

Chapter 1

The *Why* of Research: Paradigmatic and Pragmatic Considerations

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These are exciting, confusing and intriguing times in which to contemplate and conduct research. The concept of research itself has been troubled by the postmodern/poststructural turn so that even the definition is contested. Traditionally, research has been conceptualized as the systematic, objective, valid, reliable collection and analysis of empirical data to solve a problem (applied research), or as a means to build theory and add to the existing knowledge base (basic research). However, these characteristics of what constitutes research have been scrutinized, critiqued, and sometimes eliminated from the traditional definition. The importance assigned to empiricism and the form in which data are traditionally presented are being contested with research being constructed as fiction (Tierney, 1997), poetry (Glesne, 1997; Richardson, 1994), and readers' theatre (Adams et al., 1998). Further, objectivity, once considered central to "rigorous" research, has been deconstructed and questioned so often that acknowledging a researcher's subjectivities, values, or "bias" in a qualitative project is common practice. The meaning of validity and reliability has also been the focus of critique and reconceptualization (Collins, 1991; Harding, 1991; Lather, 1991; 1993; Lincoln & Guba, 1985) with validity characterized as "obsession" (Lather, 1993). Finally, the broad goal of some social science research, to improve the quality of life for human beings, is being critiqued as part of a naive belief in "redemptive social theory" (Britzman, 1997; Cary, 1999; Popkewitz, 1998).

What do these critiques and reconfigurations of traditional research mean for workforce education graduate students? In this changing research world order how do workforce education graduate students make sense of their thesis or dissertation work? We think that discussions of what constitutes research have engendered healthy (albeit sometimes vitriolic) debates and conversations in the field. The scholarly context in which theses and dissertations are now being conceptualized, developed, and defended no longer reflects the unified view of research that previously existed in workforce education. Where once only quantitative research designs dominated, qualitative forms of inquiry now flourish and a multitude of theoretical positions abound (Gregson, 1998). However, with the proliferation of ways to conceptualize and conduct

research in workforce education there comes a greater responsibility to be knowledgeable about the philosophical issues embedded in research and their pragmatic implications. Students must make thoughtful research decisions and defend their positions to advisors and committee members within this broader context of what it means to do research. The purpose of this chapter is to enable students to begin thinking about these issues.

To accomplish our goals for this chapter we first explore the philosophical origins and, thus, the underlying assumptions of a positivistic research paradigm (typically quantitative research), post- positivistic (typically quantitative and some qualitative research) and alternative paradigms (typically, qualitative research). We then examine three workforce education studies and point out the relationships among paradigms, theoretical or conceptual orientations, and research methods. We maintain that these facets of research are all interconnected. Thus, the paradigm you use to situate your study will inform the theoretical or conceptual stance applicable to your study, as well as the methodology and methods you use (Crotty, 1998). However, we acknowledge that researchers do not always operate with a unified conceptual understanding of their project. Further, we agree with Lincoln and Guba (2000) who argue that the current status of research exemplifies a blurring of paradigms and provides the opportunity "for interweaving of viewpoints, for the incorporation of multiple perspectives, and for borrowing or bricolage, where borrowing seems useful, richness enhancing, or theoretically heuristic" (p. 167).

We hope that after reading and reflecting on this chapter you can explain why research should not be considered merely a set of techniques or methods. Whether conducting a quantitative or qualitative study thoughtful researchers should be able to articulate how their philosophical stance or paradigm informs their use of theory, their methodology and their selection of methods. We hope that this chapter will prepare students for that discussion. We begin by introducing you to the world of paradigms.

Paradigms of Inquiry

The word *paradigm* is very much in use today. However, it is not an easy term to define and has been used in a plethora of ways (Kuhn, 1970). In this chapter we use *paradigm* in its most common or generic sense, a basic set of beliefs that guides action in inquiry or research (Crotty, 1998; Guba & Lincoln, 1994; Lincoln & Guba, 2000). In a sense, a scientific paradigm can be thought of as an all-encompassing way of thinking that organizes scientific endeavors; it

is a pair of glasses in which we "see" the world. Obviously, operating from an agreed upon worldview is helpful in facilitating action. However, at the same time, an all-encompassing way of thinking may constrain the investigator when imagining different visions of what science could be and do. The paradigm that has guided workforce education for many years, positivism, is now being contested in the wider research arena as well as in our field. In other words, there is no longer an agreed upon set of assumptions and procedures, an all-encompassing world view, for conducting research in workforce education. There has been, and is on going, a paradigm(s) shift, or some would say there is a paradigm proliferation.

