuals, groups, or organizations?
3. Specifically name the individuals, groups, or organizations that you plan to study.

After limiting the broad interest, usable topic questions appear, such as, "To what degree are state standardized test scores in language arts predictive of individual student success in college placement in remedial classes?" Or, "How does teacher competency in test preparation of students affect student achievement on a standardized test?"

The preceding exercise probably produced many choices for possible research focuses. The next step is to select one of the possible subjects for study.

Activity 4. Select a Perspective

Once the subject focus is selected, choose the perspective or vantage point, the place from which to view the subject. What perspective most appropriately fits the query? Choice of perspective depends on the subject chosen for study and the unit of analysis from which the researcher has chosen to study it. What is the unit of analysis? Is this a study of individuals, groups, or organizations/communities? The unit of analysis is important because social science theory is divided in this way. The subject's unit of analysis must be linked to the appropriate academic discipline to gain access to the pertinent information about the subject.

For example, a researcher might study the communal behavior of groups and the effects this has on standardized testing and student achievement. Perhaps the researcher might address the social interactions that affect student achievement. If the subject is defined from the individual student's perspective, then psychology may provide the best vantage point. If the subject focuses on a community perspective, then cultural anthropology may provide the best vantage point. If the subject is achievement from the perspective of group reactions and

interactions, then sociology may provide the best vantage point. As with the focus, the researcher must narrow the perspective. Probably choices surfaced from the previous exercise. Select the discipline and unit of analysis that present the best perspective for accessing data about the subject of study.

AI Helpful Hints

Task 2, Activity 4

The following chatbots can provide different types of perspectives. *Gemini* can provide multiple perspectives on a topic and synthesize information from various sources. *Scite.ai* can highlight contrasting findings and debates, summarizing opposing viewpoints to provide various perspectives. *Scite* and *Almetric* can analyze the existing research literature and public discourse to provide supporting and contrasting viewpoints on the research interest. The *Connected Papers* app can assist in exploring and analyzing related research types to refine the scope of your research interest. *ChatGPT* can help classify the significance of your research problem or interest by suggesting real-world applications and the social significance of the research interest.

Exercise 1.4

Choosing the Perspective for the Study

1. What academic fields best lend themselves to your subject and perspective for research? (If you are still considering more than one perspective, choose a suitable academic field for each perspective.)
2. What are the specific knowledge areas of this academic field that will best help in exploring and defining the research subject?
3. What knowledge competency do you have in this academic field?
4. What additional knowledge of this academic field do you need to acquire to have a solid foundation to address this interest?

Clearly defined key ideas, a limitation of subject, and the perspective for study transform a broad personal interest into an acceptable research query.

Activity 5. Reflect and Develop a Query Statement

The key to developing a successful research topic is the ability to examine the personal interest, concern, or problem to study. The more clarity and specificity brought to bear in defining the interest, the easier it is to connect this interest to a researchable topic of study.

Experience with students choosing interests shows that beginning researchers sometimes neglect to take the time necessary to reflect on what they will actually study. Selecting an interest of study haphazardly without considering intent, perspective, or vantage point can produce awkward and unsatisfactory results. Therefore, taking time to carefully choose an interest for study is essential for all researchers.

Taking a personal interest and transforming it into a usable research query is much like setting up a photograph. For example, compare selecting a subject for research to photographing a scene. Imagine yourself standing at Big Rock Campground in Joshua Tree National Park. Around you are miles of desert with shifting light and shadow. Perhaps there are also people, reptiles, plants, or insects in your scene. Do you want a photo of an ancient juniper tree, or do you want a picture of a family around a campfire? What is the purpose of the photograph, and what is your goal? If your goal is to record the entire park through time, you would have a lifetime's work. Usually, though, the intent is not to photograph the entire park or to study everything about a subject from all perspectives. Instead, it is to select one worthy subject of interest and to do it justice using your chosen perspective.

