

DOING EDUCATIONAL RESEARCH

BOLD VISIONS IN EDUCATIONAL RESEARCH

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Defining characteristics of books in the series are their explicit uses of theory and associated methodologies to address important problems. We invite books from across a theoretical and methodological spectrum from scholars employing quantitative, statistical, experimental, ethnographic, semiotic, hermeneutic, historical, ethnomethodological, phenomenological, case studies, action, cultural studies, content analysis, rhetorical, deconstructive, critical, literary, aesthetic and other research methods.

Books on *teaching and learning to teach* focus on any of the curriculum areas (e.g., literacy, science, mathematics, social science), in and out of school settings, and points along the age continuum (pre K to adult). The purpose of books on *research methods in education* is **not** to present generalized and abstract procedures but to show how research is undertaken, highlighting the particulars that pertain to a study. Each book brings to the foreground those details that must be considered at every step on the way to doing a good study. The goal is **not** to show how generalizable methods are but to present rich descriptions to show how research is enacted. The books focus on methodology, within a context of substantive results so that methods, theory, and the processes leading to empirical analyses and outcomes are juxtaposed. In this way method is not reified, but is explored within well-described contexts and the emergent research outcomes. Three illustrative examples of books are those that allow proponents of particular perspectives to interact and debate, comprehensive handbooks where leading scholars explore particular genres of inquiry in detail, and introductory texts to particular educational research methods/issues of interest. to novice researchers.

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I. INTRODUCTION

JOE L. KINCHELOE AND KENNETH TOBIN

1. DOING EDUCATIONAL RESEARCH IN A COMPLEX WORLD

Preface

The last half of the first decade of the twenty-first century is a strange time for educators. Many of the gains many of us thought we had made twenty years ago are under assault and many of the epistemological fights for the benefits of multiple ways of doing educational research in which we were forced to engage in the 1980s are breaking out again. The right-wing recovery movement—a reeducation of the public to accept Eurocentric and often male ways of both being and seeing—has shaped everything from the corporatization of the public space, the social positioning of poor people and people of color, the politics of public knowledge to the ways we conceptualize and validate research about education.

Indeed, it is a strange and challenging time. It is in such a *Zeitgeist* that we have put together *Doing Educational Research*. After having lived through this last 25 years, we have come to believe that a book dealing with diverse, innovative, challenging, and rigorous ways of conducting educational research that is both thought-provoking and practical is sorely needed. To accomplish this task, we have brought together some of the most innovative minds in contemporary educational research. We believe that the combined efforts of these scholars have produced a unique and highly usable text that will work to engage new generations of scholars while reinvigorating mature researchers in the complications and vagaries of doing educational research.

We find educational research intrinsically exciting and even mysterious. No matter how much the mavens of evidence-based inquiry in right-wing movements may insist that there is one right way to produce educational research, we are convinced of the power of multiple ways of seeing the world—the educational world in particular.

We believe that there are yet unexplored domains of human consciousness, cognition, teaching and learning. While we make no claim that we have achieved some transcendent way of approaching knowledge—not by a long shot—we do believe that some of the ideas and concepts explored here may lead the wisest among us to new domains of human thinking, exploring, being, and doing.

A STARTING POINT FOR RECONCEPTUALIZING EDUCATIONAL RESEARCH

We construct *Doing Educational Research*, thus, as a starting point for something much greater than what is produced here. In the finest critical tradition the authors writing here initiate an exploration of what could be: new exciting ways of understanding educational phenomena, being students of the world, and changing those aspects of education that bring about injustice, pain, and suffering. Indeed, we believe in the power of the ideas the authors of this book delineate in their chapters, and in this context, we sense we are still in the early stages of a journey that will eventually change the basic ways we conceptualize both the act of knowledge production and the process of teaching and learning.

Employing these diverse ways of seeing and making meaning delineated in the following chapters, educational researchers begin to discern interconnections between ideas, physical objects, political decisions, social circumstances, and the teaching and learning process that have been previously ignored. A complex critical mode of educational research is aware of many different perspectives, the vantage points of diverse disciplines of knowledge (e.g., history, philosophy, economics, psychology, literary criticism, sociology, etc.) and transdisciplinary ways of seeing such as cultural studies. Educational researchers informed by these multiple perspectives understand relations between values and different interpretations of the world in general and education in particular. They understand the way one's location in the world or position in the web of reality (e.g., one's race, class, gender, sexuality, religion, ideology, epistemology, etc.) helps shape how one sees self and world. Educational researchers who do not understand these dynamics of positionality (the way one is situated in the world) and their impact on the questions we ask of education, schooling, politics, etc. are babes in the research woods. Their claims of objectivity fall on fallow ground.

The researchers who have written the following chapters understand these issues and work to follow them to new research spaces and intellectual places. With this in mind we want our readers to accompany our authors on these journeys. Indeed, we want them to recognize and understand the benefits of diverse ways of thinking and understanding the world and the cosmos of education. While we deeply respect those who have come before us and have helped us get where we are, we are ambitious—we want to go farther into the epistemological and ontological fog. While important benefits have historically come from educational research, past practice in the domain and the contemporary regressive efforts to reclaim the worst of such ways of researching are insufficient to the task of improving education.

Not only is there more to learn, more to be addressed, more to do, contemporary educational researchers must have the skill and will to fend off the regressive purveyors of one-truth, monological, and reductionistic ways of viewing education. In this context the researchers who crafted this book provide alternatives to the arrogance of positivist reductionism with a radical humility, a fallibilism, an awareness of the complexity of our task. We are aware of how little we know about the immensity of it all, but we push on. We view ourselves and our ways of seeing in the light of new horizons and new contexts, in the process recognizing previously un-

noticed connections. Such connections alert us to new dimensions of what we are capable of engaging—the ones we previously missed. Critical, yet humble, we push for something better.

BEYOND HYPERRATIONALITY: INTO A NEW DOMAIN OF CRITICALITY AND COMPLEXITY

Obviously, one of our most important concerns in this volume is to avoid the surge of hyperrationality and the instrumental rationality that characterizes it. Such a rationality involves an obsession with means rather than ends, method, procedure, and efficiency rather than an effort to understand the world so we can better serve the needs of human beings. As this hyperrationality limits questions to “how to” rather than “why should,” we are reminded of the meticulous Nazi medical researcher obsessed with recording and analyzing the “cephalic index” (the shape of one’s head) of those entering Hitler’s death camps while ignoring the moral implications of genocide. Concurrently, we understand that resistance to such hyperrationalism does not necessitate the embrace of an irrationality characterized by a nihilism and relativism that offer no hope for scholarly growth or ethical action. In *Doing Educational Research* we avoid these untenable extremes and search for new and more compelling modes of reason—in other words, new forms of knowledge production that allow us to understand more so that we can engage in empowered action for our individual and social good.

As you read the following chapters, one begins to understand that all of the authors in this volume are searching for something better, are attempting to move into a new domain of educational research. All of them are concerned with the role of the self in research, the role of relationship(s) and multiple contexts in understanding pedagogical phenomena. With these concerns at the front burner of our consciousness, we attempt to blaze new trails into the epistemological (the branch of philosophy that deals with knowledge) and ontological domains (the branch of philosophy that deals with the nature of being in the world). In the epistemological domain we begin to realize that knowledge is stripped of its meaning when it stands alone. This holds profound implications in education and research because more positivistic forms of educational science have studied the world in a way that isolates the object of study, abstracts it from the contexts and interrelationships that give it meaning. Thus, to be a critical researcher that takes the complexity of the lived world into account, we have to study the world “in context.” All of the authors here agree that we have to search for the interrelationships and contexts that give knowledge meaning while avoiding reliance upon decontextualized study.

Operating in the ontological realm educational researchers understand that to be in the world is to operate in context, in relation to other entities. Western Cartesian (coming from the tradition of the scientific method delineated by Rene Descartes in the 1600s) science has traditionally seen the basic building blocks of the universe as things-in-themselves. What much recent research in physics, biology, social science, the humanities, and cognitive science has posited involves the idea that relationships not things-in-themselves are the most basic properties of things in the

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world. In the ontological realm this would include human beings themselves. To *be* in the world is to be in relationship. People are not abstract individuals who live as fragments, in isolation from one another.

Humans come to be who they are and change who they are as a result of their interrelationships, their connections to the social sphere. They learn to think and talk via the socially constructed languages, deport themselves via cultural norms in their communities, and take care of themselves by imitating significant others in their immediate environment. Race, class, gender, sexual, religious, geographical place affiliations exert powerful influences on how they see themselves and their relation to the world. To be human is to be in relation to.... And, importantly, for those engaging in educational research, we understand that to be human is to possess the power to change, to be smarter than we now are, to engage in praxis—transformative action informed by the insights gained from our inquiry.

As most of us know by now, many observers have come to the conclusion that the simplicity of Cartesian rationalism and mainstream forms of educational knowledge production has not meet our needs. This is the realization that is being challenged by those who would attempt to recover the infallibility of Western traditions. The web of reality is composed of too many variables to be taken into account and controlled. Scientist Illya Prigogine (Prigogine & Stengers, 1984) labels this multitude of variables, “extraneous perturbations,” meaning that one extraneous variable in an educational experiment can produce an expanding, exponential effect. So-called inconsequential entities can have a profound effect in a complex nonlinear universe. The shape of the physical and social world depends on the smallest part. The part, in a sense, is the whole, for via the action of any particular part, the whole in the form of transformative change may be seen. To exclude such considerations is to miss the nature of the interactions that constitute reality. The development of a reconceptualization of educational research does not mean that we simplistically reject all empirical science. It does mean, however, that we conceive of such scientific ways of seeing as one perspective in the complex web we refer to as reality.

ACCOUNTING FOR THE COMPLEXITY OF THE EDUCATIONAL COSMOS

All of the authors of *Doing Educational Research* attempt in their own way to account for this complexity and develop ways of seeing and being that avoid reductionism. As educational research comes to recognize the complexity of the lived world with its maze of uncontrollable variables, irrationality, non-linearity, and unpredictable interaction of wholes and parts, they begin to also see the interpretative dimension of reality. Educators have been “scammed” by a science that offers a monological process of making sense of the world. Critical researchers who appreciate the depth of this complexity maintain that we must possess and be able to deploy multiple methods of producing knowledge of the world. I (Joe Kincheloe)—borrowing from Norman Denzin and Yvonna Lincoln, Claude Levi-Strauss and Jacques Derrida—have referred to this elsewhere as the bricolage (Kincheloe, 2001, 2005; Kincheloe & Berry, 2004). Kathleen Berry and Shirley

Steinberg extend our understanding of the bricolage in their chapters in this volume.

Such methods provide us diverse perspectives on similar events and alert us to various relationships between events. In this complex context we understand that even when we use diverse methods to produce multiple perspectives on the world, different observers will produce different interpretations of what they perceive. Given different values, different ideologies, and different positions in the web of reality, different individuals will interpret what is happening differently. We never stand alone in the world, especially when we produce knowledge. We are connected and constantly affected by such connections in every step of the research act. Understanding these aspects of the connections between the knower and the known modifies the very way we approach knowledge, research design, research method, and interpretation.

