

What Is Interdisciplinarity? Some Essential Definitions

CHAPTER

2

“Interdisciplinarity” is one of the great buzz-words in academia, and has been for perhaps a generation.

—Joe Moran (2002, p. 73)

What a splendid book one could put together by narrating the life and adventures of a word. The events for which a word was used have undoubtedly left various imprints on it; depending on place it has awakened different notions; but does it not become grander still when considered in its trinity of soul, body, and movement?

—Honoré de Balzac
(as cited in Frank, 1988, p. 139)

Learning Outcomes for Chapter 2

After reading Chapter 2 of *Becoming Interdisciplinary*, you should be able to:

- 1 Know that dictionary definitions for the word *interdisciplinarity* are not adequate for understanding what is interdisciplinary study.
- 2 Understand that while the term *interdisciplinarity* is a relatively recent one, the concept of interdisciplinarity is much older.
- 3 Appreciate that the concept of interdisciplinarity depends on the concept of disciplinarity.
- 4 Obtain at least an initial understanding of what interdisciplinarity and disciplinarity mean.
- 5 Understand that there are multiple definitions and terms for interdisciplinarity as well as related terms such as *interdisciplinary studies*.

- 6 Recall the most authoritative definition of interdisciplinary studies, which is the one that this textbook uses.
- 7 Understand the difference between interdisciplinary studies education and interdisciplinary research.
- 8 Understand the difference between “full and “partial” interdisciplinarity.

Exercise 2.1 Pre-Chapter Study

Questions

- 1 Define disciplinarity.
- 2 Define multidisciplinary.
- 3 Define interdisciplinarity.

Are you still asking yourself what is interdisciplinary studies? Unlike so-called “traditional majors” such as economics and art history, interdisciplinary studies does not refer to a specific topic of study. Becoming interdisciplinary necessitates learning what the noun “interdisciplinarity” means as well as numerous related terms, several of which you will be introduced to in this chapter.

Consulting the Dictionary

in ter dis ci pli nar y

(in't r dis' pl ner'e),
adj. **1.** combining or involving two or more academic disciplines or fields of study: *The economics and history departments are offering an interdisciplinary seminar on Asia.* **2.** combining or involving two or more professions, technologies, departments or the like, as in business or industry. [1935-40; INTER- + DISCIPLINARY]

General dictionaries are often used as starting reference points. The *Random House Dictionary of the English Language, Second Edition, Unabridged*'s definition for the adjective *interdisciplinary* is shown in the left text box.

The Random House Dictionary includes an etymology of the word *interdisciplinary*, indicating that the word is a rather recent one. The authoritative dictionary for the English language, *The Oxford English Dictionary*, defines *interdisciplinary* similarly: “Of or pertaining to two or more disciplines or branches of learning; contributing to or benefiting from two or more disciplines.” *The Oxford English Dictionary* offers a more scholarly definition than *The Random House Dictionary* by citing a quotation from a 1937 article from the *Journal of Educational Sociology* as an early example of the use of the word in print.

We can deduce from the *Oxford English Dictionary* that the word *interdisciplinary* is a product of the 20th century. Evidently, certain historical conditions in the 20th century created a need for the adjective *interdisciplinary* and related words such as the noun *interdisciplinarity* to exist. What were those conditions? That question will be addressed later in Chapter 5.

Did You Know?

"The Oxford English Dictionary (OED) is widely regarded as the accepted authority on the English language. It is an unsurpassed guide to the meaning, history, and pronunciation of 600,000 words—past and present—from across the English-speaking world.

As a historical dictionary, the OED is very different from those of current English, in which the focus is on present-day meanings. You'll still find these in the OED, but you'll also find the history of individual words, and of the language—traced through three million quotations, from classic literature and specialist periodicals to films scripts and cookery books" ("About," <http://public.oed.com/about/>).

The first edition of the OED was published in parts between 1884–1928. Since 2000 it has been available as an online publication and is available to students through accessing their library databases. The OED is updated four times a year, both adding revisions of existing words and new words such as "awesomesauce" in 2015. To check the latest updates to the OED, you can read the OED Updates Blog at the following url:

Recent updates to the OED

<http://public.oed.com/the-oed-today/recent-updates-to-the-oed/>

The OED is a very important scholarly reference resource for students and scholars alike. It is the dictionary to be used when doing academic research. Check with your university librarian if you have problems accessing the OED through your university library online resources.