Paradigms, those past and those currently emerging, are often characterized by the way their proponents respond to ontological, epistemological, and methodological questions (Guba, 1990; Guba & Lincoln, 1994) and to a series of research issues such as inquiry aim, researcher values, voice, representation, and goodness or quality criteria (Lincoln & Guba, 2000). For many scholars, the three types of questions we mentioned earlier are at the heart of the research act itself.

Ontological questions focus on discerning the nature of reality, asking, What is reality? Is it "out there," existing independently of human thought systems? Or, is it a product of human construction resulting in multiple realities all dependent on the various worldviews of humans? Is it fixed and static or ever changing and dynamic? For example, if you maintain that reality is fixed, "real," independent of human understanding, and knowable (a positivist stance), you can more easily advocate for the generalizability of your research findings to comparable populations. This would be a common assumption that those who practice quantitative forms of research would hold. However, if you believe that reality is only somewhat apprehensible (a postpositivist paradigm stance) or that it is always in flux and only known through the various understandings that humans hold (constructivist stance), then generalizing your findings and replicating your study would be considered problematic since people and their understandings of the world are always changing. Finally, some postmodern/poststructural researchers trouble the notion of reality by asking Gertrude Stein's question, "Is there a there?"

Epistemological questions explore the nature of knowledge and the relationship between researchers and the people or phenomena under study. If you maintain that reality is governed by universal laws and facts, then, with appropriate methods, we should be able to ascertain those facts and predict natural and social behaviors. For example, if a researcher positions herself

behind a one-way mirror to control for researcher intervention and bias, she is exhibiting a belief in the positivist stance of objective knowledge. If a researcher immerses herself in the culture and lives of those studied, she is exhibiting a belief in the postpositivist or alternative paradigm stance of the social construction of knowledge. Further, if a researcher aids those studied or works in conjunction with them in solving a local injustice, then she may be operating from one of several alternative paradigms, such as feminist or critical. Working with research participants in solving a local problem is a very different researcher position than one who stands behind a one-way mirror, observing without being seen. The goals of these two researchers, prediction versus emancipation, would be very different as well and would impact every facet of the research process.

Finally, methodological questions focus on the methodology used to collect and analyze data. In this discussion, methodology refers not only to techniques of data collection but also to such issues as voice, ethics, values, and rigor of an investigation (Guba & Lincoln, 1994; Lincoln & Guba, 2000). So, for example, if you operate from a positivist paradigm a survey that ascertains individuals' views on select topics is a very appropriate method. Maintaining distance from your research participants and analyzing their survey responses statistically both lead to more "objective" research. If you operate from a postpositivist or a critical, feminist, or poststructural paradigm, surveys would appear to be inhibiting for a number of reasons (i.e., ontological and epistemological reasons along with issues of voice and ethics perhaps).

In today's introductory paradigm discussions most authors focus on positivism and postpositivism and then mention a variety of other paradigms that have recently emerged. However, there is no agreed upon delineation of this multitude of new paradigms as various scholars label and categorize them in a variety of ways. Some of the names of the newer paradigms include constructivism, feminism, interpretivism, critical, emancipatory, poststructural, and postmodern (Crotty, 1998; Lather, 1991; Lincoln & Guba, 2000). We start our paradigm discussion with positivism because of its historical importance and the fact that many of the newer paradigms are a reaction against its philosophical assumptions and practices. Then, we will delineate the characteristics of postpositivism. Finally, we will present several emerging and contested paradigms such as critical and poststructural.

Positivism

Comte, a French philosopher who wrote primarily from 1830 to 1850, is typically credited for coining the word *positivism* (Coser, 1977), although Crotty (1998) argues that Bacon used the term much earlier. Regardless, Comte is known for his framing of a new scientific logic (Coser, 1977; Crotty, 1998; Ritzer, 1983). He wanted to analyze society and humanity with the tools and logic of the natural sciences that had, heretofore, only been applied to the study of natural phenomena. Comte sought scientific facts about society. For him these facts constituted the only viable answers to important questions about society. In the past, answers to these important questions were typically based on philosophical speculation that had not yielded a better society. Comte called this newly emerging scientific study of society sociology. Since his introduction of positivism over 150 years ago, the application of a rational, scientific, and fact-oriented framework for studying various aspects of humanity has become the *modus operandi* for social sciences.

