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# Methods and Paradigms in Education Research



## Methods and Paradigms in Education Research

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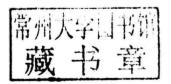


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## Methods and Paradigms in Education Research

Lorraine Ling Victoria University, Australia & La Trobe University, Australia

Peter Ling Swinburne University of Technology, Australia



A volume in the Advances in Educational Marketing, Administration, and Leadership (AEMAL) Book Series



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#### Foreword

#### TILLING PARADIGMATIC GROUND

Paradigms defined as worldviews or frameworks for higher order of thinking serve to make explicit the assumptions that guide thinking throughout the research process and to insure that decisions are made that are congruent with paradigmatic assumptions. Recognizing the power of research is an ethical responsibility as rigorous ethical reach can lead to improved understandings of problems and identification of effective solutions, whilst the opposite is true if research is not conducted in a rigorous manner. Given this assertion, why is it important for researchers to identify the paradigm that they use to frame their research? Some might argue that researchers can (and do) conduct research without being explicit about their paradigmatic positioning. However, when a researcher does not explicitly identify with a paradigm, their work is still being influenced by a paradigmatic stance, albeit without a critical examination of the implications of that paradigm's assumptions.

In addition to the ethical responsibility that researchers have to conduct rigorous research, they also have an ethical responsibility to recognize the power of paradigms and the methodological implications of paradigmatic choices. These points are addressed in *Methods and Paradigms in Education Research*. In this volume, many questions are raised about the role paradigms play in education research and the challenges that education researchers face. These range from the role and nature of paradigms to the application of paradigmatic frameworks in the design and conduct of research, as well as in the preparation of new researchers.

As Ling and Ling make clear, paradigmatic positionality has implications for every step of the research process — even before a topic is decided for a research study — because research topics can be selected for many different reasons and by many different processes. Paradigms encourage us to think critically about the origins of the research topic. Will the research topic be chosen by researchers themselves on the basis of personal interest and a scholarly literature review? Will the research topic be chosen based on expressed desire by members of a community about an issue of relevance for them? What will be the process for modification to the research topic once an area of interest is determined? Will efforts be made to include diverse members of communities in determining the focus of the research? Answers to these questions are dependent on the paradigmatic stance of the researcher.

Differences of opinions exist in the education research community about the nature of paradigms and their role in research studies. For some researchers, paradigms are made up of assumptions that are consistent with a researcher's core values, hence a researcher's paradigmatic position does not change from study to study. For other researchers, a paradigm is a set of assumptions that is viewed as appropriate for a specific research endeavor. Hence, if the research endeavor changes substantially from

study to study, the researcher may shift to a different paradigm. This raises questions about the power of paradigms discussed in this book. Is it possible for a researcher to hold that there is one reality waiting to be discovered within a certain level of probability when asked to conduct a study that focuses on this type of problem and then hold that there are multiple socially constructed realities for another study in which this assumption seems to be better suited? Or would a researcher view the problem differently because they hold a specific view of the nature of reality and thus conduct research in ways that are reflective of that assumption? What are the implications of real world constraints, such as competitive funding opportunities, on the researcher's ability to use their chosen paradigm in a research endeavor? What are education researchers' ethical responsibilities when they encounter a commissioned research project that specifies a paradigmatic framework that they do not think is appropriate for this endeavor? What arguments are possible to influence the commissioners of research that would allow for more flexibility for paradigmatic choices?