When inquiry is conceptualized as a complex process we begin to understand that research is not something employed by solitary negotiators operating on their own. Educational researchers use language developed by others, live in specific contexts with particular ways of being and ways of thinking about thinking, have access to some knowledges and not others, and live and operate in a circumstance shaped by particular dominant ideological perspectives. In its effort to deal with previously neglected complexity, the view of research offered here appreciates the need to understand these contextual factors and account for them. Connected, critical research sensitive to the complexity of the lived world are not isolated individuals but people who understand the nature of their socio-cultural context as well as their overt and occluded relationships with others. Without such understandings of their own contextual embeddedness, individuals are not capable of understanding from where the prejudices and predispositions they bring to the research act originate. Any educational research that attempts to deal with the complexity of the lived world must address these contextual dynamics.

The editors and authors of *Doing Educational Research* maintain that these, social, philosophical, political and pedagogical theoretical knowledges are essential to the development of a rigorous and complex mode of educational research capable of lifting us to a new intellectual, agency-enhancing, action-based domain. In the social theoretical domain, for example, we might ask how does the existence of socio-economic inequality along the axes of race, class, gender, sexuality, physical ability, religion, and language influence the way we approach research. What happens to our research when we bring an understanding of power and justice to our analytical table? What is the effect of social theoretical insight on the subjectivity and context-dependency of knowledge production? Might, for example, the knowledge emerging here help shape the way we answer questions about the curriculum? About school purpose? About strategies for reform? About the control of knowledge? About the disturbing covert political agendas that motivate the research and research policies of particular political and educational leaders?

So-called evidence-based research and hyperrationalistic modes of positivist inquiry do not help us answer such questions. How does evidence-based research help us answer questions, about the purpose of schools? Social theory viewed in

relation to pedagogical theory in this context profoundly enhances the ability of educators as critical thinkers to evaluate the worth of particular educational purposes, public knowledge policies, articulations of curriculum, and evaluation practices. Indeed, as you read the various chapters of *Doing Educational Research*, it becomes increasingly obvious the importance each of the authors places on such social theoretical insights. The editors and authors believe that these theoretical modes help educational researchers—as well as teachers and students—escape the well regulated and administered world that unbridled rationalism works to construct. Critical, connected researchers sensitive to the complexity of socio-educational reality use these theoretical tools to sidestep new models of social control that put a chokehold on individual and social freedom. They use these tools to enhance their own and other individuals' agency.

As we engage in research to enhance our agency to fight the power of oppression in its contemporary Hydra-headed forms, the researchers operating here draw upon a critical complex theory of epistemology to provide insight into the nature of pedagogical knowledge. Rejecting hyperrationalistic notions that there is a monolithic knowable world explained by positivist science, an epistemology of complexity views the cosmos as a human construction—a social creation. The world is “officially” what dominant groups of humans perceive it to be. This complicates our notion of theory. Positivist/rationalistic theories were simple to the extent that they claimed truth-value on the basis of how they corresponded to *true* reality. More complex, counter-positivistic theories study the various philosophical and social groundings of diverse theories, learn from them, and understand the social construction of them all. In the theoretical speculations grounding our research, we take this understanding of social construction and add the critical theoretical, hermeneutical, feminist, and fallibilist dimensions. Our pluralistic and multiperspectival orientation is omnipresent, as we seek benefits from a variety of social, cultural, philosophical, theoretical positions.

In other work I (Joe Kincheloe) have used the term critical constructivism (2005) to denote my epistemological perspective and postformalism (Kincheloe & Steinberg, 1993) to denote my cognitive theoretical orientation. A short description of critical constructivism might be helpful at this point to ground the theoretical maneuvers operating in this reconceptualization of critical thinking. An epistemology of constructivism has maintained that nothing represents a neutral perspective, in the process shaking the epistemological foundations of modernist Cartesian grand narratives. Indeed, no truly objective way of seeing exists. Nothing exists before consciousness shapes it into something we can perceive.

What appears as objective reality is merely what our mind constructs, what we are accustomed to seeing. The knowledge that the world yields has to be interpreted by men and women who are part of that world. Whether we are attempting to understand the music of West Africa, the art of Marcel Duchamp, the social theory of Max Horkheimer, the epistles on indigenous knowledge of George Dei, the curriculum theory of William Pinar, or the insights into hermeneutics of David Jardine, the constructivist principle tacitly remains. For example, most analysts don't realize that the theory of perspective developed by fifteenth-century artists

constituted a scientific convention. It was simply one way of portraying space and held no *absolute* validity. Thus, the structures and phenomena we observe in the physical world are nothing more than creations of our measuring and categorizing mind.

A critical constructivist epistemology forces educational researchers to ask:

- Does much of the research conducted in the field of education simply reflect the context, values, and assumptions of researchers?
- In light of such constructions, what is really meant by the term objectivity?
- By what processes are our constructions of the world shaped?
- Are our psychosocial dispositions beyond our conscious control?
- Do we simply surrender our perceptions to the determinations of our environment, and our social, cultural context?
- What does this process of construction have to do with the education of pedagogical researchers

DIVERSITY AND EDUCATIONAL RESEARCH: THE POWER OF CONTEXTUALIZATION

Researchers who understand complexity understand why we ask these questions; they understand that knowledge producers, teachers, and students perceive the world from a center located within themselves, shaped by the social and cultural context in which they operate, and framed by languages that contain within them tacit views of the world. As they dig deeper into the contexts surrounding the construction of self and the lived world of education broadly defined as well as schooling, research sensitive to complexity find that students from different racial, ethnic, and class locations will relate to education in different ways. They learn from their studies that if students who fall far from the middle class, white, English speaking mainstream are not provided assistance by insightful teachers, they will often become the victims of decontextualized ways of producing knowledge about education. Critical researchers aware of these complex dynamics understand that such students will not fail because of some inability or lack of intelligence but because of a set of forces unleashed by their relation to what is often labeled the “common culture.” Indeed, we learn that the more educators use the term, common culture, in an unexamined way, the more those students who fall outside of its boundaries will fail.

Researchers who understand this contextual complexity appreciate the notion that Western culture and Western colonized cultures do not present a homogeneous way of life but a domain of difference shaped by unequal power relations. They understand that they must act on an appreciation of the way these differences shape people’s relationships to various institutions. If everyone is seen as a part of some narrow articulation of a common culture, then those who don’t fit the mainstream criteria will find themselves looking into the society’s institution as unworthy outsiders. Critical complex researchers work to understand these important social tendencies, make sure that steps are taken to include everyone in a high quality educa-

tion, and avoid the deficitism that emerges when such ways of seeing are disregarded.

The way these factors play out in the everyday life of school is multidimensional, complex, and always significant. When classroom instruction is driven by technical standards with their fragmented factoids, the same pedagogical actions take place repeatedly without regard for who succeeds and who fails—in particular, what social groups succeed or fail over time. A creative way of merely delivering content, no matter how ingenious it may be, still works to produce much the same results as long as the epistemological assumptions are the same. Thus, to avoid falling into these age-old traps, researchers must help educational leaders, politicians, and teachers understand both the social context that shapes learners and the epistemological context that molds the way knowledge is viewed and thus educational goals are forged in the classroom. Such contextual awarenesses provide teachers with a monitoring system that allows them a cognizance of the multidimensional effects of their pedagogy.

The ability to employ contextualization in the pursuit of multiple perspectives is an important skill promoted by the researchers the editors and authors of *Doing Educational Research*. As researchers begin to discern the multiple perspectives that always surround any topic, they examine such viewpoints in relation to one another. The insights derived from such an activity lead directly to new ways of seeing and appreciating the complexity of the cosmos. In this context we believe that our approaches to research are particularly important in this disturbing era where standardized curricula are being implemented in numerous national and local educational systems.

When such policies are pursued—on the basis of reductionistic, decontextualized, epistemologically naïve research—the ability of teachers to develop pedagogies for their unique students is subverted. In such decontextualized situations teachers are disempowered—teaching itself is deprofessionalized. The prerogative of master teachers to act on their knowledge of and participation in critical and complex research in a way that accounts for the multiple contexts of schooling and its students is undermined. Their capacity to study the contexts in which knowledge is produced and validated is subverted. In such simplified standards-based, test-driven classrooms, it doesn't matter who students are or what their specific needs may be—the curriculum has already been mandated on the basis of pseudo-rigorous research. The views of research presented in this volume can help researchers, teachers, and other individuals begin to free us from this ever-worsening pedagogical/epistemological crisis.

In this contemporary quagmire of regressive knowledge production, teaching and learning are becoming less immediate, less connected to the conditions of the community, less involved with what motivates students, less concerned with moral and ethical issues in the life of the school, less connected with other bodies of knowledge produced in different situations, less aware of the ideological motivations that drive educational and political leaders. Moreover, the rationalistic policies emerging from this decontextualized and misleading research about education remove schooling even further from the socio-economic and cultural changes sur-

rounding it. As the capital driven, global information society changes the nature of jobs and the tools required for them—not to mention the need for new citizenship skills in a new transnational knowledge order—teachers and students drift along in low-level memory work far removed from the commerce of everyday life. The educational researchers writing in *Doing Educational Research* understand the context of socio-economic, political, and cultural change, so that teachers and students can keep ahead of it and help direct it in positive, democratic, and just ways.

Educational reforms based on decontextualized, rationalistic research remove teachers and students from an understanding of the compelling intellectual and political issues of the day. This is a fatal pedagogical mistake as it sets up a dichotomy between school and the “real world.” Such a division will always undermine motivation, as teachers and students come to see the mandated activities of school as trivial and irrelevant. Critical complex researchers understand that to be able to integrate these understandings into their pedagogies, all educators must appreciate the way the world has changed in the last few decades. The rate of socio-economic, political, and cultural change has accelerated and in this process identities are no longer as stable as individuals are bombarded with information to the point of incomprehensibility. Traditional forms of problem solving where variables are limited and are assumed to act in predictable ways are less useful in an era marked by the complexity of multiple causality and as many have termed it, chaos. With globalization and new forms of information production and communication individuals in various fields have been confronted with more ill structured and divergent problems, cultural misunderstandings and value conflicts, and problems of power inequities. It is apparent that rigorous educational research would include an understanding of this new context and the forms of knowledge, skills, and cognitive abilities needed to deal with it successfully.

Critical research aware of the complexity of these new contexts understand that even the era of images and pictorial representations ushered in by television has never been adequately addressed—if addressed at all—by mainstream educational research and integrated into schooling. Media literacy, a set of skills so central to citizenship and an understanding of the contemporary world, is provided little respect in the mainstream educational knowledge climate of the last half of the first decade of the twenty-first century. When such imagery is not integrated with hypertext and cyberspace schools fall even further behind cultural and informational change. Those students who are conversant with such dynamics learn about them on their non-school time. While their insights and abilities often border on genius, there are still many aspects of the contemporary techno-electronic landscape that are missed by such students.