The Necessity of Further Academic Research

Students need to be cautious when using general dictionaries for their academic research. Why? General dictionaries can be simplistic, incomplete, or otherwise inadequate in their explanations. For example, both *The Random House Dictionary* and *The Oxford English Dictionary* definitions provide students with a very general, albeit imprecise, idea of what interdisciplinary study is and does: **when one studies interdisciplinary studies, one utilizes two or more academic disciplines in some way or ways**. Nonetheless, the two dictionary definitions remain rather vague regarding *what exactly* is being used or combined within the involved disciplines or *how* that combination is actually accomplished. As we will learn later in this textbook, what typically gets combined or integrated are *disciplinary insights* or concepts, not disciplines themselves. In other words, dictionary definitions do

not always provide students with adequate explanations. Because dictionaries are unable for spatial reasons to go into much depth, it is always a good idea to follow up initial dictionary consults with additional academic research in order to find out what the leading scholars on any topic say about the subject of their expertise.

Avoid Citing Encyclopedias and Wikipedia for Academic Research

At the advanced college level, students are usually expected to go beyond encyclopedias (including Wikipedia) for their research. In general, while encyclopedias and Wikipedia may be good starting points and can point to additional sources, students should avoid citing Wikipedia for academic research. In its General Disclaimer, Wikipedia states that it cannot guarantee the validity of the information found on its site (https://en.wikipedia.org/wiki/Wikipedia:General_disclaimer). Even the founder of Wikipedia, Jimmy Wales, strongly advised students in 2006 not to quote from Wikipedia for their academic assignments when he was quoted at a conference as saying the following: “For God’s sake, you’re in college; don’t cite the encyclopedia” (Young, 2006).

Interdisciplinarity as a Concept and Its Relation to Disciplinarity

As an idea or concept, *interdisciplinarity* is historically linked to *disciplinarity*. As scholar Louis Menand (2001) has written, “*interdisciplinarity* is not only completely consistent with *disciplinarity*—the concept that each academic field has its own distinctive program of inquiry—it actually depends on the concept” (p. 52). Leading theorist of interdisciplinarity William H. Newell (1998) is in accordance when he writes, “understanding the role of disciplines in interdisciplinary studies should be central to a full understanding of interdisciplinarity” (p. 541). Once students know that the concept of interdisciplinarity is inextricably linked to the concept of disciplinarity, then they can realize sooner how important it is to learn more about how those links developed historically, i.e., how the formation of disciplines led to the emergence of interdisciplinary studies within academia. To put it differently, once students understand that interdisciplinary studies programs and interdisciplinary fields such as neuroscience would not have been possible without the rise of disciplines, students can better grasp that learning about interdisciplinary studies involves learning about how knowledge has been organized and transmitted historically.

TABLE 2.1 *Three Initial Points about Interdisciplinarity*

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| 1. When one studies interdisciplinary studies, one utilizes two or more academic disciplines in some way or ways. |
| 2. <i>Interdisciplinarity</i> , is historically linked to the term, <i>disciplinarity</i> . |
| 3. It is important to understand disciplinarity and its relation to interdisciplinarity when studying interdisciplinary studies. |

What Is a Discipline? Initial Definitions

The first six definitions listed for “discipline” in *The Random House Dictionary* pertain more to the military than to education or learning:

- 1** training to act in accordance with rules; drill: *military discipline*.
- 2** activity, exercise, or a regimen that develops or improves a skill; training: *A daily stint at the typewriter is excellent discipline for a writer.*
- 3** punishment inflicted by way or correction and training.
- 4** rigor training effect of experience, adversity, etc: *the harsh discipline of poverty.*
- 5** behavior in accord with rules of conduct; behavior and order maintained by training and control: good discipline in an army.
- 6** a set or system or rules or regulations. (Flexner, 1987, p. 562)

The Oxford English Dictionary is more helpful, although the first definition it lists is noted as obsolete: “Instruction imparted to disciples or scholars; teaching; learning; education, schooling.” The second definition is one with which students are more familiar: “A branch of instruction or education; a department of learning or knowledge; a science or art in its educational aspect.” Disciplines are how major areas of study such as the humanities, the social sciences, the sciences, and the arts organize themselves.