Comte's proposed positivistic logic was clearly a revolt against the methodology of all previous philosophers who focused on understanding society (Coser, 1977). His revolt centered on the "fact" that there was no method. These metaphysical or unscientific studies, as Comte saw them, had not produced universal agreement on how to solve society's many dilemmas for the several thousand years they were in place, and, for Comte, this was unacceptable. Comte wanted to study society and to construct a better one based on the methodology and methods of the newly emerging natural sciences.

For positivists like Comte reality is fixed and there are laws that explain how the universe operates. If there is a real world that operates according to universal natural laws, then researchers must control for their bias and attempt to construct an investigation that allows these laws to reveal themselves through the data. Researchers must strive for objectivity and in a sense stand behind a one-way glass observing natural phenomena as it transpires.

Probably the most controversial assumption that positivists make is that knowledge is value free. Knowledge is seen as separate or apart from the social context in which it emanates. The scientific method, if followed carefully, is the only means to acquire that knowledge and any presuppositions that a researcher may have will be filtered out with the use of these methods. Positivists not only believe that truly objective research is possible, they also posit that it is the best approach to discover the world and then predict it.

Positivists do acknowledge the difficulty of achieving objectivity for two primary reasons: the possibility of bias and the difficulty encountered when trying to isolate a single variable for study from all other variables found in nature and society. Thus, it is difficult to make claims of certainty about what causes what. The positivist's answer to these two dilemmas is the use of a manipulative methodology and empirical methods. A manipulative methodology, such as an experimental or quasi-experimental design, alleviates the problem of multiple variables interference. Control and experimental groups, sampling of populations, and random assignment are all attempts to ensure that an investigation achieves objectivity, generalizability, and possesses the ability to ascertain relationships between the studied variables.

The implications of Comte's positivistic framework for studying humanity as individuals or in-groups have been profound. This has been particularly true in the United States where science is often not considered just another form of logic but rather is sometimes accepted as the only logic against which all other modes of thought are compared (Giroux, 1979). Besides Comte's claim that universal laws and facts that govern human behavior and society can be ascertained by the scientific method, another important assumption of positivism is that the universe operates in a linear, rational, coherent and stable fashion. The logical extension of this belief is that humans also operate ~ in a stable coherent and rational manner.

The scientific method, undergirded by the paradigm of positivism, has contributed to an incredibly technologically advanced society. However, at the beginning of the 20th century some philosophers began to question the use of positivism in studying humankind and the costs that its use had incurred socially.

The Emergence of Postpositivism

At the turn of the century in the United States, Dewey (1907, 1916), while a strong proponent of the scientific approach, began to question some characteristics of positivism especially as they related to the emerging social sciences. From an ontological perspective, Dewey questioned the existence of fixed and eternal truths. From a practical perspective, he argued that positivism gave flawed legitimacy to the methods of inquiry and proof that had been promulgated by the physical sciences and adopted by the social sciences.

During the 1930s in Germany, philosophers such as Adorno, Marcuse, Fromm, and Horkheimer critiqued positivism and contributed to the development of a new paradigm of

inquiry, postpositivism. Although they differed in how they viewed objectivity, subjectivity, and even the purpose of research, they agreed that positivism had exerted a type of hegemony, a preponderant influence or dominant authority, on people's understandings of the world and society as a whole (Benhabib, BonB, & McCole, 1993; Kelly, 1994; Wiggershaus, 1995). For this group, hegemony of positivistic thought had powerful and negative consequences for society in general. The critique of positivism continued with Heisenberg's uncertainty principle which questioned the certainty and objectivity of positivism; Popper's argument that science does not proceed in an inductive manner but rather in a hypothetical-deductive manner; Kuhn's embedding of science revolutions or paradigm shifts within broader historical contexts; and Feyerabend's focus on the absurd in science (Crotty, 1998).