Nevertheless, the technological abilities obtained by such students exacerbates the gulf between the haves and have nots in alarming ways. Technical rationalistic educational policies that emphasize memorization of data are devised as if we are still living in an oral culture. The cognitive and pedagogical processes required by such decontextualized policies hearken back to medieval schooling where students memorized texts because there was so little literature in print. The editors and authors of *Doing Educational Research* understand both the importance of these new

DOING EDUCATIONAL RESEARCH IN A COMPLEX WORLD

developments in communications and the necessity of devising new methods of researching their complex roles in the contemporary education and schooling.

In the context of cyberspace we possess less and less knowledge of the cultural location, the human contributions, the socio-political and economic interests that shape information. In those few classrooms where students are asked who produced the data they downloaded off the Internet the night before, they are often at a loss to answer such a query. They have never considered such a question or its multi-dimensional implications. Information in such situations has lost its borders, it moves and flows in the non-linear and instantaneous ways that human thought operates. Traditional forms of knowledge as it is researched in reductionistic designs and as it is organized in books and official interpretations are undermined in this new context. A subversive element implicitly operates that challenges the informational status quo but at the same time allows power wielders who control informational pipelines to covertly promote data that serves their economic, social, and political interests. Obviously, such a dangerous reality demands new forms of knowledge work and educational inquiry. In an era where the power of economic institutions—especially in relation to control of information—has risen to unprecedented heights the development of our ability to delineate the hidden interests of the knowledge cyber-technology provides us so abundantly is crucial to the future of democratic education. The need for innovative and rigorous forms of educational research has never been greater.

EDUCATION RESEARCH AS COURSE REQUIREMENTS

Traditionally graduate studies have involved research and were regarded as research degrees. Indeed, when I (Ken) was involved in higher education in Australia, advanced degrees that involved coursework (such as honors and masters degrees) were regarded as inferior to those that were research-only degrees. Of course many students who started out on research-only degrees floundered at the beginning, especially if they were not connected to a research group to provide scaffolding associated with how to do and learn from research, what to read, and how to present what you learn from research. Research groups also provided for participation in various forms of peer review and dissemination at brown bag seminars and more formal colloquia. In the sciences research groups have a long history that continues to the present time. In contrast, this was not such a tradition in education where individual researchers often worked independently throughout their career. Perhaps in education it was easier to see a rationale for two trends that have profound impacts on graduate degrees in education—the mergence of coursework as a partial fulfillment of degree requirements and the creation of methods courses designed to teach the foundations of educational research.

In particular circumstances both of these trends make sense—especially if degree candidates cannot participate conveniently in appropriate research groups. However, as is often the case with institutionalization of such trends, rules are created to specify the authorized pathways for obtaining a degree and standards come to be defined in terms of adherence to the rules. Hence, in doctoral and masters

degrees students may be required to take courses in specified areas irrespective of the knowledge they need to attain their scholarly goals and undertake research in a chosen area. Also, method is separated from the substantive research focus and many universities embrace a bankrupt dichotomy of qualitative and quantitative research methods, stipulating that all students should take at least one course in each area.

In compiling this Handbook we did not envision it only as a textbook in qualitative methods courses—though it may find uses in research methods courses. The chapter authors raise issues of epistemology and ontology that are germane to the doing of educational research by individual researchers and research groups. Every chapter serves as an introduction to learn more about the issues it raises and thereby is a foundation for deeper learning to support inquiry in education. For many educational researchers it makes more sense to pursue deeper studies through focused reading in the areas we explore in the Handbook rather than stipulating that graduate students take a time out to study methods that are not relevant to their scholarly interests. Ironically, the tendency to specify particular methods in educational research is not found in the same way in the sciences where it would be unthinkable that, for example, the mass spectrometry group would become adept at electro fluorescent spectroscopy or that theoretical physicists would do any required laboratory methods.

The issues raised in the chapters of the Handbook are germane to the practice of educational research wherever it is undertaken and, in the spirit of bricolage, complementary methods are explored that have the potential to add value to ongoing investigations as well as to serve as an aid to planning research. Furthermore, the issues addressed in the Handbook can comprise a critical framework for review of research and the associated claims; including policies and practices that truncate the agency of scholars in the name of higher standards. Not the least of these is the regression toward prescribed standards for educational research—standards that embrace an oversimplified grasp of the natural sciences and adherence to positivism and causal relationships between over-reduced social systems defined in terms of variables.

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KENNETH TOBIN

2. QUALITATIVE RESEARCH IN CLASSROOMS

Pushing the Boundaries of Theory and Methodology

My first studies of science classrooms, undertaken in Australia and the United States were quasi-experiments and involved investigations of the relationships between teaching and science achievement. For more than a decade I participated in a program of research that explored verbal interactions, teacher and student participation in science classes, and achievement. I was also interested in learning environments and issues such as formal reasoning ability and locus of control¹. Although I felt that I was learning a great deal from this research, I experienced several sources of frustration. First, making sense of teaching and learning in terms of variables was extremely reductionist and my research involved large sets of variables and complex statistical algorithms (unconvincing processes of breaking down and packing together—never quite capturing an elusive whole). In many instances the most salient features of classroom life seemed to be outside of the statistical model and I found myself writing more and more about what I referred to in those days as context—the factors I had not identified a priori; that were surely shaping what happened in the classes in which I was an observer. Second, macroscopic social forces, such as race, social class, equity and policy mandates were not represented convincingly as quantified variables, even when multivariate approaches allowed me to represent such factors with clusters of variables. Furthermore, macro social forces, such as poverty and stipulations for high stakes tests, seemed to be overwhelmingly important in comparison to within-school and -classroom variables (e.g., how questions were posed and answered). I sought an approach that was amenable to understanding how learning in science classes occurred within a complex social system in which what happened within schools and classrooms was saturated by macroscopic forces such as race, social class and state and national level policies. Third, I wanted to employ a methodology that was more closely aligned with the ways in which scientists do science, when they are involved in explorations of new areas in which there is much to be learned. I wanted to explore and probe macro social forces that could be described and interpreted without a need to reduce and quantify. My search for a new approach was deeply theoretical and the transformations from quasi experiments to interpretive forms of inquiry were not revolutionary in the sense that there was an abrupt shift. Instead, over a 10-year period my methodology evolved to be consistent with sociocultural theory, using collective forms of qualitative inquiry to build understandings of social life; informed by multiple voices, diverse participants, and dialectical relationships that seek to transcend part-whole dichotomies.

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ABOUT THIS CHAPTER

Research in classrooms focuses on better understanding teaching and learning, using what is learned to create and sustain improved learning environments. The methodology I present in this chapter is grounded in sociocultural theory and an ethical stance that obligates me to adhere to criteria that acknowledge that, while education research is central to effective practice, it is a privilege and must be undertaken in ways that meet four authenticity criteria, which I describe later in the chapter. The remainder of this chapter contains seven sections. First, I address the necessity for research with human subjects to be ethically sound, undertaken with the informed consent of all participants. In subsequent sections I review participant observer forms of research, how to make sense of data resources, involving students as researchers, undertaking auto/ethnography and auto/biography, and incorporating microanalyses into critical ethnography. Finally, I conclude the chapter with discussions about judging whether or not a study meets the criteria for high quality, authenticity and credibility, doing research at different grain sizes, and generalizability.

RESEARCH WITH HUMAN SUBJECTS

When I commenced education research in 1973 there was no necessity to obtain approval from an Institutional Review Board (IRB) or its equivalent for research with human subjects. However, because of many high profile ethical problems with research involving human subjects (mainly in the sciences), peer review processes have been established in most countries to protect the rights of human subjects involved in research. Here I address the central issues associated with obtaining and maintaining informed consent of participants in a study and enacting ethical research practices.

Negotiating Entry

My first step in getting involved in research is to talk to teachers about the possibilities before I have worked out all the details. Initial contacts are oral and open ended, allowing the participants opportunities to make suggestions. My purposes in doing this are to ascertain whether the teacher is comfortable with what I have in mind and to provide opportunities for her² to make suggestions about possible foci, likely participants, and the duration of the study. For example, Donovan, a first year science teacher from an inner city high school, frequently complained to me about his students and the school. He and I were serving together on an advisory group assembled by the regional coordinator from an urban school district. Based on numerous conversations in and out of the group Donovan and I agreed to co-teach his science classes. Since the regional coordinator was present during many of our conversations she encouraged our collaboration and facilitated the necessary permissions from the school district.

Donovan and I made an appointment with his principal and requested her consent for us to coteach Donovan's classes and approach the school district and the university IRBs for permission to undertake a longitudinal study of the teaching and learning of science. The principal was highly enthusiastic, gave her approval, and came with us to discuss our proposal with the coordinator of the *Incentive* small learning community, one of 10 small schools within a larger school of about 2,000 students. I took notes and promised that prior to seeking formal approval to undertake the project I'd write a draft incorporating their suggestions and get further input from them. Subsequently, the classroom teacher, principal, and small learning community coordinator all agreed to a multi-phase project involving coteaching and then, subject to the research being formally approved, coteaching with research.

Getting Started

Although we had agreed to coteach, Donovan preferred to enact a peripheral role, observing my teaching and struggles to succeed. Even though it did not work out as intended, coteaching was important because it allowed me to begin teaching, get to know students, co-plan lessons with Donovan, and videotape lessons so that we could critically examine our teaching and the students' learning, and identify changes we'd like to make. The videotaping and associated analyses were not done for research purposes, but with the goal of improving learning environments. Even so, the students and their parents or guardians had to give their permission to be videotaped, using the standard permission forms employed by the school district when the purposes of videotaping are for instructional improvement. Approvals to videotape for the purposes of instructional improvement and professional development allowed us to focus on the priority of student learning, afforded me gaining valuable experience of this classroom and school, and provided all of us with experiences and time to become comfortable with our interactions being videotaped. Coteaching and videotaping became a part of what was regarded as normal practice in Donovan's science class, a fact that was highlighted in the proposal to the IRB—since the research did not require a significant change to the practices already approved by parents/guardians, school, and district.

During this period of about six weeks the IRB approvals needed to do research were being prepared by us and reviewed by panels in the university and school district. These were submitted simultaneously despite the contradiction that the approval of each was contingent on approval of the other.

A critical issue was when to commence videotaping and how to deal with the situation of students not returning parental consent forms. We discussed the issue with the principal and agreed to a procedure that allowed us to start once a reasonable proportion of the consent forms were returned. In this instance, one student did not assent to being videotaped and the parent/guardian consent forms were returned over a period of two weeks. Once we had received more than a third of the signed consent forms we started videotaping, taking precautions not to inadvertently capture images of students for whom consent had not been obtained. We

asked students to assist us by avoiding movement into the line of the camera. Even though we were videotaping we did not change other aspects of what might be regarded as normal classroom practice. For example, seating arrangements were not changed to make it easier to avoid videotaping particular students. Our primary goal was to ensure that no students were disadvantaged by our decision to use video resources to improve our teaching and the benefits of videotaping interactions were shared among all participants.

Initially we placed the camera at the side of the classroom, focusing on the co-teachers and only zooming in on students whose consent forms were returned. However, when all consent forms were on file the coteachers hand-held a small digital camera or positioned it on a desk to capture different forms of interaction as they unfolded.