Philosophical assumptions associated with paradigms in education research have been categorized as axiological (ethics), ontological (reality), epistemological (knowledge), and methodological (systematic inquiry) (Mertens, 2015; Mertens & Wilson, 2012). The characteristics of each paradigm that are discussed in Paradigms and Methods in Education Research provide one way to define each paradigm. As Ling and Ling acknowledge, there are other opinions about how to characterize each paradigm. For example, the transformative paradigm arose from concerns raised by members of marginalized communities and their advocates that research either did not include them or included them in ways that did not accurately capture their experiences (Mertens, 2009). It is designed to raise critical questions about the status quo and to challenge practices that sustain oppression. The transformative axiological assumption is determined by members of marginalized communities who express a desire to have their rights respected and to have research conducted that will contribute to socially just solutions. The outcome of a transformative study is to increase knowledge and capability to bring about those socially just solutions for social transformation. It can be argued that transformative researchers conduct their work with greater impartiality (than is commonly considered in the concept of objectivity) because they make efforts to be more inclusive of the full range of voices of stakeholders affected by the research. There are no foregone conclusions before the research is started. The research is conducted in a transparent, inclusive manner in order to obtain conclusions that would be biased if only the views of the powerful were included. There is a commitment to inclusion of diverse voices in the research process so that the powerful do not determine what is to be studied and how it will be studied. Transformative research is not conducted to support a particular point of view; it is conducted to reveal different versions of reality and to bring to visibility the consequences of accepting versions of reality that sustain oppression. Transformative research is solution oriented — people from marginalized groups do not want yet another researcher coming into their communities to tell them one more time what is wrong with them. They want effective solutions. In order to get effective solutions, the researcher needs to engage in the complexity of the context and the phenomenon under study, using a systematic method of data collection to inform the outcomes. The intent of transformative research is to include the perspectives of a wide range of stakeholders so that it is not the biases of the researcher that determine the outcomes. Clearly the way each paradigm is understood and defined has important implications for education researchers.

Choices of paradigms can also be looked at as cultural phenomenon in and of themselves when the education research community is viewed as a cultural group. Are researchers aware of the history of educational research and the dominance of particular paradigms over time? What is the power structure within the academy that supports the use of one paradigm over another? What is the research commu-

nity's ethical responsibility to diversify its ranks in order to bring different voices into the conversations about appropriateness of specific paradigms within the education sector? What would be the effect of having more research methodologists who were representative of marginalized groups? Would that shift the power balance in terms of paradigms that are viewed as being appropriate for education researchers?

The emergence of mixed methods as a conscious study of research methodology has also served to raise questions about paradigms (Mertens et al., 2016; Mertens, in press). How can a researcher who truly believes that there is only one reality waiting to be measured mix quantitative methods with qualitative methods? How can a researcher who truly believes that there are multiple socially constructed realities combine qualitative with quantitative methods that are designed to converge findings into a single number? This quandary has been raised under the moniker of the incompatibility of paradigm merger and suggests that researchers must "stay in their lane" rather than merge or cross over. Yet other scholars suggest that it is possible to include both quantitative and qualitative methods in a single study and still conduct research that is internally consistent with paradigmatic beliefs, whether that is positivist, interpretivist, transformative, or pragmatic. Mixed methods thinking has advanced to recognize that the combination of quantitative and qualitative approaches is a methodological decision and that it is possible to make that choice under any of the paradigms currently in play in the education research community (Mertens et al., 2016; Mertens, in press). The look of the study will be different because researchers who align themselves with different paradigms will frame the study differently and seek to answer different kinds of questions.

This search for the role of paradigms in research is especially timely given the acknowledgement by the research community that we need to address the concept of complexity if we are to contribute to understanding the nature of problems and the development of effective solutions in education. Is a supercomplexity paradigm (Bauman, 2014) necessary or do other paradigms need to integrate concepts of complexity into their worldviews? What would the integration of concepts of complexity look like in the different paradigms? Is there a better fit in one or the other of the paradigms for this concept? How can the complexity and dynamic nature of reality be incorporated into a positivist, neo-positivist, interpretive, transformative, or pragmatic paradigm? Is it necessary to include the idea of complexity in all types of research? What are the consequences of over-simplifying understandings that could result from research that does not incorporate complexity?

