work by applying the Broad Model Rubric to work by both practitioners and students like yourself.

Learning Outcomes

By the end of this chapter you will be able to:

- Apply strategies to analyze disciplinary insights and expose their sources of conflict
- Apply the Broad Model Rubric to assess examples of practitioner and student performance of STEP 5
- Reflect on how the interdisciplinary research process has enlarged your understanding of the problem
- Evaluate your own performance of STEP 6 using the Broad Model Rubric

Having completed the first four STEPS of the Broad Model, you are now ready to perform the two remaining STEPS. STEP 5 calls for critically analyzing disciplinary insights and locating sources of conflict between them. STEP 6 involves reflecting on how using an interdisciplinary approach (as reflected in the Broad Model) has enlarged your understanding of the problem. These remaining STEPS are italicized in Figure 12.1.

The applicability of this rubric extends beyond the classroom since many real-world complex problems benefit from this kind of careful, systematic, and holistic analysis. Developing an effective research strategy for addressing complex problems and identifying deficiencies in expert work are vital skills for life in contemporary complex societies. These analytical skills will serve you long after graduation.

STEP 5: Critically Analyze the Disciplinary Insights Into the Problem

This discussion has two objectives: (1) to provide proven strategies for analyzing the disciplinary insights you have gathered and locate sources of conflict between them and (2) to demonstrate how the Broad Model Rubric is used to assess examples of practitioner and student performance of STEP 5, to prepare you to evaluate your own performance of this STEP. We discuss how entry-level students can critically analyze the insights of unfamiliar disciplines in Box 12.1 at the end of this section.

Figure 12.1 The Broad Model of Interdisciplinary Process (STEPS 5 and 6)

STEP 1: Define the problem or state the research question.

STEP 2: Justify using an interdisciplinary approach.

STEP 3: Identify relevant disciplines.

STEP 4: Conduct a literature search.

STEP 5: Critically analyze the disciplinary insights into the problem and locate their sources of conflict.

STEP 6: Reflect on how using an interdisciplinary approach has enlarged your understanding of the problem.

Strategies for Critically Analyzing Disciplinary Insights

There are three proven strategies for critically analyzing disciplinary insights and locating their sources of conflict: identifying the key elements of each insight, organizing this information, and critically analyzing it. In Chapter 8 you were introduced to the basic principles of critical reading. Here, you will build on those insights with an eye to comparing and contrasting the insights produced by different disciplines.

Strategy No. 1: Identify the Key Elements of Each Insight

In critically analyzing insights, we are interested in identifying the key elements of each insight so that we can locate points of conflict between them. As you read each insight closely, look for the elements that follow. Depending on the author, some of this information will be easy to spot while other information will require more effort. For instance, it is common for authors to make their theories and methods of research and data collection explicit, but it is not common for them to make their assumptions and epistemologies explicit. In addition to the usual bibliographic information (author's name, publication date, and title), these are the key elements that you should be looking for as you read each insight:

- The author's disciplinary affiliation. This provides important clues about the author's perspective and assumptions concerning the problem. For instance, if the author is writing from the perspective of economics (which we have said includes most areas of business), then it is likely that the author will assume the participants are making rational choices motivated by economic self-interest.
- The author's insights, thesis, or argument (that is, the author's conclusions and justified supporting arguments)
- The author's assumption(s) concerning the problem

- The author's epistemological position (which usually reflects the epistemology of the author's discipline)
- Key concepts and their meanings
- The theory advanced by the author and grounded in research that explains the data collected
- The author's research method (which reflects the method favored by the author's discipline)
- The phenomena addressed and the relationship of parts to whole (information invaluable for mapping the problem)
- The author's bias (ethical or ideological)

Strategy No. 2: Organize This Information

A useful way to organize this information is to create a table in Word or Excel as we advised earlier. In Table 12.1, students were asked to provide information about each author's insight into the subject of suicide terrorism. Note in this example that the author's thesis is a direct quote rather than a paraphrase. This eliminates the possibility of skewing the writer's meaning as may occur when paraphrasing. If you are reading insights produced by an interdisciplinary field such as gender studies or global studies, you should treat it in the same way as you would a traditional discipline.

As you read each insight, keep adding information on the key elements of each one. The extra effort you make on this "front end" activity will be rewarded when you come to the "back end" of the research process and Strategy No. 3.