From Instructional Improvement to Research

My perspectives on obtaining approval for undertaking research with human subjects are guided by the Belmont Report (1979), which addressed three general principles: respect, beneficence, and justice. Proposals to the IRB should show clearly how the research respects human participants by maximizing their autonomy to make choices about their participation, that there is a balance favoring the benefits associated with being involved in research compared to the harms from being involved, and that the practices involved in doing the research and distributing the benefits and harms are equitable.

The proposal to the IRB should address the ways in which human subjects will be recruited to participate in the study, what they will be told as part of the informed consent process, how they can exercise their autonomy during the conduct of the study, and the benefits and harms associated with being involved, withdrawing, and staying involved. Details should be provided on the scope of the study, defining the boundaries of what the study is about and being precise about where the study will take place and its duration. Assurances also should be given about anonymity and confidentiality and the ways in which data will be stored, used, made available to others, and protected from tampering. If the data are to become part of a database this should be made clear and if data will be destroyed at a particular time the dates should be specified.

Once our proposal was written, and Donovan agreed to it, we obtained letters of support from the regional coordinator, school principal, and small learning community coordinator. I then prepared informed consent protocols to be signed by the people we would invite to be involved. In this study the primary participants were high school students who were less than 18 years of age, and therefore could not consent. Accordingly, we produced two forms, one to obtain consent from parents/guardians and the other for students to assent to be involved in the study. Only students who signed an assent form were given a consent form to take to their parents/guardians.

Good morning. I am Dr. Ken Tobin from the Graduate Center of the City University of New York. I am a researcher who focuses on improving the quality of learning and teaching science and mathematics in urban schools.

Today I'd like to invite you to get involved in a study that will involve me, your teacher, and three other teachers and their classes. Being involved in the research will involve me coming to your class about once a week and carefully watching what happens, taking videotape of what happens, and using audiotapes to record what is said in whole class and small group settings. I will do my best to assist your teacher to teach you science and when I can I will help your teacher to respond to questions and assist with teaching the lesson.

In addition to watching science lessons your teacher and I will study the work you produce in class and we may ask you questions about what happens and why certain things happen the way they do. We may invite you to be interviewed and you can fill out a short form to request an interview with your teacher or me. Anything you say will be kept confidential and we will never use your actual name in anything you write. You will be asked to let us have a name we would use in our writing about what we learn.

I will watch the videotapes and select parts that interest me. I will then analyze these tapes. Usually I will write my impressions of what happens, and analyze how the teacher interacts with students and how the students interact with one another. I will study how the teacher and students talk to one another. I will examine the loudness and pitch of sentences and words and I will see how pauses are used in the talk of the teacher and students.

I will discuss what I learn from the research with students in interviews and in small groups that I call cogenerative dialogues. During interviews I may use video clips, which will vary in length from 30 seconds to 2 minutes in length. If your images are in the video clip I will ask your permission to use the video clip.

About once a month I will select short video clips to show to the whole class so that I can discuss what I see together and work out how to improve the quality of teaching and learning science. I want these discussions to be serious and we should all show respect for one another and not make fun of anyone who is shown in the video clip. If your image is in the video clip I plan to use I will ask your permission.

As part of this study I will look at your performance on quizzes and tests so that I can see how your involvement and work relates to your achievement in science.

If you agree to be involved in the study you should sign the assent form and then take a consent form for a parent or guardian to sign. When I have both forms signed I will copy them and give you a copy of each. The forms have a place for you to show whether or not you agree to have what you say recorded and for me to videotape you during the class.

You can decide at any time not to be involved in the study. To indicate your decision to withdraw you would let your teacher or me know and at that time I would not audiotape you, interview you, or use any video images of you in the research.

Figure 2.1. Sample recruitment script to be presented orally (not read).

Because coteaching, videotaping, and conversations about instructional practice were part of the normal day in Donovan's classes there were no additional burdens placed on participants as a result of this study. Accordingly, we were able to apply for what is referred to as expedited review from the IRB—a request that was approved by the IRB Chair, allowing the proposal to be reviewed by two members of the IRB and the committee chair. Because of Donovan's official relationship with

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the students I was designated to collect the assent and consent forms to minimize feelings of coercion for people to be involved in the study.

CONSENT FOR MINOR TO PARTICIPATE IN RESEARCH		
Title of the Study: Use of research to improve the quality of science education in an urban high school.		
Invitation to Participate: Your child is being asked to participate in this research because he/she is a student in a school that has agreed to participate in a study of the teaching and learning of science in an urban high school.		
Purpose: This study seeks to enhance science education in urban schools. The study will explore how students' learning of science is affected by teaching and the ways in which your child and other students participate in the class.		
Procedures: During this study your child may be videotaped or audiotaped. He/she may be asked to take part in interviews. In addition, test scores and school records may be accessed. Selected excerpts from the videotapes will be used in the dissemination of what is learned from this study.		
Risks: Except for the embarrassment of seeing him- or herself on videotape segments shown to the class there are no potentially harmful risks related to participating in this study. Your child's images will not be shown to the whole class without first obtaining his or her permission.		
Benefits: As a result of participation, your child's awareness about school and learning may be increased, particularly in science. The study provides students with valuable insights into different approaches and practices in teaching and learning science.		
Withdrawal: Participation in the study is voluntary and if your child decides to participate, he or she can withdraw without any penalty at any time. Participation in the study is not a factor in determining your child's grade or standing in any course.		
Alternatives: You may choose not to allow your child to participate in this study. If so, he/she will not be videotaped, audiotaped, or interviewed, and no references to him/her will be made in the reporting of this study.		
Compensation: Your child receives no financial compensation for his/her participation.		
Confidentiality: All information collected in this study will be kept private and your child will not be identified by name. The researcher will keep the audio- and videotapes from this study in a locked filing cabinet. Only the researchers will have access to these tapes.		
Subject Rights: If you have questions about your child's rights as a participant in this study, you can contact the IRB Administrator, Gotham City University, (367) 373-2724, IRB@gcu.edu.		
Conclusion: You have been given the opportunity to ask questions and have had them answered to your satisfaction. You have read and understand the consent form. You agree to allow _____ to participate in this research. Upon signing below, you will receive a copy of the consent form.		
I agree for my child to be videotaped _____(Initial)	Yes	No
I agree for my child to be audiotaped _____(Initial)	Yes	No
_____ Name Parent/Guardian	_____ Signature	_____ Date

Figure 2.2. Sample consent form for the participation of minors.

The IRB required an example of the script I would use to recruit participants in the study. Although I did not intend to read to students and other potential participants I informed the IRB that the text of the script contained below in Figure 1 contained the essence of what I would say to possible participants.

After a statement like the one in the script is presented orally to students they would be advised about how to get involved in the research should they have an interest in participation. Involvement requires understanding fully what is involved, that is informed consent, and a signed willingness to participate. If the participants are less than 18 years of age they are not able to consent to be involved and a two stage process is needed—assent from the student and consent from the parent/guardian.

CONSENT OF PARENT OR GUARDIAN	
<p>I am Ken Tobin, a professor in Urban Education at the Graduate Center of the City University of New York. I am doing research in New York City public schools in an effort to learn more about how to improve the quality of teaching and learning science. I can be reached at (737) 327-3437. Alternatively you can email me at ktobin@gc.cuny.edu.</p>	
<p>You have previously consented for your child to be involved in a study of the teaching and learning of science at his or her school. As part of this research I have used videotape to explore how learning happens as the teacher and students interact with one another and materials from the classroom. I want to use short segments of the video to educate others about what I have learned from the research. Your child's image is included in one or more of the short excerpts I want to use in meetings with science teachers and with researchers at professional meetings throughout the world.</p>	
<p>I am requesting permission to use your child's image for the purposes of professional development for teachers and disseminating what I have learned from the research. You can view the videotape at the school or request a compact disk or digital videodisk containing the images for which I am requesting your permission.</p>	
<p>If you have questions about your about your rights as a participant in this study, you can contact IRB Administrator, Gotham City University, (737) 327-3437, IRB@gc.cuny.edu.</p>	
<p>Please read the following, select Yes or No to indicate your preferences, and sign below.</p>	
<p>Circle Yes or No as appropriate:</p>	
I allow you to use the video segments that contain my child's images:	Yes No
I would like to view the video segments at school:	Yes No
I would like a CD or DVD containing the video segments:	Yes No
<p>I give permission for you to use video clips that include the image of _____ (insert child's name) in professional development activities with teachers and meetings of researchers to let others know what has been learned from the research.</p>	
Print name: _____	Date: _____
<p>Signature: _____</p>	

Figure 2.3. Informed consent protocol for additional uses of videotape.

There are numerous ways in which potential participants can be informed about the purposes of a study. The process starts with an explanation like the one provided in Figure 2.1. The next step can involve distributing assent forms to an entire class, explaining what the various sections mean and allowing those who are willing to participate to complete them. A potential problem is that some students might feel coerced into participation by peer pressure—the classroom providing a context in which students might be influenced one way or the other by the presence

of peers and perhaps the teacher. For this reason I prefer to meet with students one-on-one in an office away from the classroom. I can then speak to them about the study, answer questions, assure them that participation is voluntary, and distribute the consent forms to students who assent. Figure 2.2 contains an example of an informed consent protocol to be signed by a parent/guardian.

Additional informed consent protocols were needed for the adults participating in the study, in this case other teachers who were colleagues of Donovan's, school and small learning community administrators, parents and guardians, non-teaching assistants, and school police. Also, because I would use videotape for a variety of purposes I prepared an additional consent form for these purposes. It is provided above in Figure 2.3.

Sharing Opportunities to Participate

Name: _____ Email address: _____

Please check any that apply and put your request for an interview in the box at the back of the room.

I would like to be interviewed about the science class from _____ (write the day or date).

I would like to be interviewed about what generally happens in my science classroom.

I would like to be interviewed about my participation in science.

I would like to be interviewed about the teaching of science.

I would like to be interviewed about why we do science and what science might be like.

Figure 2.4. Protocol to request an interview.

In interpretive research it is customary to speak to students informally about what they are doing and why they are doing it. Informal interviews take the form of conversations and can occur as a lesson unfolds. Usually, the conversations are quiet and relatively short. Efforts are made not to disadvantage any students by taking too much of the time of the person being interviewed or by distracting others. Informal interviews are augmented by formal interviews with students selected to provide insights into what is happening and why it is happening. Interviews might also be set up for students to check on what is being learned from a study and to get participants' perspectives on the patterns of coherence and the contradictions that have been noted. In the selection of participants from a stakeholder group (e.g., students), I use a process that involves the use of opposites. I never use random selection. The participants are chosen because their perspectives are judged to be worth knowing and of value to the research. I select someone who has something to contribute to the study. Having selected a first person to interview, I then select a second who is as different from the first as possible. In this way participants are selected serially based on their differences from one another and contingently—based on what I'd like to learn next. However, there may be participants who want to be interviewed and do not get selected. Accordingly, to be fair, I use a

process to allow students to request to be interviewed by filling out a form (Figure 2.4) that is available at the back of the classroom. In this way participants are not prevented from experiencing the benefits of being interviewed in a study (and if there is harm from being interviewed it is shared out).