Education researchers have long recognized the interdisciplinary nature of education, covering an age range from infancy to adulthood. Thus, questions that are inclusive of the concept of complexity seem particularly apropos for education researchers. For example, in education research, questions often arise about the lack of sufficient student achievement, particularly among children of poverty or from marginalized groups. This is a perennial question. Research that over-simplifies the nature of the problem and development of solutions may be considered a waste of time and resources. Multiple variables contribute to student achievement. These are not limited to what happens in the classroom. Certainly the quality of teaching, access to appropriate instructional materials, provision of a safe environment, family involvement, and good leadership are important considerations. However, school personnel work in communities that have a historical legacy that also needs to be considered that influences those aspects of the communities that support or inhibit a student's ability to learn. Should research focus solely on the teacher-student interaction as a way to address lack of achievement? How can different paradigmatic positions help to raise questions about the complexity of the surrounding environment in concert with what happens in the schools to improve the probability that problems will be better understood and the effectiveness of potential solutions?

#### Foreword

The preparation of new researchers is also a challenge that arises within the context of multiple paradigms as options in education research. What is the influence of the professor or supervisor's own paradigmatic stance on their teaching about paradigms and methods? What teaching strategies can be used to encourage students to critically examine their own assumptions and to be able to articulate the assumptions that guide their own choices? What are the risks that students take if their positionality is not one that is advocated by the mainstream academic set at their university? What are the implications of cultural and linguistic differences between professor and student? Of differences in terms of status as a member of a marginalized community or someone who experiences oppression on a daily basis? Of differences in terms of home country? If students come from and plan to return to a different country, how is that situation supported in the teaching about paradigms? The questions raised here apply not only to new researchers, but also to experienced researchers who are in a continuous learning mode. Perhaps exposure to new ideas can contribute to advancement in research methods by transforming the professors and other professionals who prepare new researchers as well.

In *Methods and Paradigms in Education Research*, the contributors provide perspectives about the concept of paradigms from many different countries. They also provide examples of research studies that were consciously designed and conducted within specific paradigmatic traditions in some instances and paradigms that were understood more fully retrospectively. This provides excellent insights into the implications of paradigm choice in terms of methods, as well as in terms of the types of outcomes that result. For example, is the use of the transformative paradigm only appropriate when the major focus of education research is a recognized marginalized population such as the LGBTQ community or racial/ethnic minorities or women in the sciences? Or, is the transformative paradigm equally important in research with mainstream communities in order to avoid homogenization of results as interventions often have differential effects on invisible or unrecognized members of marginalized communities? Is disaggregation of data under the positivist, neo-positivist, or pragmatic paradigms sufficient to illuminate the experiences of people who experience discrimination in the educational setting but may not be the specific focus of a study? These are questions that arise when consideration is given to the identification and application of paradigmatic frameworks in education research.

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### **Preface**

#### **TARGET AUDIENCE**

This book is designed for academics and students taking courses of study on research methods. The book can be used by academics teaching education research methods to assist their students to:

- 1. Understand the centrality and power of the research paradigm;
- 2. Describe, locate and compare alternative approaches to education research;
- 3. Identify their own research interests and motivations and to locate them within a paradigm;
- 4. Design research proposals and interpret findings;
- 5. Read and critique research publications and papers.

This book is also designed to inform and support education researchers, post-graduate research students and their supervisors, and others engaging in education research, such as academic developers in universities and teachers in schools.

In this book, the research paradigm takes prime position. The paradigm may be used to inform research design and implementation. The research paradigm provides a basis for choices about data collection strategies and data analysis techniques, and decisions about the nature and form of the findings and the conclusions that can be drawn. That is not to say that a research endeavor needs to start with a paradigm; the particular research exercise is likely to be initiated by a research interest or research question. What is contended here is that, whatever initiates a research interest, being clear about the paradigm in which the research is conducted is critical in ensuring all elements of the research exercise are congruent.

#### COMPONENTS

The first section of the book, in Chapters 1 and 2, includes the conceptual base for the publication. In Chapter 1 the concept of research paradigms and the typology employed is introduced. Lorraine Ling, in Chapter 2, goes on to elaborate a framework for the design, implementation and interpretation of research in education, based on research paradigms. She discusses elements of research paradigms in detail. Section 1 of the book includes a chapter by Fraser and Pechenkina (Chapter 3), reflecting on the research paradigms employed in articles in two education development research journals. The neopositivist paradigm in the inductive mode emerged as the dominant paradigm in both journals. Robertson,

in Chapter 4, suggests how, with better understanding of research paradigms, doctoral candidates and their supervisors can deepen their philosophical, and meaning-making constructs.