For both the photographer and the researcher, an initial interest in a subject triggers the task. In both cases, there is a specific image of the outcome expected. Also, in both cases, that early expectation will, in all likelihood, be different from what results. The selection of the subject of a photograph is just a starting point. A satisfactory end product will appear only after much exploration into focus, intent, and perspective, each of which will change as you delve deeper into the subject. Perhaps the final photo will be substantially different from what was originally conceived. In both photography and research, it is necessary to be willing to see what works and to continue down productive paths and abandon those paths that meander aimlessly without leading to satisfactory results. The first photograph may be of a jagged rock, but the final photo may be a close-up of the quartz fragments in one section of metamorphic stone in that jagged rock.

Like a photographer, a researcher must have a subject of interest that launches the inquiry and must also craft and mold the result. The researcher follows a path that works to define the research interest rather than simply adhering to the original intent. Evidence, whether of the eye or the mind, must lead the way.

AI Helpful Hints

Task 2, Activity 5

AI applications can be very helpful in assisting the development of a research query. *ChatGPT* using a plug-in like *ResearchGPT* can assist in refining research questions, providing nuances for refining the question as well as different perspectives to sharpen its focus. *ResearchGPT* is designed specifically to assist in academic research tasks providing suggestions, brainstorming research questions, and refining the problem statement.

AI applications, such as *Elicit* and *Iris.ai* can also help clarify research questions. *Scholarcy* can assist in summarizing initial research literature to identify key concepts and assist in refining the research query.

Exercise 1.5

Developing the Research Query Statement

This exercise combines and patterns the information gathered from previous free writes. Reflect on and analyze the written information produced by the earlier exercises and develop a specific statement of interest. Initially, this statement could be a single question or research query statement. Make it clear and concise. Develop a second statement that defines the significance of the research. Finally, write a statement that clearly defines the beliefs, values, biases, and opinions relating to your research and note how you will avoid or accommodate them.

Using the information gained through your introspective work in the previous four exercises, answer the following three questions:

1. What is your specific personal interest?
    - The interest, issue, or concern of my research is _____. (Answer in seven sentences.)
    - Cross out the two least important sentences without changing the key idea.
    - Cross out any words or phrases that can be removed without changing the meaning.

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- Reduce the remaining draft to three sentences.
- Be sure the final three sentences identify the subject (what you are studying), perspective (how you are looking at it), and vantage point (which academic field you are using).

2. What contributions to the field justify this research?
3. What are your beliefs, values, biases, and opinions about this interest?
   - Will any of these beliefs, values, biases, and opinions help you in conducting your research?
   - How will you prevent the beliefs and biases contained in your personal viewpoint from affecting the necessary neutral stance of a researcher?

Now, using your answers for Questions 1 through 3, write a statement that clearly defines the interest for your research work, a statement that defines the significance of your research, and a statement that defines your personal tendencies and how you will control them. When completed, you will have a researchable interest.

A quick aside—selecting and defining the topic is also the start of the writing process. Keeping a written journal of all progress begins here and is essential to comprehending and building knowledge. A journal helps to clarify ideas and to process learning. Writing helps clarify thoughts and ideas. The journal is an ideal place to establish an internal dialogue where reflection on learning can be wrestled with and understood. Journals also provide an excellent place for reviewing and planning work. For a detailed explanation on writing a journal, see Supplement C.

Task 3. Link the Research Query to the Appropriate Discipline

The last concern of this chapter is refining the personal interest of a study statement into a suitable topic for formal research. Begin by reviewing your progress so far. Refer back to Figure 1.1, introduced earlier in the chapter. The figure provides four tasks for creating an acceptable topic for research. Reading from left to right, notice that Task 1 is selecting an interest that has been identified as a subject for study. You focused the interest by clarifying and defining its core ideas and then limited the interest to one subject.

Task 2 was to select a perspective, a link to a specific discipline, used to access the pertinent literature. This created a research query statement. Now it is time to reword the personal interest statement using the language of the chosen academic perspective.

Addressing Task 3 of Figure 1.1 leaves personal understanding and turns to the shared knowledge about the subject provided by the academic community. To accomplish this task, align the research interest statement with the external concern and work of that academic community. Why is this important? Without aligning the research interest to the topic of study as addressed by the academic community, there is no avenue or language to gain access and entry to the relevant academic body of knowledge.