Negotiation of Approval

I ran into difficulties with the IRB when I moved to a new institution and did not understand the culture of the peer group at my new university. Whereas there was a special IRB panel to review education research at my previous university, here there was just one panel for all research in the social sciences. Two issues caused me most concern, essentially because I did not understand the difference between writing a proposal for a funding agency and writing one for IRB approval. An initial stumbling block concerned an IRB request for research questions and hypotheses. My knee-jerk reaction was that the request reflected an epistemological position that I rejected because in ethnography the questions are broad and only narrow down as the study progresses. Usually I do not write hypotheses and focus on identifying patterns and associated contradictions that relate to what is happening and why it is happening. However it is clear that my knee-jerk thoughts are wrong. The IRB wants to know what a researcher will study and what she expects to learn from the research. Their request makes sense if the IRB is to do its work of peer review. Providing the information also makes sense from the perspective of good ethnography since it provides a baseline for what Guba and Lincoln refer to as ontological authenticity (discussed in the next section of this chapter), whereby a researcher is obliged to show that her initial constructions change as a result of doing the research (Guba & Lincoln, 1989). Hence, providing the IRB with hypotheses is a first step in establishing that a qualitative study has ontological authenticity.

The questions you provide to the IRB should be broad and cover the domain of your research interests. For each broad question also provide five more specific questions to explicate the likely areas in which the study will be undertaken. Hypothesize on the likely answers to these specific questions—based on what you know now. Nobody will hold you accountable for these answers. By responding in this way I define the scope of my study and the boundaries for which I am seeking approval. If, in the course of doing the research, I stray from within those boundaries, I need to seek additional approval from the IRB. This can prove to be extremely important in the event that a participant or her guardian complains about some aspect of the research. You want to be sure that what you do has been approved by the IRB—so your predictions are important. For example, one of my graduate students recently undertook research with middle school students in inner city schools. One of the students she interviewed raised the question of sexual harassment and the researcher decided to ask other participants about sexual harassment in her interviews. Almost immediately there was a protest from a concerned parent, pointing out that she had not been informed that questions about sex were part of the research. The topic was beyond the scope of the informed consent and had not been approved by the IRB.

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Thanks for taking the time to speak to me this afternoon. I now have a clear idea of some of the concerns you have about my proposed research "Use of research to improve the quality of urban science education."

The ethnography planned for each of the four case studies is longitudinal and researchers will examine the ways in which the teachers and students interact when science is taught in regular classroom settings and when the teacher and students interact in cogenerative dialogues. Past research in urban high schools, in Philadelphia, suggests that the students learn to interact with one another and the teacher in cogenerative dialogues and build new procedures for interacting with peers and the teacher. Similarly, the teacher learns to successfully interact with students, listen and learn from them, and effectively deal with their ways of interacting. Cogenerative dialogues are safe spaces in which to learn new ways of interacting across differences in age, ethnicity, social class, and gender. Key to previous research and this proposed study is that once these new ways of interacting are learned the teacher and students are then able to enact what they have been learned in actual lessons. Not only that, the students can become leaders in initiating interactions with peers and the teacher.

We regard cogenerative dialogues as a professional development activity in which teachers and students can accept shared responsibility of the quality of teaching and learning, and by regularly meeting they can learn to interact successfully with one another. We will study what happens in the cogenerative dialogues intensively. As I explain in the materials I sent you we will use a variety of qualitative data sources to ascertain what is happening in the cogenerative dialogues and why that is happening. By undertaking analyses on a weekly basis through until the end of the year we will be able to identify patterns of change in the ways in which the teacher and students interact. We will explore patterns and associated contradictions using ethnography and then we will examine interactions using microanalysis. The microanalysis will enable us to explore the ways in which the teacher and students use their voice, gesture and body movement and orientation. We will explore which interactions have successful outcomes and which do not. Evidence of improvement will be sought in longitudinal studies that are undertaken weekly.

In parallel we will explore the ways in which the same students involved in the cogenerative dialogues participate in regular science classrooms. We will look to see if patterns from the cogenerative dialogue are evident in the classroom and vice versa. We will also ascertain the extent to which new interaction styles developed in cogenerative dialogues transfer to the classroom.

A question we discussed on the telephone is how will we know if we are successful. The criteria for success will emerge from discussion between all the teacher researchers. We will meet at least once a week as a group and will discuss what is happening in the classroom and design procedures to be used in the forthcoming week to test how robust our claims for success are. We will also search strenuously for contradictions to any claim that is made. Some of the criteria for deciding whether positive environments are occurring will include criteria such as the following:

Higher levels of student engagement. Higher levels of attendance. Higher levels of synchrony in the interactions involving student<-> student and student<->teacher. Higher quality of teacher and student discourse as evident in solicitations, responses, reactions, and structuring.

Standard procedures of discourse analysis will be used and advanced technological tools, such as PRAAT, will allow us to measure such characteristics of speech as pauses, frequency of utterances and the amplitude of utterances.

There are many more examples of what would constitute higher quality teaching and learning. I am very experienced in such analyses and since 1973 have been involved continuously in qualitative and quantitative studies of teaching and learning. The bottom line is in higher quality learning environments and higher achievement in science-- including high stakes tests like the Regents' exams. I also expect more students to go on to college and expand their career options as a result of being involved in the study.

The four case studies in the first year involve a middle school, a new high school, a high school for relatively high performing students, and a school for students who have been expelled from their previous school because of violence to a teacher (i.e., a last chance school).

I hope I have addressed all of the points you raised in the telephone conversation. If you have further questions I will be happy to respond to them.

Figure 2.5. An email response to questions raised by a school district IRB.

The above incident was quickly resolved, but served as a wake up call for me. It is important in seeking IRB approval that careful attention is given to identifying the likely areas of interest that will arise and to identify the places in which the research will be undertaken. If changes happen as a study unfolds then the IRB should be informed and a decision should be taken about whether or not the informed consent protocols need to be changed.

After I had obtained the official approval from the university IRB, the school district IRB asked me additional questions to clarify the scope of the study. These requests occurred in a telephone conversation with the committee chair and a follow-up email message confirmed what we agreed to in writing. With the common use of email I regard it as important to consolidate into one document the original proposal together with subsequent questions and answers, so that IRBs, researchers, and participants are clear on what has been agreed. The letter in Figure 2.5 provides an example of my responses to queries raised by the school district IRB coordinator during a telephone conversation.

AUTHENTICITY CRITERIA

What criteria can be used to judge whether or not high quality ethnography has been planned and undertaken? Different researchers will adopt different stances, however, I use the four criteria advocated by Guba and Lincoln—recognizing that education research with human subjects must benefit those who are involved in the study and that researchers have a responsibility to those who agree to be involved that benefits will not be realized only in the future, but will also lead to improvements as the research is enacted.

Criterion 1: Learning from a Study

Although it is customary for researchers to engage in programmatic research in which each successive study builds on what was learned previously, it is important that they do not commence a study with preconceived ideas about what will be learned. The danger is that such ideas can serve as templates that filter data and confirm a priori expectations. To guard against this occurring researchers can document the progressive changes in their understandings and the foci of their research. The intention is that researchers learn from the data and associated analyses. Evidence of learning from the study would include a changing trajectory of answers to a research question, possibly through the inclusion of nuances and the identification of contradictions to patterns of coherence. Of course the patterns themselves could change over time and the initial constructions could become contradictions to those patterns. While learning from a study it is important to obtain and retain diverse perspectives of participants who are located in different social spaces by virtue of such factors as race, social class, gender and first language. In the remainder of this chapter I refer to participants in these different social spaces as stakeholder groups. Hence in meeting criterion 1 it is important for researchers to show how research questions are answered for different stakeholder groups—

how the answers evolve over time, are nuanced for different participants, and incorporate contradictions.

Ontological authenticity relates to the ways in which participants in the study alter their perceptions of the nature of social life, as it pertains to the research foci. The role of the researcher is to document these changing perceptions. Traditionally researchers, including those within my group, have focused on documenting their own changing ontologies. One important way to do this is to undertake auto/ethnography and dedicate a significant part of the writing of a study to the documentation of changing ontologies and making sense of such changes in relation to what is learned from a study.

An important part of the analysis of a researcher's changing ontology is an examination of the changes that occur in the theoretical underpinnings of a study and the associated changes in the methodologies employed. It can then be shown how changes in the frameworks alter the ways in which social life is illuminated and represented in descriptions and explorations. In this way, changes in the theoretical underpinnings of a study can be linked to the realities presented as outcomes of a study. Perhaps, as a further emphasis on the relationships between theoretical frames, research questions, and methodology it can be shown that decisions to employ one set of theoretical constructs rather than another not only illuminates social life differently by highlighting certain features, but also obscures others. For example, in research on teaching and learning a decision to theorize learning as cultural production brings into focus such issues as cultural reproduction (of the canon), cultural transformation, and cultural fluency, including conscious and unconscious ways of knowing. At the same time issues associated with conceptual change may be shaded from view. Also, opting to use Sewell and Bourdieu as starting points for conceptualizing culture led us to adapt our methodology to search for patterns in social life that have thin coherence and are interconnected with contradictions. The purpose of our research then was not to explain away the contradictions, but to understand them as an expected part of social life that together with the patterns of thin coherence were central in what we could learn from a study and perhaps would have to address in efforts to improve the quality of learning environments.

Concerns about ontological authenticity should extend beyond university-based researchers to include each of the salient stakeholder groups. To what extent do stakeholders construct their lived lives in the fields of study in ontologically changed ways? If ethnography is to be critical in ways that catalyze and sustain desirable changes, from the perspectives of stakeholders, then the ways in which stakeholders enact and perceive social life ought to change as a result of the research. Enduring transformation, for the better, might be sustained if fresh theoretical and empirical lenses are acquired for making sense of teaching and learning and the ways in which participants successfully interact to produce learning³.

Criterion 2: Educating Stakeholders about the Unfolding Outcomes

In a process of informing stakeholders about what is learned from a study it is important to educate each stakeholder group about the nuances of a study, what is learned from the different stakeholder groups, assisting them to understand the patterns of coherence and contradictions. This criterion can be addressed in a number of ways and the process can be continuous. Within the framework of negotiated agreements, anonymity, and confidentiality, the unfolding outcomes of a study can be made available to participants on a website that can be accessed at their personal convenience. Depending on how public these findings should be, the website could be password protected with access limited to researchers and participants.

Clearly, educative authenticity is at the heart of ontological authenticity and is seen as an essential step in sustaining beneficial changes due to research in classrooms. Not only is it important to obtain rich descriptions of what is happening and why it is happening, but also to ensure that all stakeholder groups understand how others experience and make sense of reality. If issues of equity and oppression in classrooms are to be addressed effectively through research an effective program of educating all stakeholder groups about the constructions of others seems central.

Criterion 3: Research Should Catalyze Improvements

Researchers have an obligation to educate all participants in ways that afford improvements in regard to what is learned from a study. Accordingly, to the extent possible, situations of disadvantage, inequity, and oppression are addressed in ways that expand the collective agency of stakeholder groups. Hence, the results of a study are expected to change over time as adjustments are made by stakeholders to create and sustain environments in which all stakeholder groups can meet their goals. If this is to occur it might be necessary for representatives of each stakeholder group to meet to discuss the unfolding results of a study and negotiate changes to produce desirable goals and outcomes. Ideally, the participants in such discussions would assume a shared responsibility for enacting agreed to changes.