Beginning in the 1960s and 1970s, minority groups and women in the United States questioned the powerful influence and consequence of positivistic thought on their own status. Women challenged the scientific findings regarding female mental and physical health (Harding, 1991). They became skeptical that male natural and social scientists could ascertain the mental, physical, and emotional issues of women's health when the latter typically developed their models based on studies of men. For example, Gilligan's (1983) classic work, *In a Different Voice*, contested Kohlberg's scheme of moral development because its conceptualization was based on male moral reasoning. Gilligan argued that women reason differently from men in solving moral dilemmas. Along the same lines, scholars of color began to critique how their own racial and ethnic groups had been constructed in supposedly scientific research and offered new epistemologies, or ways of knowing, drawn from their own lives. Patricia Hill Collins' (1991) classic "Black Feminist Thought" challenged positivistic thinking by offering a type of epistemology called "standpoint" that operated at the intersection of her race and gender. There are still ongoing critiques of how positivistic thought has fostered unequal power relations between researchers and those who are marginalized in the society and calls for responsible as well as respectful research (Lomawaima, 2000).

Although positivism has been the subject of criticism throughout much of the 20th and into the 21st centuries, most academics still acknowledge its profound influence today. Aronowitz (1995) argued that "scientificity" is the "permeation of the standard elements of the scientific attitude into all corners of the social world: seeing is believing; the appeal to hard facts such as statistical outcomes to settle arguments; the ineluctable faith in the elements of

sylogistic reasoning" (p. 12). For Aronowitz, Giroux (1979), Eisner (1983), and other critical, feminist, and postmodern/poststructural thinkers, scientific thinking is a type of hegemony, and the "culture of positivism," is still all powerful in u.s. society even though a revolution in the social and natural sciences has occurred in the last twenty years. So, although positivism has been declared officially dead (Phillips, 1983; Popper, 1974), its philosophical assumptions still influence the social sciences through postpositivism and society.

From such early and later critiques of positivism, an alternative paradigm to positivism, postpositivism, began to emerge. Currently, there is some discussion that a single postpositivism paradigm does not exist. Rather, there are several different paradigms seen as opposing the paradigm of positivism. Carr and Kemmis (1986) argued that there are three forms of educational research: positivist, interpretive, and critical. Lather (1991; 1999) advocated a four paradigm typology: positivist, interpretivist, critical, and poststructural/postmodern and maintained that a researcher might adopt different orientations throughout a research process, based on the circumstances. Lincoln and Guba (2000) maintained that there are five paradigms, including positivism, postpositivism, critical theory, constructivism and participatory. Finally, Crotty (1998) saw positivism, postpositivism, constructivism, interpretivism, critical inquiry, feminism, and postmodernism as the paradigms now in use in the social sciences. We have distinguished among postivism, postpositivism, constructivism, critical and feminist, and postmodern/poststructural.

We agree with Crotty (1998) and see postpositivism as a "humbler version of the scientific approach, one that no longer claims an epistemologically or metaphysically privileged position" (p. 40). So, although postpositivists react against the rigidity of positivism, there still lingers within this paradigmatic approach some of the same beliefs, values and assumptions about how the universe operates and what that means for research. Generally, postpositivists believe that laws governing the universe exist but are difficult to ascertain. Experimental designs are not always viewed as particularly helpful because they do not emulate the social world where people live. As a result, the use of quasi-experimental research designs and some qualitative forms of inquiry are preferred. While objectivity should be a constant goal for investigators, it is difficult to achieve since their beliefs and values are embedded in the entire research process.

Investigators operating within the postpositivistic paradigm may appear to be quite varied; there are those who practice quantitative methods exclusively and those who practice

qualitative methods exclusively. You may wonder how such different research approaches could be found in the same paradigm. Although these researchers utilize different methods, they still hold some of the same assumptions about the world in which they conduct research. For example, qualitative researchers who draw from the grounded theory approach follow a somewhat mechanistic analysis approach just as that applied in an advanced Statistical procedure. Both sets of complex research techniques assume that there are laws that govern the universe and that these laws can be ascertained through rigorous research. Although much qualitative research seeks to understand the world from the participants' worldview, that understanding can also produce models of cause and effect just as path analysis models can. In fact, historically, many early and some current anthropologists practice(d) a "fly on the wall" type of ethnography that parallels the one-way mirror approach of some positivists and postpositivists. Thus, those who operate within a postpositivistic paradigm still hold similar ontological, epistemological, and methodological assumptions, although their methods may differ from positivists.

Alternative Paradigms: Constructivist, Critical, Feminist, Postmodern/Poststructural

In 1991, Lather characterized the current State of educational research as "postparadigmatic diaspora." It is a decade later and we think that her claim still seems appropriate. We initiate our discussion of alternative paradigms with this phrase so that readers will consider the number of emerging paradigms as more than just a proliferation of ways of conducting research.