Scholarly Definitions of Disciplinarity

General dictionary definitions do not go in much depth. For example, dictionaries do not elaborate on how disciplines impact or affect students’ lives. Students already know that knowledge is organized as they have been studying various subjects of study since elementary school. Disciplines reflect the organization of knowledge. Each major area of knowledge such as the humanities, the social sciences, the sciences, and the arts is made up of multiple disciplines that often, but not always, correspond to a school subject, a university major, or a university department. Scholar Joe Moran (2002) has defined the term *discipline* succinctly as follows: “It refers to a particular branch of learning or body of knowledge” (p. 2). Julie Thompson Klein’s (1990) definition is more comprehensive and is often cited in the literature on interdisciplinarity:

The term discipline signifies the tools, methods, procedures, exempla, concepts, and theories that account coherently for a set of objects or subjects. Over time they are shaped and reshaped by external contingencies and internal intellectual demands. In this manner a discipline comes to organize and concentrate experience into a particular “worldview.” Taken together, related claims within a specific material field put limits on the kinds of questions practitioners ask about their material, the methods, and concepts they use, the answers they believe, and their criteria for truth and validity. There is, in short, a certain particularity about the images of reality in a given discipline. (p. 104)

What strikes you about Klein's (1990) definition of "discipline"? Disciplines, according to Klein's definition, are particular—they have a "particular 'world-view'" as well as "a certain particularity about the images of reality." The renowned education scholar Howard Gardner (2000) in his book, *The Disciplined Mind*, explains disciplines in terms that students are familiar with:

It is easy for students (and teachers and parents) to be confused about the disciplines. They are often seen simply as "subjects": courses to take with discrete texts and teachers, in order to pass certain requirements. To the extent that disciplines are simply presented as sets of facts, concepts, or even theories to be committed to memory, students may remain innocent of their powers. After all, facts themselves are discipline-neutral: they acquire their disciplinary colors only when they have been pieced together in a certain way and placed in the service of a particular theory, framework, or sequence.

For the disciplines inhere not primarily in the specific facts and concepts that make up textbook glossaries and indexes, compendia of national standards, and all too often, weekly tests. Rather, the disciplines inhere in the ways of thinking, developed by their practitioners, that allow those practitioners to make sense of the world in quite specific and largely nonintuitive ways. Indeed, once mastered and internalized, the disciplines become the ways ... in which experts construe the phenomena of their world. (p. 155)

Klein's (1990) definition is similar to Gardner's (2000) as both stress the idea that **disciplines frame the way we view the world**. Each discipline frames issues and problems in its distinct way, and different disciplines will develop theories to explain certain phenomenon based on their own assumptions, viewpoints, and observations. Gardner makes some additional important points. **When we pursue studying a discipline—for example, economics—we learn to see the world and its phenomena through the trained eyes or "disciplinary lenses" of its practitioners, e.g., economists.** In other words, if we study economics, sooner or later we begin to view social behavior from the economic perspective. Viewing human behavior from the economic perspective additionally means more than just focusing on decision making based on terms of supply and demand, two central concepts in economics. It involves making disciplinary assumptions such as presuming that one's decisions are based more on economic factors rather than emotional factors such as fear or religious beliefs.

Links between Academic Disciplines and Military Discipline

Scholars have been able to make connections between the vastly divergent meanings of the word *discipline* that dictionaries do not provide. The late philosopher Michel Foucault (1979) saw connections between the more military meanings of the word *discipline* with the educational meaning. As Moran (2002) summarizes Foucault's argument succinctly: "Foucault points out that schools and universities, where the academic disciplines are taught, are also disciplinary environments" (p. 134). Liora Salter and Alison Hearn (1996) suggest that "these two seemingly distinct definitions of discipline—as a branch of knowledge and as a means of social control—should always be understood together. Disciplines defined as branches of knowledge always already connote the regulation of knowledge in the service of power relations" (p. 18). In other words, studying a particular discipline involves rigorous, regimented, methodological education and training.