Some students believe having a well-defined personal interest statement provides sufficient topic definition to proceed directly into research. These students then complain that they searched the internet, spent hours in the library, and exhausted the library's online resources. They worked hard at gathering information about their topic but could find nothing written on it. These students were using their everyday vocabulary to access the specific language, vocabulary, and discourse of a specialized field.

Rarely does a researcher stumble onto a unique and previously unidentified topic of study. Previous work has been done on almost all of the interests under consideration. So, what is the difficulty? The difficulty is a lack of linkage between the wording of subject definition and appropriate academic terms of the academic discipline. Word usage and meaning are particular to context. All academic fields have an esoteric language to describe their subjects of study. The chances are remote that a researcher's use of everyday language conforms to the technical language an academic field uses.

For example, consider the word *conflict*. Informally, *conflict* is defined as a disagreement or argument or as an incompatibility of goals between parties. As used in the discipline of history, *conflict* could mean a war, as in an armed conflict. As used in organizational psychology, *conflict* is an organizational breakdown of the standard mechanisms of decision-making. As used in social psychology, *conflict* is behavior that occurs when two or more parties disagree. As used in personal psychology, *conflict* may refer to a person's internal struggle. As used in literature, *conflict* is whatever keeps a character from achieving a goal. Each academic discipline defines terms to meet its specific needs.

A researcher must study the specialized vocabulary of the academic field chosen and become familiar with the terminology that identifies the potential subject of study. Once functionally skilled in the appropriate language, a researcher can easily translate the key ideas that provide subject definition and topic definition for the subject of study.

Three activities must be accomplished in order to complete Task 3. They are (1) becoming familiar with the academic terminology, (2) entering the discourse about the intended subject of study, and (3) consulting with a research librarian (Figure 1.2).

Figure 1.2 Task 3: Link the Research Query to the Appropriate Discipline

JOB	PURPOSE	REFERENCES*	LIBRARY ACCESS	VIRTUAL LIBRARY ACCESS
Activity 1	Become familiar with the academic terminology concerning the study topic	Subject-area thesauri and dictionaries	In reference stacks, catalogued by academic discipline	Either: Do a keyword search. Query by keyword, by particular reference type, or by availability online Or Query Library A–Z on the main page of the library website. Reference types will be in alphabetical order.
Activity 2	Gain entry to the literature concerning the subject of study	Subject-area encyclopedias and handbooks		
Activity 3	Consult with a research librarian			

*The reference texts used in Task 3 are particular to a specific academic discipline. Thesauri, dictionaries, encyclopedias, and handbooks are compiled for each social science discipline. Seek out the appropriate ones. Do not use generic references for this task. This is crucial when researching online, as not all sites are reliable.

The reference section of the library provides the necessary tools to easily complete the jobs of Task 3.

Activity 1. Become Familiar With the Academic Terminology Concerning the Study Topic

To complete Activity 1, begin by consulting the *subject-area thesauri and dictionaries* to become familiar with the academic terminology that fits the interest statement. Each of these references has a particular purpose. Use a *subject-area thesaurus* to find the synonyms that link appropriate academic terminology to the keywords of the interest statement. Using this reference may also produce particular words that better define and narrow the topic of study.

The *subject-area dictionary* provides a different reference point. Using the results of the thesaurus search, consult these specialized dictionaries to determine if the definition of the terms selected fits your needs. Note here, when querying subject-area dictionaries and thesauri, locate the language used by the academic discipline to define the topic. These references provide the language familiarity and phrasing necessary to transform the terms of the interest statement into a viable preliminary topic statement, a statement aligned to the chosen academic field. Once you have identified the correct terms that correspond to your interest, you have completed Activity 1.

AI Helpful Hints

Task 3, Activity 1

In addition to using subject area dictionaries and thesauri, AI can also help. Since AI can analyze large amounts of data, it can easily identify technical terms and concepts. Its analysis can provide synonyms and related concepts. It can also identify relevant terminology in various disciplines. AI can also provide specific definitions and explanations of complex or key terms. *Semantic Scholar*, *Ellicit*, and *Iris.ai* are particularly good at this task.

Activity 2. Gain Entry to the Literature Concerning the Subject of Study

Using the newly found terminology, consult the *subject-area handbooks and encyclopedias* to access the academic discourse about the topic. *Subject-area handbooks* discuss the theories relating to the topics of their academic field. They provide a great head start in determining the boundaries for the literature search and in creating an overview of the academic discourse about the subject.