Whatever the 'postmodern condition' is, it calls for an ability to locate oneself in the tensions that characterize fields of knowledge in a time of the loss of grand narratives and one best way of thinking, a time of multiplicity and competing discourses that do not map tidily onto one another, a time of unevenly legitimated and resourced incommensurabilities regarding the politics of knowing and being known. (Lather, 1999, p. 2)

We believe that the number of emerging paradigms and their critiques of the assumptions and procedures of both positivism and postpositivism warrant attention. These paradigms offer new visions of what science and research can do and be. However, because of space constraints

we only briefly introduce readers to the following emerging paradigms: constructivist, critical, feminist, and postmodern/poststructural.

Constructivism. Scholars working within the constructivist paradigm maintain that reality does not exist “out there” but is constructed by human beings in relation to each other (Crotty, 1998; Guba, 1990; Guba & Lincoln, 1994; Lincoln, 1990; Lincoln & Guba, 2000; Schwandt, 1998). Therefore, reality is contingent upon human meaning making. But, as Crotty notes, constructivism is not just about the human construction of meaning as if it were independent of phenomena in the world. Rather, it is human interaction with the world and how human then make sense of that interaction. Thus, constructivists believe that there can be no objectivity. Researchers and those being researched, or the phenomena studied, engage in dynamic interaction that creates the meaning of findings. Thus, knowledge is always a human construction and never value free.

The purpose of a constructivist research project is not to predict the world or to control it as positivists and even postpositivists might desire (Crotty, 1998; Guba, 1990; Lincoln, 1990; Guba & Lincoln, 1994; Schwandt, 1998). Constructivists identify the myriad of mental constructions of the world, try to understand them, to locate some consensus among them, and to reconstruct the world based on these understandings. Drawing from the inductive nature of qualitative inquiry constructivists seek theories that arise from the data and help explain the many ways that humans conceptualize the world in which they live.

Constructivist research, therefore, diverges sharply from the precepts of positivism and postpositivism. As you read about other emerging paradigms such as critical, feminist, and postmodern/poststructural, you should note the similarities between constructivism and these others. However, you will also note where they diverge in some basic assumptions about the world and the purpose of research.

Paradigms that challenge the status quo: Critical, feminist, postmodern/poststructural. Although there have been many books written about each of these paradigms individually, we believe that critical, some feminist, and postmodern/poststructural paradigms of research share some important assumptions about the world, the purpose of research, and the position of investigators in the research I process. The following discussion highlights these similarities. However, we warn readers that there are also important differences among these paradigms and that situating your research in any paradigm requires in-depth reading. In the following

discussion, we highlight a few distinctions among critical, feminist and postmodern/poststructural research approaches but we cannot address all of them. Furthermore, many researchers who position themselves in the critical realm blur these paradigms.

The following are some common elements that link these three research paradigms. Although not fully embraced by every researcher operating from these stances, these assumptions are central to understanding them. They include an acknowledgment [1] that positivistic research has largely failed to capture the shifting complexities of people's ways of thinking and that it has contributed to further marginalizing oppressed peoples, [2] that a researcher's beliefs and values play a significant role in the conceptualization, implementation, and analysis of the research, [3] that knowledge is socially constructed and that facts should always be viewed within their historical, political, social and economic contexts, [4] that research has always been and is currently implicated in relations of power and has political and social consequences, [5] that unequal power relations are inherent in research and that researchers must attempt to alter that traditional hierarchical relationship between "researched" and researcher, [6] that oppression is complex and that focusing only on race, ethnicity, social class, gender, and/or sexual orientation simplifies the multiple positions and contradictions that individuals simultaneously inhabit, [7] that power and knowledge are intricately tied together through discursive practices, and, [8] that an explicit attempt to challenge oppressive social and economic practices must be made through the research process (Aggar, 1991; Anderson, 1989; Giroux, 1979; Harding, 1991; Harvey, 1990; Kincheloe & McLaren, 1998; Lather, 1991, 1999; Shacklock & Smyth, 1998; Thomas, 1993; Wexler, 1992). As can be easily seen, constructivists would embrace the first three assumptions we delineated. However, the following assumptions which focus on issues of power and oppression are more reflective of critical, feminist and postmodern/poststructural approaches to research. Thus, the overall goal of critical, feminist, and some postmodern/poststructural researchers is to challenge the inequities embedded in the social lives of research participants. This is a very different type of research goal than found in the prediction, control and understanding of positivism, postpositivism and constructivism.