TABLE 2.2 *Five Important Initial Points about Disciplines*

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| 1. A discipline is a branch of knowledge or study. |
| 2. Disciplines are often seen as established academic subjects or majors. |
| 3. Disciplines help shape the way their practitioners view the world. |
| 4. Each discipline views the world in with its distinct disciplinary perspective. |
| 5. Studying a particular discipline involves rigorous, regimented, methodological training. |

Exercise 2.2 Reflection about Disciplines

- 1 What class(es) or academic discipline(s) did you enjoy studying the most while you were in elementary school? Why?
- 2 What class(es) or academic discipline(s) did you enjoy studying the least while you were in elementary school? Why?
- 3 What class(es) or academic discipline(s) did you enjoy studying the most while you were in high school? Why?
- 4 What class(es) or academic discipline(s) did you enjoy studying the least while you were in high school? Why?
- 5 What academic disciplines are you interested in learning more about in your studies now? Why?

Towards a Textbook Definition of Interdisciplinary Studies

Many scholars have attempted to define and explain *interdisciplinary studies* and related terminology since the 1970s. The earliest attempts took place in 1970 with the first international seminar on interdisciplinarity organized by the international Organization for Economic Co-operation and Development (OECD). In 1972 the results of this seminar were published in book form as *Interdisciplinarity: Problems of Teaching and Research in Universities*. The book, according to Klein (1990), “remains the most widely cited reference on the subject of interdisciplinarity” even though some of the ideas and definitions provided became quickly disputed by other scholars and/or outdated (p. 36). Even the OECD revised its earlier definitions after conducting a survey of the relationships between the university and the community in its member countries as well as hosting a 1980 international conference on the topic (Klein, 1990, p. 37).

Over the past few decades, numerous scholars such as Klein have dedicated themselves to defining interdisciplinary studies and related terms such as interdisciplinarity, interdisciplinary learning, and interdisciplinary research, thus elaborating and improving upon dictionary definitions such as the two quoted in the beginning of this chapter. As Klein points out, the terms invite multiple meanings, because *interdisciplinarity involves a plurality of practices*.

Generally speaking, it is important to know the distinctions between the following terms: interdisciplinarity, interdisciplinary studies, interdisciplinary thinking and interdisciplinary research. Several leading scholarly definitions for interdisciplinarity, interdisciplinary studies, interdisciplinary understanding, integrative studies, integrative learning, integrative interdisciplinary learning, and interdisciplinary research are presented here as it is important for interdisciplinary studies students to be aware of them.

Defining Interdisciplinarity

Interdisciplinarity refers to the general phenomenon of combining or integrating disciplinary perspectives. Klein (1990) defines interdisciplinarity more comprehensively as follows:

Interdisciplinarity has been variously defined in this century: as a methodology, a concept, a process, a way of thinking, a philosophy, and a reflexive ideology. It has been linked with attempts to expose the dangers of fragmentation, to reestablish old connections, to explore emerging relations, and to create new subjects adequate to handle our practical and conceptual needs. Cutting across all these theories is one recurring idea. Interdisciplinarity is a means of solving problems and answering questions that cannot be satisfactorily addressed using single methods or approaches. (p. 196)

Diana Rhoten, Erin O'Connor, and Edward J. Hackett (2009) offer another definition of interdisciplinarity emphasizing that it is a communal activity that is both purposeful and result driven: "We understand interdisciplinarity as both a process and a practice by which a set of purposive arrangements and a sense of community are established and ultimately integrates ideas with others to form an end product" (Rhoten, O'Connor, & Hackett, 2009, p. 87).