Just as criterion 2 (i.e., educative authenticity) was related to authenticity criteria 1 and 3, so is this criterion related to the others. Research is not a privilege to benefit researchers alone. Instead there is a tax to be paid for the privilege of doing research and that is to act in ways that catalyze desirable changes, not just for the well positioned within the fields of study; but also for all participants. Scholars such as Lather (1993) and Kincheloe and McLaren (1994) refer to the centrality of research catalyzing positive changes for the participants involved in a study. As a quality criterion, researchers should structure a study so that all participants are educated by what is learned in a study and can then use what they learn agentically; to improve the quality of their social lives in the fields in which they participate.

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Criterion 4: Assist all Individuals to Benefit from the Research

Even though the steps taken to educate stakeholder groups and catalyze positive changes to the learning environments will expand the agency of most participants there will be some who cannot make the changes needed to reduce their disadvantage. Accordingly, researchers have an obligation to help those participants who are unable to help themselves or whose disadvantage continues as the study proceeds. That is, the researchers provide additional structures for those individuals for whom the efforts to educate them and catalyze worthwhile changes were not enough.

For example, a pattern that we observed was that African American males were underachieving in science compared to their female counterparts. This was partly due to the sporadic attendance of some youth who were suspended from class and school for a variety of reasons. Despite the principal, coordinators of schools within a school, and teachers knowing about this trend, when Shakeem was suspended from school and had to transfer to another school because of his high frequency of suspension I intervened with the principal; making a case for allowing him to continue at the school because he did not want to go to a new school and a change of schools would further disadvantage him. Fortunately the principal agreed to my request and Shakeem was permitted to stay at the school. In this instance the principal, a Black female, recognized that the enforcement of the rule would needlessly disadvantage Shakeem. Similarly, when Tyrone was suspended for 5 days, essentially because his mother could not come to the school for a compulsory conference, I asked the principal if she would waive the rules for Tyrone and consider changing a school policy that was keeping urban youth out of the school.

The Bottom Line on Authenticity

Although I dealt with the four authenticity criteria in a linear way, it is apparent to me that this is yet another example of factors that constitute a whole—they are dialectically related. I do not envision a researcher claiming that classroom research is authentic or credible based on just one or two of the authenticity criteria. Because each is constituted in a whole, the quality of a study can be judged in terms of the ways in which each of the four criteria is addressed and accomplished.

DATA RESOURCES

Interpretive research is a form of participant observation that has the goal of ascertaining what is happening and why it is happening from the perspectives of the participants in the fields of study. Hence, as culture is enacted within fields, the researcher describes what happens in terms of the emergent patterns and associated contradictions. To do this, the researcher visits the field regularly, becomes a participant observer, a visitor to the field with a set of roles that other participants need to understand and accept. The presence of the researcher (as a participant observer) changes what happens because his or her presence, and associated practices

and schema, alter the structure of the field and hence the agency of all participants. Accordingly, as participants appropriate the dynamic structures introduced by the researcher, different forms of culture are produced and enacted than would be the case if the researcher were not present. Although the roles of the researcher inevitably change as she becomes more familiar with the fields of study and is known by the participants, it is important that all participants are aware of the roles to be enacted, accept them, and are apprised of changes as they occur.

In my research described earlier, I negotiated with the school principal, the coordinator of the small learning community in which the study was to occur, and the science teacher that I would coteach with Donovan. The students understood that I was a professor from the university and that I would serve as a coteacher when I came to their class to do research. Enacting the role of coteacher gives me close access to the students' praxis as learners and also to the teaching praxis of my fellow coteacher. I am also able to access multiple data resources, an important criterion in ethnographic research. Accordingly, students knew that I would observe, take notes, videotape what happened, photograph their work, speak to them about their work during the class and, as necessary, teach individuals, small groups and, if called upon by the teacher, the whole class. Students did not hesitate to ask me for assistance. In this way I was a coteacher, usually involved in peripheral roles that occasionally became more central. By having a form of participation that was active I had access to the unfolding production of teaching and learning. My practices and associated schema were part of the dynamic structure of the classroom and were structured by it as well.

A problem associated with me being a "coteacher as researcher" is my inability to create field notes as the lesson progresses. I use two approaches to address this limitation. One is to speak into the microphone of the camera, which I hold in my hand as I move around the classroom, thereby catching what happens (in the direction of the lens) in terms of video and audio. The second is to speak my descriptions and interpretations—things to pay attention to—into a hand held digital recorder, in my case iTalk connected to an iPod. Rather than reading back over field notes written during a lesson I can play back my recorded comments and, as I watch the video replay, I can take those comments into account as I make sense of the data.

During a lesson I routinely speak to students, usually recording what they have to say through the microphone on the camera. Often this is accomplished as the camera points elsewhere, making the speakers less conscious of being recorded. If I feel the necessity to have video and audio I usually ask permission of the student to shoot the video as well as have a short conversation. When I talk to students, either informally or formally I make a point of trying to structure the interactions such that students speak for longer than me. To the extent possible I want to capture their perspectives on teaching and learning and the many relationships that are central in my research—such as agency|structure, individual|collective, and practices|schema. When I first introduce the study I let them know that when I interact with them I want them to speak until they "run out of gas."

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The other piece of technology I carry with me as part of my ethnographer's toolkit is a Nikon Coolpix 4600, a digital camera with a 512 MB memory card that can be used to take high quality pictures of artifacts used during teaching and learning. In effect this replaces a photocopier in that I can photograph student work, chalkboard inscriptions, the layout of the class, the uses of equipment and materials and capture the ways in which particular resources are used during the lesson. These digital images are of high quality and, as a slide show, are a way for me to quickly reconstruct the key features of a lesson. When I use the digital camera I usually set the videocamera on a desk or table, leaving it to record events as I capture specific high quality images.

Analytic Memoranda

As soon as possible after coteaching a lesson I endeavor to write analytic memoranda, with and without the assistance of video replay. An example of an analytic memorandum is provided in Figure 2.6.

Analytic memoranda are used as data resources and can be used as evidence to support patterns of coherence or contradictions to those patterns. Another use of analytic memoranda is to give a copy to participants to see whether they correct and elaborate on the text and to highlight areas of agreement and disagreement. Hence, analytic memoranda are generative and interpretive resources.

MAKING SENSE OF THE DATA RESOURCES

A critical part of interpretive research, as I do it, is to stay on top of the data analysis. Hence, as soon after being in the field as possible, it is important to answer the two main questions of interpretive research, namely, what is going on here?—and why is that happening? In formulating responses my methodology guides me to search for patterns of coherence in the data and associated contradictions. Once I identify patterns and contradictions I want to be able to describe both in terms of examples, what I refer to as vignettes, or little stories. I do not expect the patterns of coherence to be thick, just systems of practices and schema that tend to cohere and always contradictions, or inconsistencies with those patterns. Accordingly, I do not try to explain away the contradictions as error, but seek to understand them along with the patterns of coherence. I am guided theoretically by William Sewell's ideas on culture, whereby culture is enacted as patterns of practices and schema that have thin coherence; dialectically interconnected with contradictions (Sewell, 1999). Hence, in an important sense, the patterns of coherence and the contradictions represent a whole, or to think of it another way, when culture is enacted, patterns of coherence and contradictions are mutually constitutive—that is, each mediates the other.

the periodic table or to its probable valence. She asked many questions about why the correct formula for magnesium bromide contained two atoms of bromine. In my efforts to explain how she could write chemical formulae for each of the reactants and products as a first step into the given problems Kamica became frustrated and began to write a letter about how much she disliked chemistry. With 20 minutes still to go it was a struggle for me to connect with Kamica.

Several of the students had their heads on the desk. Aaron could be aroused and he told me that he did not know what to do. Once I had taught him what to do he stayed on task for most of the rest of the lesson. Another African American male looked menacingly at me when I aroused him. "I have a headache man. Don't mess with me," he snarled. Remembering Tyrone's advice of not messing with students who did not want to be taught I quickly moved away to deal with other students who were interested in receiving assistance. The male sitting near to Kamica was rarely at school. When he too complained about not being taught the material I asked him why he was absent so much. His response was not at all rational and he then indicated that he did not like chemistry and since failure was no stranger to him he was not concerned at the thought of failing the course. Throughout the 75 minutes he toyed with the problems but made no serious commitment either to learn or work his way through any of the problems. I had a sense that he would have engaged if I could have given him a set of problems that he could be successful at.

The lesson reinforced how the students can manage book-focused activities. It was relatively easy to move from student to student and to keep them quiet and moderately active. However, connecting to what the students could do was a challenge in this activity. At any time that I tried to teach to the whole class the students switched off and hardly paid attention at all. When I worked with them one on one they appreciated the effort usually and were prepared to work in this way for as long as I was prepared to teach them.

The students were unable to navigate a textbook and searched through their notes to find what they needed to solve the problems. If they did not have notes on a given topic they were of the opinion that we had not covered it in class. To avoid the problem of having them spend so much time on writing notes I had been giving them handout sheets from the first day I taught them. I did not see any of these notes being used as a resource. For me this raises the question of what students regard as resources to support their own learning. Although I invited students to work together to solve the problems there was no apparent take up of this offer. The students seemed to want to work alone and any conversations were social rather than substantive.

The lesson ended with an invitation for the students to complete up to number 11 for homework. From my standpoint this was a compromise. I had initially set a target of 50 problems to be completed. The rationale offered by Donovan for the reduced target was that the first 11 problems provided both the reactants and the products whereas the final 39 only provided the reactants, leaving students to work out the products as well as to balance the equation. Reluctantly I agreed with this reduced assignment even though I felt privately that in 75 minutes of class time it ought to have been possible to complete the entire 50 problems and do other work as well. I am greatly disturbed that students can accomplish so little in a double period of chemistry and then we adjust our expectations downward with an inevitable outcome being the addition of fuel to the cycle of social reproduction.

As I walked down the hallway to exit the building I encountered at least five students from my class who were absent from the first period. The issue of truancy and absence from class is a major problem that influences the extent to which a coherent program can be planned and enacted. How is it possible to plan for instruction when on the average a student will only attend for three-fifths of the classes in a given week?

Figure 2.6. An example of an analytic memorandum.

So, where to start? If I have digital audio messages I begin there, by playing them through, so that I can pick up my memory joggers, recorded while I was in

the field. Usually my recorded comments impel me toward particular tasks and perhaps lead me to focus on specific events and examine the evidence for identified patterns or contradictions. Once I have dealt with my oral remarks I like to review the videotape. I find it best to watch the tape having first imported it into iMovie. Once it has been imported and saved, as an iMovie file on a 500 GB external hard drive, I watch it in real time and use my computer to make notes. If something catches my interest or if complex interactions occur, I play the tape back, over and over if necessary and when salient vignettes occur I clip them, so that they exist as discrete entities. On the first pass through I do not delete any of the images—I simply break down the file into smaller segments and write notes about the patterns and contradictions I notice.