Subject-area handbooks can be organized in three ways. First, handbooks can discuss theory as it evolves. This is done chronologically. A theory is first discussed, and as it changes, the commentary evolves. Second, theories can be organized topically. In this case, find the research topic that aligns to your needs and review the section for the appropriate discussion about that theory. Third, handbooks may be organized around current discussions in the field. This type of handbook deals with the hot topics in the academic area and the emerging theoretical considerations.

Subject-area encyclopedias also provide great access to the academic discourse on the subject. Because encyclopedias are organized alphabetically, it is easy to find the theory and discussion relating to a specific topic. Using the keywords and terms selected from Activity 1, simply page to the reference point in the encyclopedia and read on. The encyclopedic entry will begin with an overview of the subject, followed by a detailed discussion of the relevant theory. Lastly, the entry will list the relevant contributors and authors for further study.

By consulting the appropriate subject-area encyclopedias and handbooks, you will have translated the everyday language of the interest statement into the terminology of an academic field. This will also provide an overview of the topic and the relevant theory and discourse about the topic. Finally, you have built a beginning list of the theories and contributing authors in order to begin the literature search. Activity 3 is complete.

Just a word about where to find these important reference tools in the library: When using a university library, find the reference section or reference stacks. The reference books will be cataloged by academic discipline. Seek out the appropriate discipline for your interest and find the references that address the topic. These tools should be available electronically as well. Access to references should be found on the main page of your library's website.

There are two basic options to use when consulting the library's main page. First, do a keyword search. This query will request three pieces of information: (1) keyword, (2) the particular reference text category, and (3) the library location, which, in this case, is online. For instance, if you are looking for dictionaries, type in *keyword, dictionaries, virtual online*. This query will display all of the reference dictionaries available online. Simply select the academic discipline dictionaries appropriate to your perspective, and you are on your way. The second option can usually be found on the main page of the virtual library portal. It is a subject "hot button" called *Library A–Z*. When clicking this hot button, a new screen will appear providing an alphabetical listing of all the resources in the virtual library. Scroll down to the reference category needed and click it. All of those references will be displayed. For example, say you are looking for handbooks. Click *Library A–Z* on the main page of the library portal. An alphabetical listing of the library resources will appear. Scroll down to the *H* section of the listing, find *Handbooks*, and click that entry. All of the handbooks available will appear, and you can sort through them to determine the appropriate entries for the review.

By using the new language and definitions found when completing Activities 1 and 2, the interest statement is now linked and translated into the vocabulary of the academic discipline. Now it is time to seek advice. Make an appointment with the university's research librarian. Consultation can be done at a university library or online, as available. The purpose is to discuss the research interest as it has now developed. Look for confirmation about your thinking, a critical review of the interest statement, and tips and advice.

AI Helpful Hints

Task 3, Activity 2

AI can be a valuable tool in helping you identify an appropriate academic discipline for the academic query. Analyzing the preliminary query and terminology, it can identify the key concepts from that information. Using those key concepts, AI can do cross-disciplinary mapping to explore topics and subtopics to correlate the research query with related disciplines. Examining the methodological approaches, AI can provide alignments to the various disciplines and the query. AI can view the prominent academic journals of each discipline to provide each discipline's perspective in responding to the research question. Finally, AI chatbots can suggest academic keywords that align with the research query for each discipline. *Research GPT*, *Iris.ai*, and *Elicit* work well with this task. General-purpose AI applications such as *Google Scholar* and *Semantic Scholar* can also provide pertinent information when given specific instructions. *ChatGPT* with appropriate prompting can also assist.

Activity 3. Consult With Research Librarian(s)

Rules for Library Use: A Primer

Before your first trip to the library, whether you are consulting online resources (your library's virtual site) or an actual library, stop for a minute and review some important rules on library use. Heeding these rules will save time and produce better results.

Rule 1. Know Your Librarian

- The research librarian, whether online or in person, is a friend, a guide, and a coach. When using a library for the first time, consult first with a research librarian. Make sure that

you have formed a positive relationship and can rely on the librarian as coach, mentor, and confidant.