Strategy No. 3: Critically Analyze This Information

In Chapter 8, we advised asking whether the author's conclusions actually followed from their evidence and supporting arguments, or they were instead driven by disciplinary perspective or personal biases. To "critically analyze" requires being critical of expert evidence and to look for points of conflict and their sources.

Table 12.1 Checklist of Things to Look for When Reading

Author	Disciplinary Perspective	Thesis	Assumption	Theory Name	Key Concept(s)	Method	Phenomena Addressed	Author's Bias
Post	Psychology (cognitive)	"Political violence is not instrumental but an end in itself. The cause becomes the rationale for acts of terrorism the terrorist is compelled to commit" (Post, 1998, p. 35).	Humans organize their mental life through psychological constructs.	Terrorist Psycho-logic	Special Logic (Post, 1998, p. 25)	Case study	Individual human agents	Suicide terrorists are irrational.

Source: Adapted from Repko & Szostak (2016), and Repko, A. F., Newell, W. H., & Szostak, R. (2012) (Eds.). *Case Studies in interdisciplinary Research*. Thousand Oaks, CA: SAGE Publications, Inc.

Note: If constructed using Excel, the table can be easily expanded horizontally to include additional information about any one insight as well as vertically by adding as many insights as necessary. The utility of this table for interdisciplinary work on the undergraduate level will be increasingly evident as the interdisciplinary research process unfolds.

Source: Adapted from Repko & Szostak (2016), and Repko, A. F., Newell, W. H., & Szostak, R. (2012) (Eds.). *Case Studies in interdisciplinary Research*. Thousand Oaks, CA: SAGE Publications, Inc.
Note: If constructed using Excel, the table can be easily expanded horizontally to include additional information about any one insight as well as vertically by adding as many insights as necessary. The utility of this table for interdisciplinary work on the undergraduate level will be increasingly evident as the interdisciplinary research process unfolds.

Be Critical of Expert Evidence.

Being critical of expert evidence means being keenly aware that the factual information presented by the author may be "skewed" and understanding the implications of this bias. The term **skewed** refers to "the degree to which an insight reflects the biases inherent in the discipline's perspective and thus the way an author understands the problem resulting from the author's deliberate decision or unconscious predisposition to omit certain information that pertains to the problem" (Repko & Szostak, 2016, p. 190). We learned in Chapter 5 that each discipline has an epistemology or way of knowing, and that it collects, organizes, and presents data in a certain way that is natural to it. By saying that the factual information presented by disciplines may be "skewed" is not to allege that the data are falsified or sloppily gathered or presented in a biased way (though the latter is sometimes the case). Rather, it is to say that disciplines are notorious for omitting certain kinds of

facts and data. This is because disciplines are interested in certain kinds of questions and amass data to answer these questions without consciously realizing that they may be excluding other data that would, if included, modify or even contradict the study's findings.

In reading and thinking about each insight, you should ask, "What counts as evidence in this author's discipline?" and "What kind of evidence is this author omitting that would shed additional light on the problem?" These questions deal with issues of the depth and breadth addressed in Chapter 8. We illustrate the close connection between an author's disciplinary perspective (which includes assumptions, epistemology, and research method) and the kind of supportive evidence the discipline considers reliable by examining two essays by experts from psychology and education on the question, "Should schools adopt computer-assisted education for young children?" Their findings are summarized here:

> *Psychology (Learning Theory).* The National Research Council (NRC) is the research arm of the National Academy of Sciences, a private, nonprofit scholarly society that advises the federal government in scientific and technical matters. Its study *How People Learn: Brain, Mind, Experience, and School* argues that computer-assisted education can enhance learning (Bradsford, Brown, & Cocking, 1999). The supportive evidence used by the NRC includes references to state-of-the-art learning software and several experimental projects such as GLOBE, which gathered data from students in over 2,000 schools in 34 countries (Bradsford et al., 1999).
>
> *Education.* In 1999, The Alliance for Childhood, a partnership of individuals and organizations, issued a report, *Fool's Gold: A Critical Look at Computers in Childhood,* that subsequently appeared in a leading education journal. The report argues that computer-assisted education does not benefit young children. This view, a matter of heated debate within the profession, was nevertheless included in the Education Department's own 1999 study of nine troubled schools in high poverty areas, as well as extensive references to studies by leading education experts, including Stanford Professor (Education) Larry Cuban, theorist John Dewey, Austrian innovator Rudolf Steiner, and MIT Professor Sherry Turkel (Alliance for Childhood, 1999).