As I identify patterns of coherence (often called assertions) and associated contradictions I make a note of the evidence to go with each. At this time I make decisions about whether or not to show particular clips to the participants either as a whole class, in cogenerative dialogues, or to individuals such as selected students and the teacher. Usually the clips I select range in duration from 30 seconds to 3 minutes. If I decide to show selected clips to the participants I save them as QuickTime files and store them on a DVD or CD ROM. To the extent possible I like to write interpretive memoranda based on my initial review of the tape. The interpretive memoranda will connect what I am learning to what I have learned previously from the study, to the theoretical framework, and to what others have learned. Usually the others will be from my research group and close associates.

These initial analyses and interpretations help to focus what happens next in my research and also provide a basis for me to get feedback on my tentative findings from participants and peers who are not directly involved in the research. The process of discussing what I have learned with participants and asking for their input on my interpretations is called member checking. I do not privilege the interpretations of any particular participant, but want to get input from a range of them as additional data to provide nuances to what I have learned. Member checking might lead me to change my mind, or more often, to elaborate what I have learned from a study to include additional patterns of coherence and contradictions, or to consider alternative interpretations as contradictions to my claims. Whatever happens I keep a record so that over time I can explore the trajectory of my changing understandings—a key authenticity criterion.

Once a week I schedule a meeting of my research group. Usually each person in the group is involved in his or her own research and we come together to discuss what we are learning and thereby learn from one another's ongoing research. Also we share our foci and methodologies. For example, at the present time my research group is tiered, the base group consisting of four colleagues who are doing research in their own classes and me. Each month the base group meets for three consecutive weeks on Wednesday evening for two hours. Each person in this group takes a turn at leading the research group until, over a five meeting cycle, all researchers have had an opportunity to lead and get focused feedback on their research. This is called peer debriefing and its purpose is to enrich a study through the critical insights of peers.

A second tier consists of the base group plus two other research groups, which undertake research in New York City. The first and second tiers meet on Friday once a month and each month we rotate the meeting venue—the host researchers leading the conversation about our research. This meeting of the larger group is also a form of peer debriefing allowing for even more disparate perspectives to inform our studies.

A third tier is distributed nationally and internationally and consists of colleagues who are undertaking similar research to that being undertaken in the first and second tiers. Some scholars in this network participate in many of the tier 1 and 2 meetings, either by traveling to New York City or by videoconferencing using iChat. In this way valued perspectives enrich our research on a regular basis. In fact, the uses of videoconferencing afford important conversations within and across the tiers.

As I learn from my study I make sure that I have sufficiently compelling data to support the patterns of coherence and the associated contradictions. I want all claims to be nuanced and illustrated with vignettes, narratives of what I experienced as a researcher. For any pattern of coherence, or claim I want to make about the study, I expect to have multiple data sources. That is, I do not want to make a claim that is based only on interview, or just on my impressions of one short excerpt from videotape. Hence, as a pattern and its associated contradictions begin to emerge I examine the design of the study to ensure that I get more data resources to address the pattern and associated contradictions. When I call for multiple data resources I mean that the data assembled to support coherence and contradictions should be compelling, supported by evidence that is appropriate for the claim.

INVOLVING STUDENTS AS RESEARCHERS

The use of students as researchers provides a way to obtain their perspectives on what is salient in terms of school, teaching, learning and myriad other issues. Having identified foci for research they can provide insights into what is happening and why it is happening, in terms of patterns of coherence and contradictions. Especially since we began doing research in urban high schools we have utilized numerous student researchers and their expertise has benefited the research. Elsewhere Rowhea Elmesky and I provided a detailed account of the ways in which we have expanded the roles of students in our research (Elmesky & Tobin, 2005). Here I provide some windows into their roles, how they enacted them, and what use we made of their intellectual work.

Initially the key idea in using student researchers was to obtain their answer to the question of how to better teach kids like me on a lesson-by-lesson basis. This role then expanded to allow student researchers to interview their peers. I was astonished by the work of Tyrone in this regard. He took the task very seriously and prepared for his interviews by coming to my methods classes to hear what issues we spoke about and browsing through the bookshelves in my office to get insights into issues that were central to urban education. For example, without prompting from me he perused a book that addressed Fordham and Ogbu's ideas about acting

white and then proceeded to interview a number of his peers about the construct (Fordham & Ogbu, 1986).

The battle for me has been to include the student researchers as researchers and not regard them as data resources enacting different roles. Accordingly, we schedule research meetings with the student researchers to discuss our research in relation to theory and methodology. As the student researchers begin to understand the theoretical underpinnings they can connect with the research and identify and produce resources that would not otherwise inform the research. Their development as scholars is no different than any other researcher—that is university and teacher researchers. What tends to hold them back is a tendency for some of us to reify traditional student-adult power differences. For example, some of our most successful teacher-researchers, such as Alex, had difficulty in dealing with the expanded roles of student researchers, such as Shakeem. As researchers we welcomed Shakeem's perspectives on teaching and learning; however, as a teacher Alex regarded some of them as brash and disrespectful. Also, when Shakeem returned to his classroom his critical discourse about what was happening was sometimes regarded as "out of line." Being a student researcher allows students to produce new culture that can transform their identities and roles in many facets of their lifeworlds. As student researchers learn to use their voices to identify new sources of inequity and to advocate new roles and activities it is not surprising that the traditional power brokers might resist these new forms of culture. The potential for student researchers to encounter difficulties because of their changed agency and identity ought to be closely monitored to ensure they do not encounter serious problems.

Interviewing Peers

When student researchers interview their peers the peer-to-peer talk seems to be distinctively different than occurs when an adult, like me, conducts an interview. My approach has been to talk to the student researchers about conducting interviews and let them decide how many students to interview, whom to interview, and what to ask. Whether or not follow up interviews are desirable also is left to the student researcher to decide. I encourage student researchers to write a brief analytic memorandum about each interview, focusing on what was done and what was learned. The student researcher then transcribes the interview, which is recorded on a small hand held digital recorder.

In terms of the mechanics of doing an interview I usually discuss the place of the interview with the student researcher, the optimal length, and the ways to avoid interrupting responses with questions. The heuristic we use and advise student researchers to use is to let the persons being interviewed know that they should consider questions as invitations to discuss issues that are important to them, especially things that happen commonly in their class and contradictions. The persons being interviewed should talk for as long as they want to, until they run out of gas. When they let the student researcher know they are out of gas (using the timeout signal

from sports) the turn at talk can transfer to the student researcher who can then ask for clarification, elaboration, or pose a fresh question.

The following transcript is from an audiotape made by Tyrone as he listened to the playback of an interview with Amirah. Tyrone was fluent orally and we obtained much richer interpretations when he audiotaped his interpretations. In Tyrone's case we did not consider it good use of his time to transcribe interviews. Accordingly, we oriented his researcher roles to his interests and capabilities. Of course when we needed his assistance to decipher parts of an interview his insider knowledge was invaluable.

All in all, I think that was a good interview I had with Amirah because she stated a lot of good points. And she had a lot of things to get off of her head. I think it's good that a lot of...I think a lot of people should be talking to Amirah. Not actually interviewing, not actually talking about school, but actually trying to get her to express her feelings on certain things because she has good feelings and good ideas and good thoughts. Plus she has a lot in her head. And I think some of the things need to be let off of her head, and maybe she'll be able to calm down and act like a child again. Because even though she's a teenager, and she's almost grown, she's acting a little older than she is. And she feel as though that's the right way to be. I feel as though it's good to act a little older than your age, but you're still supposed to act your age and have fun. You're not supposed to just be a 16-year-old acting like you're a 34-year-old like you've got to maintain two jobs and ten kids. She has to be able to lay back and relax sometimes. And I feel as though she feel as though she can't do it that way.

Tyrone's insights into Amirah incorporate an insider perspective that nobody else on our research team had. As an African American youth who is growing up in poverty, he recognized Amirah's necessity to fend for herself because at the age of 3, within a few months her single supporting mother died and then just a few months later, her guardian grandmother also died. Now raised by her cousin, Amirah has the responsibilities of home duties, and providing food and clothing for herself and others in the home. At home and in her neighborhood Amirah has the responsibilities of an adult and yet at school she is required to be compliant and is treated as a child. Not surprisingly, Amirah is very resistant to efforts of teachers to control her and suspicious of efforts to create collaborative activities in which she can coparticipate. Tyrone's interpretation of his interview with Amirah contained perspectives that have significant implications for the ways in which we structure classes in urban schools, interact with urban youth, and make sense of what we regard as their resistance to enacted curricula.

Doing Urban Ethnography

One of the early ways we involved student researchers was to ask them to undertake ethnography of sounds of the city. We provided them with audio and video recording equipment and invited them to record sounds in different parts of the

city, such as on busy street corners, in fast flowing traffic, in parks, in stores, on a building site, and on bustling sidewalks. After a discussion about what was happening and why, the students used iMovie and QuickTime Pro as tools to produce a movie, to capture what they learned from their ethnography. To us, their movie and the processes that led to its production were salient windows into their perspectives on science and its intersections with an aspect of urban life. Foci for other video ethnographies undertaken by student researchers included the shopping mall, rapping in the 'hood, going to church, my family, and homework.

In a similar vein we have taught high school youth an elective course on public interest anthropology, whereby they learned how to do ethnography and then undertook a study of their neighborhoods, exploring issues of salience to the residents. These ethnographies provide compelling insights into the neighborhoods in which urban schools are situated and can inform the foci and interpretations of on-going research that focuses primarily on what is happening in classrooms.

Video Vignettes

As an alternative to one of the coteachers identifying video vignettes for analysis and discussion we regularly asked students to identify and analyze clips that were salient to our research. The video vignette and associated analyses then were discussed critically during a research meeting. The following is an example of a written critique of a video vignette identified by student researchers from Ms. Bonds' science class.

Ms. Bonds Boring (January 16, 2003)

The way she was teaching was appalling. She just sat on the table and lectured the students. As you can see the students are very uninterested and are not listening. As a student I know that that isn't an effective way to teach the class. Ms. Bonds was also lacking power. I say this because earlier in the clip the students were out of control and very rambunctious and when she said stop they ignored her. There was only one student who was actually paying attention. Later on in the clip she started yelling and shouting commands and instructions at the class. Yelling to your class isn't effective because it will just be an invitation for that student to be impertinent to you and to be resistant towards you. A student may also sense that the teacher doesn't care if she/he yells at the student.

Although the above interpretations are harsh for Ms. Bonds to read she welcomed the feedback, along with some earlier comments from student researchers that she was "stiff, white, standin'." In effect the student researchers identified a potential connection between a teacher's verve and the interest and focus of students. Students tended to shut down whether Ms. Bonds stood straight and talked at them or sat on her desk and talked at them. Consistently the student researchers selected examples of ineffective teaching as those in which the teacher was relatively immobile. In contrast, examples of good teaching were those in which the

teacher showed oral fluency and moved her body energetically. Another key point in this analysis of the vignette is the senselessness of a teacher's efforts to establish control over students (rather than creating collaborative rituals) and especially acting in ways that are disrespectful and likely to catalyze forms of resistance.