The following sections of the book provide reflections on research methods and research paradigms in a variety of education research projects or specialist areas. The Sections relate to the paradigm typology employed in the book.

Section 2 provides instances of research based on an understanding of patterns and consistencies in areas of educational practice. Devlin, in Chapter 5, reviews a case study, informed by the neo-positivist research paradigm, involving an approach to improving teaching in higher education. Pollock and Hauseman, in Chapter 6, reflect on conclusions that may be reached and issues arising in the use of observation in an investigation of the work of school principals. In Chapter 7 Leder critiques research methods and instruments employed in an investigation of school mathematics performance and affect. In Chapter 8 Smith reflects on the use of Structural Equation Modelling for the exploration of the impact of aspects of curriculum design on student learning and satisfaction.

Reflections on instances of interpretivist research are reported in Section 3. Kelly, in Chapter 9, reviews her work on teachers' ontological and epistemological beliefs and the impact of those beliefs on approaches to teaching. In Chapter 10 King provides a characterization of students' approaches to learning mathematics in the context of an engineering mathematics course. He reflects on possible implications of the study for the teaching of engineering mathematics. Vicars, in Chapter 11, provides a research analysis that can be seen as relating to the transformative research paradigm. He reviews "queerly" located enquiry and declares it "a code of our own." The chapter draws on queerly operationalized research projects that involved investigation of same-sex sexualities, sexuality-related diversity, equality and inclusion in educational domains.

Research commissioned to address practical issues, in a political context, is addressed in Section 4. Livingston, in Chapter 12, reflects on understandings of the researcher and of commissioning bodies where education research projects are commissioned by government agencies, and on the consequences for selection of a research paradigm. In Chapter 13 Peter Ling reports on a commissioned transnational education research project focused on arrangements for leadership and concludes that the pragmatic paradigm applied.

Section 5 is entitled "Shifting Sands," reviewing instances of what Lang, in Chapter 14 refers to as "paradigm surfing." Lang reflects on her journey through several paradigms in conducting education research in the computing discipline. Mackenzie, in Chapter 15, focuses on a research journey and the conscious and subconscious application of paradigms to research design in researching the learning and teaching of writing. Giridharan, in Chapter 16, reviews a study she undertook investigating lexical inferencing strategies employed by second language learners. She notes a paradigm shift as the study progressed through stages. In Chapter 17 Calway, while arguing for adoption of the neo-positivist research paradigm, looks at a range of issues and paradigm possibilities in investigating work-integrated learning.

Section 6 relates to the possibilities of a "supercomplexity" research paradigm. Barnett, in Chapter 18, revisits and extends his work on the university in an age of supercomplexity and its implications for research in education. He refers to planes, possibilities and poetry in researching supercomplexity. Authors of the two following chapters, upon reflection, place the work they refer to in the supercomplexity paradigm. Selkrig and Keamy, in Chapter 19, refer to becoming comfortable with supercomplexity. They describe themselves as rhizome researchers with many conceptual tools and practices available to open new types of inquiry. Rose, in Chapter 20, identifies five categories of contribution by the "Black Academy" in Australian higher education today and styles the result "a supercomplex renaissance."

#### **USING THE BOOK**

Readers are encouraged to start with Chapter 1, which introduces the research paradigm framework used in the book and its implications for the design and critique of education research, and then to engage with the more detailed definition of research paradigms provided in Chapter 2. From there you may wish to peruse chapters where the particular research paradigm or the subject of the research is of interest to you. Chapters portray practical experience in working through research method and research paradigm issues. It needs to be acknowledged that applying research paradigms is not all plain sailing in the practical situation. Nevertheless, the hope here is that reflection on matters addressed in the following chapters will assist in providing a sound platform both for critique of education research and for ensuring coherence in research design.

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# Section 1 Paradigms in Education Research

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