Critical and feminist. Researchers working within a critical paradigm wish to explore how schooling is situated within historical, political, and social contexts and how schooling serves to both reinforce dominant relations of power as well as provide space for those relations to be challenged (Aggar, 1991; Anderson, 1989; Crotty, 1998; Gunzenhauser, in press;

Kincheloe & McLaren, 1998; Lakes & Bettis, 1995; Popkewitz, 1990; Shacklock & Smyth, 1998; Thomas, 1993). Because critical researchers originally focused on how social class operated in schooling, they have been critiqued by feminists for ignoring the role of gender in oppression; by scholars of color for marginalizing the role that race and ethnicity play in oppression; and by postmodern/poststructural thinkers who questioned their use of Enlightenment ideals of progress and empowerment. As noted by Kincheloe and McLaren, the critical paradigm has been recently influenced by the writings of Foucault and Derrida, French postmodern/poststructural scholars. However, the goal of critical research is still to "produce(s), in our view, undeniably dangerous knowledge, the kind of information and insight that upsets institutions and threatens to overturn sovereign regimes of truth" (p. 260).

Feminist researchers have focused on how the subject position of female operates in society at large that is usually characterized as patriarchal in nature and have also explored how feminist researchers' identity impacts the research process (Bloom, 1998; DeVault, 1996; Harding, 1991; Kirsch, 1999; Maher & Tetreault, 1993; Reinharz, 1992; Smith, 1987). Feminist theorists and researchers have argued that phallogentric ways of thinking have dominated traditional research and perpetuated the oppression of women and other marginalized groups. Thus, feminist researchers explore how gender remains hidden in common understandings of a phenomenon such as work. At the same time, many feminists have attempted to alter the traditional characteristics of the research act by advocating more collaborative research (between researcher and those being researched and among researchers themselves); focusing on the everyday realities of people's lives; and interrogating their own subjectivity in the research process. Critical and feminist researchers are typically unabashed by their theoretical stance and their explicit research goal, and most critical and feminist research studies are replete with that information.

Postmodern/poststructural. Researchers working within a poststructural/postmodern paradigm operate from a very different worldview than researchers who still claim the tenants of the Enlightenment as forming their basis of research, which would include all positivists, postpositivists, constructivists, and many critical and feminist researchers. This genre of research challenges notions of universal Truths, the supremacy of rationality, and the goal of progress and focuses on ways that meaning is produced and struggled over (Britzman, 1997; Cary, 1999; Crotty, 1998; Kenway, Willis, Blackmore, & Rennie, 1994; Lather, 1991, 1999).

Drawing from Foucault, poststructuralists maintain that power and knowledge are intricately tied together in the concept of discourse that refers to how people speak about a phenomenon, or how they frame or understand it. Therefore, discourses construct how we may think and not think about something. For example, in Western culture dualistic or binary thinking is an acceptable way to construct an understanding of the world. Thus, there is scientific thought or nonscientific thought; rational or irrational thought; feminine or masculine; and good or bad. According to postmodern/poststructural thinkers and researchers, there is little awareness of and tolerance for ambiguities, omissions, and disruptions of such a dualistic way of thinking, and these disruptions, omissions, and pluralities of meaning are much more prevalent than acknowledged. Further, these pluralities of meaning are not given equal weight in society; dominant discourses wield much more power than those outside dominant society do. Poststructuralists would critique the hegemony of science (positivism and postpositivism) that still dominates the world of workforce education. Concepts such as validity and reliability continue to have the power to determine how a research project is conceptualized and whether it will be acceptable to committee members and advisors.

From Paradigms to Practice(s): Three Examples of Research in Workforce Education

Some of you may wonder why an introductory chapter in a book on research has devoted so many pages to exploring philosophy, theory and history in research. We position ourselves within alternative paradigm beliefs and maintain that research is embedded in particular social, political, economic and historical contexts. Furthermore, we believe that understanding the history of positivism, postpositivism, and the newly emerging paradigms will help you follow a discussion of their pragmatic differences.