Rule 2. Be Purposeful

- Have a clear purpose and plan when researching. Wandering the stacks, exploring the subject catalogue, or surfing websites is entertaining, but it is seldom productive.
- Every time you conduct research, know what you are looking for and where to get it.
- Have a strategy for research. Planning saves time. Know what you want to do before you take your first step. What types of information do you need, and where can they be found? Are you scanning the subject catalogs to refine your topic? Are you consulting the specific subject dictionaries to define terms?
- Have a schedule of work and specific outcomes in mind for the visit. Set goals, and stick to them. Brick-and-mortar and online libraries present many temptations and distractions—a provocative title that catches the eye, a new book from a favorite author, an enticing reference link. You must be disciplined. Honor your time, schedule your breaks, and focus on the task.
- Finally, before ending a session, plan the next tasks. What work must be done next? What is the timeline? What new resources do you need? Address these questions as part of a debriefing with your written notes. Remember, we have short memories. Waiting to write notes later invites ambiguity and misdirection.

Rule 3. Remember That Preparation Equals Efficiency

- Be prepared. Develop and organize cataloging and documenting tools before beginning a research session.
- Use cataloging to codify the library materials you have accessed in such a way that you can easily refer back to them and can properly identify them by the library indexing system for further reference. Cataloging tools range from simple 3 x 5 index cards to research software tools. RefWorks is available on most university websites, or you can purchase software such as EndNote or Citation.
- Know that documentation tools are repositories of notable information. They can store notes about a subject, quotes, and abstracts; further references to explore; subject maps; or a list of tasks to be completed next. Documentation tools contain library data collected for study. These tools also have various levels of sophistication, the simplest being a notebook

or notepad. The more complex and integrated ones are software such as EndNote, Zotero, Microsoft OneNote, ISI Researchsoft Reference Manager, or RefWorks.

- Take the time before you begin researching to build an organizational system that fits your learning style and that will aid you through the entire literature review. Organizing now will save much time and heartache later.

AI Helpful Hints

Task 3, Activity 3

AI can assist in a number of ways when preparing to see your research librarian. Using tools like *ResearchRabbit* or *Academic GPT* can assist in clarifying a research statement. A chatbot like *Semantic Scholar* can assist in determining the right terminology to communicate more effectively with the librarian. Tools like *Research GPT* or *Ellicit* can quickly conduct literature reviews to give you a baseline understanding of existing research. They can also help identify key journals, seminal works, and databases as potential resources to discuss with the librarian. *Research GPT* can also brainstorm questions for the librarian with you to prepare for the meeting. Tools like *ChatGPT* can help you form an outline for your meeting. It can give you a general understanding of library systems, particularly ones similar to your academic library. Having this information will give you a better understanding of the resources being recommended by your librarian.

Task 4. Write the Preliminary Research Topic Statement

You now have the necessary information to complete Task 4: writing the preliminary research topic statement. Using the new language and definitions found when completing Task 3, rewrite the interest statement. Review the reframed statement to determine if it adequately addresses the intent of your interest. If so, you have now constructed a preliminary topic statement for your study. If not, rework and revise the study's focus and vantage point or search the reference works further for other terms that would better suit your interest. Use these options until you are satisfied that the preliminary topic statement aligns with the original interest statement. Task 4 has been accomplished. You are now ready to learn about argumentation.

The following exercise will guide you through the task of transforming the formal interest statement written in Exercise 1.1 into a preliminary topic of research. It requires you to complete the following:

- Conduct a first conversation with a research librarian.
- Define the key terms of the interest statement.
- Translate the key terms and core ideas of the interest statement.
- Rewrite the interest statement into a preliminary topic statement.