Defining Interdisciplinary Studies

Interdisciplinary studies is the application of interdisciplinarity in educational contexts. Interdisciplinary studies is where interdisciplinary teaching, learning, understanding, and research take place. There have been numerous recent definitions of interdisciplinary studies, but Julie Thompson Klein and William H. Newell's 1997 definition remains the most authoritative and widely used:

Interdisciplinary studies may be defined as a process of answering a question, solving a problem, or addressing a topic too broad or complex to be dealt with adequately by a single discipline or profession . . . IDS draws on disciplinary perspectives and integrates their insights through construction of a more comprehensive perspective. In this matter, interdisciplinary study is not a simple supplement but is complementary to and corrective of the disciplines. (Klein & Newell, 1997, p. 3)

Klein and Newell's 1997 definition describes what students and scholars do when they study interdisciplinary studies or engage in doing interdisciplinary studies. Note that their definition of interdisciplinary studies refers to an educational practice that is *process oriented*, emphasizing *integration* and *problem solving*. Note too that interdisciplinary study draws on disciplinary perspectives rather than the disciplines themselves. The aim of pursuing interdisciplinary study is to obtain

the ability to construct (and therefore obtain) more comprehensive perspectives or understandings. These important distinctions will be further discussed throughout this book. But for now, you should keep in mind that when you study a discipline, you are learning how specialists working in that particular discipline view the world, i.e., their disciplinary perspective.

Defining Interdisciplinary Understanding

A related term that some scholars such as Veronica Boix Mansilla and Elizabeth Dawes Duraisingh have used interchangeably with interdisciplinary studies is *interdisciplinary understanding*, which focuses on the cognitive aspects of interdisciplinary studies:

We define interdisciplinary understanding as the capacity to integrate knowledge and modes of thinking in two or more disciplines or established areas of expertise to produce a cognitive advancement—such as explaining a phenomenon, solving a problem, or creating a product—in ways that would have been impossible or unlikely through a single disciplinary means (Boix Mansilla & Dawes Duraisingh, 2007, p. 219).

Essential Features of Interdisciplinary Study

When Klein and Newell’s 1997 definition for interdisciplinary studies is considered together with Boix Mansilla and Dawes Duraisingh’s (2007) definition for interdisciplinary understanding, five characteristics of interdisciplinary study become apparent. These five characteristics are noted in Table 2.3.

TABLE 2.3 *Five Characteristics of Interdisciplinary Study*

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| 1. Involves a process for addressing questions or solving complex problems. |
| 2. Draws on multiple disciplinary perspectives. |
| 3. Works toward the integration of multiple disciplinary insights through the construction of a more comprehensive perspective. |
| 4. Goal is to construct a more comprehensive perspective in answering questions or addressing complex problems by producing a greater understanding, advancing existing knowledge, or creating a new product that could not have been created by drawing from a single discipline. |
| 5. Results in correcting, complementing, and supplementing the limits of disciplinary approaches. |

Popular Types of General Interdisciplinary Studies Programs

There are numerous types of general interdisciplinary studies degree programs, which can help explain why students are asked to explain their interdisciplinary degrees.

Individualized degree programs are usually very small and admit only those students who can demonstrate why designing a very specific program of study is not necessary, but also possible at that particular institution.

Interdisciplinary Studies programs offer students the opportunity to study more than one discipline or field of study as well as provide students with the opportunity to learn how to do interdisciplinary academic work and research.

Liberal Studies programs offer broad and often interdisciplinary educations drawing from the humanities, the sciences, social sciences, and the arts. They often give students various degrees of choice in selecting some depth of study, whether students can choose a minor, a concentration, or an emphasis. In the state of California, many Liberal Studies programs have designed their curricula to help prospective elementary school teachers gain admittance to teaching credential programs.

Integrative Studies programs are not limited to the study and practice of integrating disciplinary perspectives. According to Marcus N. Tanner and Charlie Adams (2015):

Integrative Studies is defined ... as providing for a synthesis of study and life, an application of interdisciplinarity to complex problems, providing for a common body of knowledge, recognizing various disciplinary perspectives as well as learning how to synthesize and evaluate those perspectives, thus empowering people to address meaningful and complex issues in new and unique ways. (Tanner & Adams, 2015, p. 84)

Defining Integrative Learning

Interdisciplinary learning is a subset of *integrative learning*, which, as Klein (2005b) points out, is more broad. According to Klein, integrative learning:

is an umbrella term for structures, strategies, and activities that bridge numerous divides, such as high school and college, general education and the major, introductory and advanced levels, experiences inside and outside the classroom, theory and practice, and disciplines and fields. (Klein, 2005b, p. 8)