Challenge question: Why do these insights conflict?

These insights demonstrate how each discipline or profession amasses and presents evidence that reflects its preferred research methodology and the kind of evidence that it considers reliable. However, in all these cases, experts omit evidence that they consider outside the scope of their discipline or profession. "Facts," then, are not always what they appear to be. They reflect only what the discipline and its community of experts are

interested in.

It is easy to be seduced by the data that an author presents on the subject, mistakenly concluding that the data must surely mean that the insight of the author who collected the data is "correct." But Newell (2007) warns that interdisciplinarians need to be attuned to the subliminal message of facts, and keep track of the complex problem that interests an author without being sidetracked by the narrower, value-laden interests of the discipline on which the author draws (pp. 254–255). It is also easy to be seduced by the data when you happen to agree with the author's position on the issue. The lesson here is that you must be aware of an author's discipline, analyze carefully *the kind of evidence* the author privileges, and know *how the author uses that evidence*.

Look for Points of Conflict and Their Sources.

Critical analysis of disciplinary insights also involves identifying conflicts between insights and locating their sources. When comparing insights from different disciplines, commonalities seldom surface between any of their defining elements (i.e., perspectives, assumptions, epistemologies, theories, methods, and data). This is because an author's insight typically reflects the author's disciplinary affiliation and training. When concepts appear to be the same or similar, they too will have different meanings to reflect each discipline's understanding of the concept. For example, the concept of "sustainability" will have an economic orientation when an economist uses it but an environmental orientation when a biologist uses it. It is important to keep track of the concepts that each writer uses to see how their meaning may vary when used by authors in different disciplines.

What is almost certain when comparing different disciplinary insights on the same subject is that they will conflict at one or more points. You will see these points of conflict more readily when these key elements are juxtaposed as in Table 12.1. The mapping exercise outlined in Chapter 8 is another useful technique for identifying—and understanding the sources of—conflicts in disciplinary insights.

Box 12.1 Disciplinary Adequacy

As noted in Chapter 2, disciplinary scholars worry about how interdisciplinary scholars can develop enough expertise in different disciplines in order to draw on these knowledgeably. Entry-level students likewise wonder how they can be expected to draw on multiple disciplines with which they have limited or no familiarity. Yet we saw in Chapter 8 that entry-level students are quite capable of critically analyzing texts from **unfamiliar** disciplines. One of the key insights of interdisciplinary scholarship is that interdisciplinarians need not have the same depth of knowledge in disciplines as disciplinary specialists have in order to draw on these.

- Here is what you need to know **(i.e., develop adequacy)** about an **unfamiliar** discipline in order to draw upon its insights and critically analyze them: (Note: The level of familiarity required will vary with the requirements of a particular course.)
- First, understand the perspective of each relevant discipline. This perspective will shape the insights produced by scholars in the discipline. It is important to evaluate a discipline's insights in the context of its perspective.
- Second, read the insights (i.e., books and articles) of each relevant discipline on the problem. Though disciplinary perspective shapes insights, scholarly disagreements are commonplace within disciplines. Strive to ascertain whether a particular insight is widely shared in a discipline or viewed with suspicion. You can do this not by reading just a single article but by reading other works on the problem that may cite the article (check footnotes and the sources cited).
- Third, identify the theory on which the insight is based.
- Fourth, identify the appropriateness of the method the author uses.

In Chapter 5, we discussed **how to** approach different theory types and methods. The example above of computer-assisted learning **shows** that even entry-level students can reasonably critique the method employed in a research study. **Since no** theory or method is perfect, you can always ask whether a particular theory or method likely biases the insight in a particular direction. (The evaluation of theories and methods is addressed in greater detail in Repko and Szostak, 2016.)

Figure 12.2 The Broad Model Rubric (STEP 5)

THE BROAD MODEL RUBRIC (STEP 5)		
ID PROCESS	*CRITERIA*	*Y/N/I*
STEP 5		
Critically analyze the disciplinary insights into the problem and locate their sources of conflict.	**Identifies the key elements of insights and locates their sources of conflict**	
	5.1. The author identifies the key elements of the most important disciplinary insights into the problem.	
	5.2. The author identifies both the sources of conflict and/or agreement between insights.	
	5.3. The author maps or compiles a table that sets out how the insights from contributing disciplines are interconnected or fit together.	

The Broad Model Rubric Applied to STEP 51

Applying the Broad Model Rubric to assess examples of practitioner and student