In the remaining pages of this chapter we examine three workforce education studies that exemplify some of the paradigmatic differences we have discussed. We believe that the nebulous ideas and concepts presented in the first part of this chapter may solidify when viewed in the context of a study. All three examples are refereed publications that can be easily accessed for further perusal. We have chosen to present them in an order that parallels our discussion of paradigms. First, we detail a quantitative study that operates from the postpositivistic paradigm. Second, we examine another postpositivistic study, one that incorporates both quantitative and

qualitative methods. Finally, we discuss a qualitative study that draws from the critical paradigm of research. We hope that the interrogation of these three studies enhances your understanding of the pragmatic implications of research paradigms.

A Quantitative Study

Dawes, Horan, and Hackett (2000) employed an experimental design to determine whether a published technology education program *caused* female students to consider nontraditional technical and scientific careers. Specifically, they stratified 169 seventh- and eighth- grade students according to grade, and then randomly assigned them to either a published technology education curricula or to a control curricula. The treatment was applied over a seven-week period. The researchers hypothesized that the treatment would foster female interest in at least three out of 21 possible technical and scientific careers. Valid and reliable pre- and post-test instruments were used to determine possible gains in either technical-scientific self-efficacy or career interest.

Quantitative researchers, such as Dawes et al. (2000), use theory to develop their hypotheses to test the relationship of variables through the use of instruments. To help examine the relationships among variables with respect to gender these researchers used a framework derived from self-efficacy theory. Specifically, they sought to determine causes and effects, and relationships. To accomplish this, they imposed a treatment on selected seventh- and eighth-grade technology education students. While this experiment was conducted in a natural rather than an artificial environment, the researchers attempted to detach themselves from their research *subjects* through the use of instruments and research proctors, to avoid bias.

The term "subjects" is especially symbolic for quantitative researchers conducting experimental or quasi-experimental research because its connotation suggests *subjecting* selected humans to a treatment. While most of us would consider the treatment imposed by Dawes et al. (2000) as helpful, the notion of treatment suggests a differential power relationship since researcher(s) make all of the decisions regarding the content of the treatment, how it is to be administered, and who receives it.

Because Dawes et al. (2000) adhered to accepted postpositivistic principles of validity and reliability, generalizability and prediction were outcomes that they sought. Further, they

suggested their research effort contributed to the "truth" regarding whether a particular published technology education program *causes* female students to consider non-traditional technical and scientific careers.

A Qualitative Study Within Postpositivism: Grounded Theory

Ellibee (1997) sought to identify attributes of quality education-for-work curricula through interviews with curriculum practitioners. Although Ellibee conducted a qualitative investigation, her research can be considered postpositivistic because she employed a grounded theoretical perspective. This qualitative tradition, whose origins reside in the discipline of sociology, advocates a very technical and rational approach to data collection and analysis.

For example, in identifying and contrasting data incidents, Ellibee (1997) found an essential attribute relevant only "if at least half of the participants in at least three of the sites visited deemed it important" (p. 29). In fact, Ellibee presented a series of modified frequency charts as part of her data representation, an uncommon practice for most qualitative researchers. Ellibee also expressed the concern of representativeness shared by most quantitative researchers and embraced the position that a thorough understanding of one site cannot be accomplished without knowledge of other similar sites. Therefore, she employed a multi-case research design.

In an effort to avoid theoretical over-determination (for which critical, feminist, and postmodern/poststructural researchers are critiqued), Ellibee (1997) purported to begin her study without a theory even though she made initial research assumptions on what elements constituted quality education-for-work curriculum. While collecting data she constantly sought to develop a model in an effort to explain attributes of quality education-for-work curriculum. Further, she constantly compared the data collected from different sites and only stopped her project when she was no longer finding any additional information.

One of the primary implications of Ellibee's (1997) findings is that contextualized education-for-work curriculum is more effective than a fragmented, decontextualized approach, an assertion made by a variety of researchers working in different paradigms. Thus, while postpositivistic, constructivist, critical, feminist, and postmodern/poststructural researchers may adhere to different principles and practices of research, their respective findings sometimes support one another.

A Critical Qualitative Study

The goal of critical researchers is to not only understand the world but also to alter existing inequities. Darrah (1994) found it problematic that much of the literature concerned with workplace skills conceptualized work as unambiguous, instrumental, rational, and generalizable. Drawing from critical theory he critiqued existing conceptualizations of skill requirements as still manifesting Taylorian values and emphasized the social nature of work and the human capacity to understand and change technology and organizations.