As the Association of American Colleges and Universities (AAC&U) and the Carnegie Foundation for the Advancement of Teaching noted in a joint statement on integrative learning:

integrative learning goes beyond academic boundaries. Indeed, integrative experiences often occur as learners address real-world problems, unscripted and sufficiently broad to require multiple areas of knowledge and multiple modes of inquiry, offering multiple solutions and benefiting from multiple perspectives. (AAC&U & Carnegie Foundation, 2004)

Integrative learning occurs in many ways; indeed education scholar Lee Schulman has claimed that all learning is integrative (as cited in Huber, Hutchings, & Gale, 2005, p. 7). Integrative learning occurs when students make a connection between class readings in sociology and their own situations as part-time temporary workers. Study abroads offer students integrative learning experiences, as do service learning projects, volunteer work, and dorm life. As William Newell (1999) wrote about his experiences, “Students in general ... do not privilege academic disciplines over the lived experiences of self and others.” He realized that

their education is centered around encounters with different perspectives and the challenge of synthesizing what they learn from those encounters. It makes

little difference to them whether the perspectives are held by an author they read, another student, their professor, or the guy standing beside them in the soup kitchen where they volunteer. (Newell, 1999, p. 18)

Elsewhere Newell (2010) writes:

Integrative learning experiences bring students into contact with people who are inside the complex situation. Since these people are situated in different social locations, they look at the complex situations in which they find themselves from different angles, experience it differently and come to different understandings of it Integrative learning is not just about making connections, however; in themselves connections do not empower students. The challenge of integrative learning is to make sense of the contrasting or conflicting insights by integrating them into a more comprehensive understanding of the situation in its full complexity. (Newell, 2010, p. 4)

Mary Taylor Huber, Pat Hutchings and Richard Gale (2005) have pointed out that integrative learning doesn't just happen—it takes work. This is where interdisciplinary education comes in; students need to learn how to not only reflect on their integrative learning experiences, but how to study them in an academic manner.

Defining Integrative Interdisciplinary Thinking

According to Klein (2005b), the intersection of integrative learning and interdisciplinary studies is called *integrative interdisciplinary thinking*, which includes the following cognitive capacities:

- The ability to ask meaningful questions about complex issues and problems.
- The ability to locate multiple sources of knowledge, information, and perspectives.
- The ability to compare and contrast them to reveal patterns and connections.
- The ability to create an integrative framework and a more holistic understanding. (p. 10)

From Interdisciplinary Studies Education to Interdisciplinary Research

As Khadijah O. Miller and Andrew T. Arroyo (2011) point out, interdisciplinary studies is a curriculum that recognizes “the interdependence of knowledge and the theoretical need for integration in order to holistically deal with major societal issues” (p. vii). While curricula may vary, many interdisciplinary degree programs focus on offering students broad educations as well as the development of core transferable skills such as critical thinking; research skills; oral, written, and intercultural communication; collaborative skills; perspective taking; integrative skills—just to name a few.

Interdisciplinary studies education, i.e., learning about interdisciplinarity, is not the same as interdisciplinary research at the graduate and postgraduate levels. Interdisciplinary research is the practice of producing new knowledge aimed

at further understanding complex problems. For example, the National Science Foundation (NSF) supports interdisciplinary research in neuroscience, nanotechnology, and climate change.

Defining Interdisciplinary Research

Interdisciplinary research refers to the interdisciplinary work that scholars and researchers perform to advance knowledge. The National Science Foundation (NSF) defines interdisciplinary research by citing the following 2004 definition from The National Academies:

Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice. (National Academies, 2004, p. 2)

Four Drivers of Interdisciplinary Research

According to the National Academies, interdisciplinary thinking is rapidly becoming an integral feature of research as a result of four powerful drivers:

- 1** The inherent complexity of nature and society;
- 2** The desire to explore problems and questions that are not confined to a single discipline;
- 3** The need to solve societal problems; and
- 4** The power of new technologies (National Academy of Sciences, 2004, p. 2)

These four drivers are four important reasons why interdisciplinary studies programs and research are continuing to expand and grow in the 21st century.