Exercise 1.6

Refining the Research Topic Statement

1. Conduct a first conversation with a research librarian.
    a. Make an appointment with a research librarian or connect with your school's online librarian. Explain your research project. Provide the interest statement to the librarian for review and advice. Consider conferring with your research faculty adviser or other faculty member for coaching on the formal research interest statement.
    b. When meeting with the research librarian, review your interest statement. State the perspective and academic vantage point chosen for your interest. Seek advice on the clarity and specificity of your work. If the librarian does not understand your interest as stated, go back to Exercise 1.5 and reframe the interest based on that information.
    c. Ask the librarian to provide a survey of the library. Get the specifics of the inner workings of the reference section, stacks and holdings, periodicals, cataloging system, search capacities, and internet access. Pay particular attention to the library's ability to address the academic field chosen for the study and the stated research interest. If you need more resources to complete your study, consult with the librarian.
    d. Review the key terms and core ideas contained in the interest statement. Ask the librarian how to access the subject-area dictionaries, encyclopedias, handbooks, and other reference books that address these terms and ideas. This can be done in person or online.

2. Define the key terms of the interest statement.
    a. Using the key terms, consult the chosen subject-area dictionaries, encyclopedias, and handbooks. Find the technical definitions of your key terms.
    b. Rewrite the interest statement using the technical terms of that academic field.
    c. Review the reframed statement. Does it still express your intended interest? If it does not, rework and revise the study's focus and vantage point or search the reference works for other terminology to use until the reframed statement expresses your research interest.
    d. When the reframed statement works, go to Number 3.
3. Translate the key terms and core ideas of the interest statement.
    a. Taking your reframed interest statement, search the subject-area encyclopedias, handbooks, yearbooks, and other reference materials for topic areas that address the core ideas contained in your reframed interest. Rewrite as the topic of your study.
    b. Document and catalog the results, noting prevalent authors and theories.
    c. Begin to build subject and author maps for each of the core ideas in the interest statement.
    d. Review all work. Check for accuracy and understanding.
4. Rewrite the interest statement as the preliminary topic statement.

Tips

1. Make sure your interest is specific. Reflect on the key terms that make up your interest statement. Be sure that you clearly understand what the key terms mean and how they interact.
2. Focus the interest to ensure that it is clearly described and singularly defined.
3. Select an academic perspective, and translate the key terms to those used in that academic field.
4. Approach research with an open mind.
5. Document, document, document.

Summary

You now have the preliminary topic for study. You have successfully conducted personal introspection to identify an interest, and you have refined that interest as a potential subject suitable for study. Next is learning about argumentation. While the work seems linear, it is not. Notice that in Figure 1.1 the personal interest informs the research query. The opposite also holds true. The research query informs the personal interest. The thinking needed to unmask the specific ideas in one of these statements requires knowledge of the other. The deep or fundamental understanding of one refines the understanding of the other, as it is with a research query and the academic discipline knowledge base. The more you learn about the topic through initial reading in the literature, the more refined the topic becomes. Refinement is an essential part of subject exploration and topic definition.

Checklist

Task	*Completed*
1. Write a clear, specific description of your personal interest.	☐
2. Define the key concepts and terms contained in your area of interest.	☐
3. Reread your interest statement to check that you are studying only one subject. Is the subject too broad or too narrow?	☐
4. Select an academic perspective, a specific field of study that aligns with your research subject.	☐
5. Become familiar with the resources and the structure of your library. Engage a research librarian in an introductory session regarding the subject of study.	☐
6. Prepare documenting tools.	☐
7. Rewrite the research query statement as a preliminary topic statement using the correct academic terms.	☐

Reflective Exercise

A. Your mindset

This chapter is very complex and full of detailed directions and tasks. Given this context

- Were you able to maintain your focus and stay with the text?
- Did you work to gain a deep understanding of the concepts and procedures explained in this chapter?
- Were you patient with yourself when you grappled with any unfamiliar concepts?

B. Check for understanding

- Were you able to construct your topic statement to your satisfaction?
  - Did you identify an appropriate subject for study?
  - Is your subject of interest researchable?
  - Did you connect to an academic discipline?
  - Does your preliminary topic statement reflect what you want to do, and is it relevant and significant to the academic discipline?

C. How am I learning?

- Were you doing a check for understanding while reading this chapter so you could maximize your ability to retain the information?
- Were you able to collaboratively learn when working with the research librarian?

D. Reflect to correct

- What do you still need to know to successfully build a preliminary topic statement?
- What more do you need to know to effectively use the library resources available? Who do you need to consult to make this happen?
- Who do you need to consult to succeed at these tasks?