To explore how workers' skills are impacted by the context of their respective places of work, Darrah (1994) and other researchers affiliated with the Educational Requirements for the New Technology and Work Organization Project conducted four qualitative case studies. Each case represented a different sector of the economy (e.g., industrial, service). The first goal of this research project was to explore, describe, interpret, and explain the total complexity of skill requirements of workers in specific workplaces in an in-depth manner. To accomplish this goal, Darrah immersed himself in the lives of *participants* and their use of skills in the workplace. In a sense, the investigators became the instruments of the study. This aspect of the study could be found within any paradigms of qualitative research including feminist, constructivist, and some aspects of postpositivistic.

Through Darrah's (1994) critique of the dominant approach by workforce educators to conceptualize skill requirements, his use of particular references (e.g., Vallas, 1990), and his desire for workforce education curriculum to address the notion of agency, it is apparent that he drew from critical theory. However, Darrah was not explicit about his theoretical framework, which is somewhat of an anomaly among those who work within alternative paradigms.

Darrah (1994) wanted to provide an understanding of skill requirements from participants' perspectives. He wanted to learn from the participants and so interviewed them and observed them at work. He used a more inductive approach or emergent design. More specifically, Darrah [1] used natural settings as sites of his study, [2] placed more emphasis on meaning and process, [3] was more concerned with a holistic understanding of phenomena, and [4] tried to illuminate the contextual differences among skills in light of the different places of work in which they are found. Darrah not only found that the workplaces in different industrial sectors required different skills but he also found that each particular workplace environment

required different specific skills; thus, troubling the notion of preparing workforce education students with narrow, specific, decontextualized skills. Further, this troubling was part of a critical researcher's attempt to challenge oppressive and dominant ways of thinking and living.

Conclusion

We end our discussion of research paradigms with our thinking of what it means to be a scholar in the new millennium. The uncertainty of the world of research alluded to at the beginning of this chapter is also found in our own field of workforce education and the institutions in which our programs are housed Universities and their academic programs now face increased scrutiny from public governing bodies, decreased state revenues, and a rapidly changing political and social context (Aronowitz, 2000).

We believe that the uncertainty that envelopes the world of research and the liminal landscape of the university offer possibilities to rethink/reinvent/re-envision what it means to be a scholar and researcher. First, we maintain that opening up what constitutes research, in other words encouraging a paradigm proliferation, has and will contribute to the rethinking and possible rejuvenation of workforce education. At the same time that we celebrate the fact that there is room for differing ways of conceptualizing, implementing, and (re)presenting data, we acknowledge the need for all researchers to be thoughtful about their work. For us this means that researchers must see themselves not as technicians applying a set of methods and practices, but as scholars who acknowledge the philosophical assumptions that undergird their practices and who can situate themselves within the wide continuum of what constitutes research. Most importantly, scholars should be able to articulate the why of their research both paradigmatically and pragmatically. We believe that these types of conversations are central to promoting more thoughtful research and hopefully more thoughtful practices in workforce education.

Pragmatism research philosophy accepts concepts to be relevant only if they support action. Pragmatism recognises that there are many different ways of interpreting the world and undertaking research, that no single point of view can ever give the entire picture and that there may be multiple realities [1]. Pragmatism can combine both, positivist and interpretivism positions within the scope of a single research according to the nature of the research question. As it is illustrated in the table below, unlike positivism and interpretivism research philosophies, pragmatism research philosophy can integrate more than one research approaches and research strategies within the same study. A research paradigm is a conceptual framework that researchers use to conduct the research. The two basic research paradigms are positivism and interpretivism. Every research uses one of the research paradigms to use as a guideline for developing research methodology and to take on the research venture in a manner that is most valid and appropriate. Though basically there are two paradigms but there are several other paradigms emerged from these two especially in the social science research. Though basically there are two paradigms but there are several other paradigms emerged from these two especially in the social science research. One of the paradigms that emerged in the recent years is the mixed-method research. Why one paradigm is quantitative while other is qualitative in nature? A quantitative approach to solve problem is based on highly rigorous, controlled techniques. This rigor implies that researcher controls all other variables that can effect the study. Until the birth of the pragmatic paradigm it was believed that qualitative research cannot be combined with quantitative approach. Pragmatic approach combined quantitative and qualitative approach in one methodology. This mixed method approach help the research better understand otherwise purely qualitative research. The constructivist believe that there is a constructed reality that is based on the experiences, circumstances, and situations.