Team-Based Collaborations in Interdisciplinary Research

As Maura Borrego and Lynita K. Newsander (2010) assert, “Team-based collaboration is the norm in engineering and science” (p. 64). What is often meant by “collaboration” is a division of labor when working on a research question or project. Not surprisingly, interdisciplinary research has been defined in terms of people power. Bruhn (2000) defines interdisciplinary research as “two or more persons from different disciplines who agree to study a problem of mutual concern, and who design, implement, and bring to consensus the results of a systematic investigation of that problem” (p. 58).

Defining Common Ground and Integration

The aim of research is to advance knowledge and understanding. The aims of interdisciplinary research include advancing knowledge and understanding that is not possible using disciplinary approaches and methods. Integrationist

interdisciplinary assert that integration is the primary aim of interdisciplinary work and research even as they acknowledge that full or complete integration is rare, should it occur at all. Achieving consensus within interdisciplinary research teams implies that some degree of common ground has been reached among team members who may have very different perspectives or approaches to a given complex research problem. Common ground and consensus are achieved through communication, which is why excellent communication skills are necessary for successful interdisciplinary work and research. Common ground has been defined by psychologists Olson and Olson (2000) as the following:

Effective communication between people requires that the communicative exchange takes place with respect to some level of common ground (Clark, 1996). Common ground refers to that knowledge that the participants have in common, and are aware that they have in common. (Olson & Olson, 2000, p. 157; emphasis theirs)

Establishing common ground, whether it is between differing disciplinary perspectives or individuals from different disciplines, is crucial for integration to occur. Borrego and Newswander (2010) summarize the recent literature that defines integration as follows:

Integration. Boix Mansilla and Dawes Duraising (2007) ... emphasize the integration of disciplinary insights to advance knowledge or understanding. Integration consists of "articulating the cognitive advantage enabled by the combination of perspectives It entails characterizing the specific ways in which the whole of the understanding is more than the sum of its disciplinary parts" (pp. 227–228). They point to evidence such as "conceptual frameworks, graphic representations, models, metaphors, complex explanations, or solutions that result in more complex, effective, empirically grounded, or comprehensive accounts or products" (p. 222). Integration lies at the heart of interdisciplinarity, and variations are present in most discussions of interdisciplinary learning outcomes. (Borrego & Newswander, 2010, p. 67)

Partial and Full Interdisciplinarity

As mentioned previously, integration is rarely if ever total or complete. In his essay "Professionalizing Interdisciplinarity," Newell (1998) suggests using the terms "full" interdisciplinarity and "partial" interdisciplinarity (p. 533). *Full interdisciplinarity* would involve all five characteristics of interdisciplinarity included in Klein and Newell's definition: more than one perspective used from more than one discipline to create a more comprehensive perspective in solving or addressing a complex problem that cannot be satisfactorily addressed using one of the traditional disciplines. *Partial interdisciplinarity* occurs when at least one element of full interdisciplinarity is included, such as the utilization of multiple perspectives. Partial interdisciplinarity occurs, for example, when one signs up for an "interdisciplinary" class on a topic, say French Women in the 20th Century, and each week different professors lecture on their topic of specialty. One week a French literature professor may lecture on French women writers. The next week a political science professor will talk about the women's rights movements in France. The week after that, an art history professor lectures on French women artists. Such a class could only be considered as interdisciplinary in a partial sense, since no integration occurs in the course (except perhaps in the minds of the students at the end of the

course). To be more precise, such a course would be considered multidisciplinary rather than interdisciplinary. Further discussion on the various types of integration will be discussed in Chapter 4.

Words to the Wise

The more specific and detailed your answer to the question, “What is interdisciplinary studies?” the more knowledgeable and persuasive you will appear to others. Don’t worry if you cannot be specific in your answer yet. This chapter only reviewed definitions of interdisciplinarity. Chapter 4 will present typological terms to help you understand the different ways of interdisciplinary learning and research.

Exercise 2.3 Memorizing Definitions and Characteristics

Practice answering the question, “What are interdisciplinary studies?” deploying what you already have learned in this chapter. Memorize the five essential characteristics of interdisciplinary studies.

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