The student researchers are wonderful storytellers and can produce auto ethnographies and autobiographies—especially using video and audio media. We also had a great deal of success in asking student researchers to document their autobiographies, for example, as science learners, in written form. The following is an example from Natasia.

As the years go by it seems that I have done worst in sciences, the reason being my attention span and tolerance for being ideal. When I say "my attention span" I mean that when I get bored I acquire a short attention span. When this occurs I tend to sleep, disrupt the class, talk to the other students and other things of that nature, therefore my work doesn't get completed. When I say my "tolerance for being ideal" I mean my zero tolerance for having nothing to do. This only happens when I finish my work before the rest of the class and then I have nothing to do. I absolutely dislike to have nothing to do, in this case my work would sometimes get misplaced or destroyed or very seldom turned in. It is in this case, that the only work that would get turned in is the work turned in as soon as it is completed. The other work get lost because it is mixed up in all of the junk that I have, by this point, taken out trying to find something to occupy myself with. These, in the long run, cause my grade to fall to a near failing grade. Not the best reasons, but the reasons nonetheless.

I not bored in all of my science class, just chemistry and physics. Chemistry bores me because I had had it after I had had biochemistry which is much more in-depth than chemistry. To me chemistry is more bookwork than anything. Where as biochemistry is more lab work to me, it was fun. Physics is boring to me because all it is just a group of measurements that you will never in life use again in life. Physics is one of these class that you really don't need but you have to take it because they said so.

The only two challenges that I have in my science class now is drawing the pictures for the magnitude and displacement, and stay awake in class.

In my science class no one helps me well other than to tell me to stay awake in class. But my friends help me to stay on task as far as homework, now. Other than the usual, there's nothing much to say about homework. We don't really get much of it, but we do get homework, and sometimes it useful and sometimes it not.

Natasia's narrative raises some crucial points that also arose in other parts of our research. As a grade nine youth Natasia was clearly the leader in her class and had quick insights into the biological sciences, especially genetics. In the four years of high school Natasia struggled to succeed despite the fact that she wanted to be a doctor, had a strong interest in science and studied at least one and often two science courses a year. Issues addressed in her narrative include the lack of challenge

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in school science, catering for talented students, connecting studies to the interests and perceived relevance of students, sequencing science courses, the role of homework, and ways in which teachers and other students can provide support for learning.

Making PowerPoint Presentations

Student researchers are routinely asked to prepare PowerPoint presentations to support oral presentations they will make at research meetings and to stakeholder groups like peers and teachers. The students create presentations that include text, graphics, illustrations, digital images, and short video clips. Such presentations serve multiple purposes such as viably presenting student researchers' perspectives, allowing student researchers to become technologically fluent, and providing a context for interactive exchanges about research.

Students as Teachers and Teacher Educators

As we undertook research in urban classrooms we have been responsive to requests by school administrators and teachers to offer a variety of options to benefit the students and hence the school. For example, we have provided elective credit for student researchers to teach science to children in a nearby middle school. We worked out a plan with the principals and other administrators and the science teachers from the two schools. According to the plan a group of high school students would meet with our researchers on Mon, Tues to plan what they would teach on Wed and Thurs and then on Fri the group would meet to review what they had learned from their experiences and how to make improvements for next week. We divided the middle school class of about 30 students into five groups, each taught by two high school student researchers. In a semester we typically taught two five-week units to the middle school students. This activity created many foci for intensive research, including our teaching of the student researchers on Monday and Tues, the students' coteaching on Wed and Thurs and the critical analyses and research undertaken on Friday. In addition, we were most interested to see how the experiences of teaching others afforded the learning of science and the emergence of new roles as learners in the student researchers' other classes.

Obviously there are many potential foci for research in just the peer teaching activity described above. In this example, the school requested the activity and as a research team we did not have the resources to study it to fully realize the potential of the data resources that were accessible to us. Importantly we had to limit the scope of what we researched and focus our efforts on doing the activity successfully, being sure to answer the broad questions of what is happening and why is it happening. However, it is also important not to privilege the sort of research I do over the sorts undertaken by the teacher and student researchers. Although I was not collecting data resources at the micro level to support my research agenda, the students and teachers undertook research to improve the quality of the activity and to learn what might be retained from this study for enactment in the forthcoming semesters and years. In terms of the authenticity criteria all participants in the peer

teaching activity were guided by and achieved all four of them. Students, teachers, administrators and university researchers learned enough from the study to be able to describe what happens and make suggestions on what should happen in the future. Furthermore, if challenged in any point there were compelling data to support claims.

On a regular basis we arrange for the student researchers to interact one-on-one with small groups of prospective teachers in their methods classes and as an expert panel. In this way they disseminate what has been learned from our research in ways that can potentially impact practice. Even though student researchers have coauthored papers and book chapters with other researchers, their roles as teacher educators and when they use PowerPoint presentations (as described above) are the most authentic ways we have used to allow them to present their voices in credible and authentic ways. Obviously, such presentations also serve as data resources for ongoing analyses and interpretations. In addition, the following testimony from a candidate science teacher suggests she found the information provided by the panel of urban youth to be of considerable value.

You were all great! I know I, personally, learned a lot (probably more than you think we all did). I am new to the Philly public school system, and I just want to say that you have helped to alter my perspective on the school system. All of you were articulate, candid, and well spoken. You also helped me to see some of the things that can make me a better teacher (being caring, but not overbearing; or to be sure to approach the students before calling the parents; and many other things).

Just as we have expanded the roles of students to allow them to contribute to key aspects of education, it is feasible to expand the roles of parents, school administrators, and members of the community. Appealing pathways for getting them involved as coresearchers are coteaching and cogenerative dialogues.

AUTO/ETHNOGRAPHY AND AUTO/BIOGRAPHY

It seemed to me that much of the research in urban education was premised on deficit perspectives of the school systems, the teachers and the students. While I acknowledge that unbridled optimism is unlikely to catalyze the improvements in urban education that we all would like to see, I am equally sure that describing a flawed landscape and producing policies to hold participants accountable for the flaws will not produce improvements of the required magnitude. Accordingly, when I faced mounting contradictions about urban science education I resolved to undertake auto/ethnography—to learn from ethnography of my own efforts to teach science in inner city schools. These initial efforts were followed up by studies of others' teaching, however in a context in which I cotaught with regular urban science teachers.

When I began my research in urban schools in 1998 I didn't set out to do auto/ethnography—but with hindsight it was exactly the right thing to do. The problem for me was that I had just moved to Philadelphia and the schools in the

inner city were unlike any I had ever experienced in my lengthy career as a teacher and researcher. The first hint that there was something wrong came in the form of complaints from my science methods students who felt that what I was teaching them “didn’t work.” I felt that what I was teaching was solid and that they were just not up to the task of teaching in urban schools. When I observed Donovan teach at City High—the supervisor of one of my student teachers—I did not regard him as effective. My perspectives were external, distant, and laden with deficits. As I previously described, Donovan agreed to coteach with me—however, he did not do that, leaving me instead to go it alone. I did not mind since I was confident of success. What a shock to me when I found that I was unsuccessful.

Autobiographies and the stories about how I taught and why I did what I did flowed in narrative form. Naturally the stories incorporated an historical perspective that brought the different cultures of suburban and rural students in Australian schools in the 1960s and 1970s into juxtaposition with urban youth in the 1990s and 2000s. Through a variety of theoretical lenses the research showed that my teaching, which I felt to be effective in Australian high schools several decades earlier, could not adapt to the culture of the students and provide the structures needed to expand their agency and afford their learning of science. When this study began my research group was relatively small, consisting of a doctoral student, a student teacher, and several high school students who served as researchers. Donovan was a researcher too, but it took him some time to assume that role. So, making sense of the data resources was very difficult in the first six weeks or so. I had field notes, videotape, many formal and informal interviews, and regular conversations with Donovan. I was puzzled by the way in which the students refused to show me respect and virtually ignored me when I spoke to them. They would not cooperate with me and often put their heads down as if to sleep in my class. If I pushed too hard they responded aggressively and I was clearly out of my depth. To make matters worse, they had difficulty understanding my Australian accent and I found it impossible to understand their dialect. The learning environments in the class were dysfunctional from my perspective and I did not have the tools to create and sustain productive learning environments.

I was emotionally involved in ways I did not think possible. I had trouble sleeping and often felt so frustrated that I became angry with myself. I prepared for many hours each night and purchased materials to enrich the learning environment and build the curriculum around lab activities. To no avail—each day brought its new wave of failures to report to my close colleague Wolff-Michael Roth. Having a critical colleague to shed light on what was happening was fruitful. In those days we interacted many times a day using email—now we use iChat⁴. Even though Michael had not at that time been a researcher in urban schools of Philadelphia, he had deep theoretical insights that greatly shaped my ways of making sense of what was happening. He was sympathetic, but also a critical friend—exactly what Guba and Lincoln meant by peer debriefing. As I offered my accounts of what was happening he mentioned alternative theoretical ways to think about my experiences. I am sure that I was not as open to his suggestions as I should have been. However, two comments he made were highly influential in shaping my research and provid-

ing a foundation for much of the work we did in our urban education research. These pertained to focusing the curriculum on students' interests rather than my perceptions of what students would be interested in, and my failures to succeed being an example of a breach of habitus.

Students' Interests as a Focus for Curriculum

I was convinced that I would succeed as a teacher if the students were interested in science. Like most teachers I felt that I had to cover the state and school district standards and so I worked from them to plan a lab centered approach in which students also talked and read a lot about science. I found myself relying heavily on what and how I taught in Australia up until 1974 when I became a university teacher educator. I was confident that, as David Hawkins had noted in his classic paper *Messing about in Science* (Hawkins, 1965), the students would be curious about science and use inquiry as a basis for learning. Michael pointed out to me that each of the units I designed was built around my sense of what the students were interested in rather than what they said they were interested in. Although this is quite a difference in orientation I did not see the difference initially. I felt that if I designed labs that were interesting students would create interests in new aspects of science, and learn. The following is an excerpt from an autobiography, one of many written in conjunction with this study.

I was determined to enact a science curriculum that was libratory and potentially transformative in the sense that, by virtue of their participation and learning, students would have a better appreciation of their world, enhanced opportunities for advanced study in science, and increased choices for career placement and training (Barton, 1997). I wanted to enact a curriculum that the students would perceive as interesting, relevant to their lives, and useful. To the extent possible I wanted the students to have choices in what they would study and where they would study it. I predicted that they would enjoy doing science if the program was based on investigations and I had a preference for the activities to involve real world problem solving. Although I would focus on inquiry as a means to develop deep understandings of science subject matter the critical defining characteristic of my approach to the science curriculum would be deep learning whereby students would pursue areas of interest in detail and, in so doing, employ a multitude of resources to support their learning.

Even though I began to teach with a transformative/libratory agenda I was by no means sure of how to proceed with the teaching of consecutive units on chemistry and physics. I intended to use a multi-faceted approach. For example, I wanted students to read about contemporary science and thought they could access science from journals, newspapers, magazines, and the Internet. To accommodate my initial thoughts on what the enacted curriculum might be like I requested that my class be scheduled for two days in a computer lab

and three in a science room that would support a range of activity types, including investigations.

I planned to begin with an activity sequence on chromatography, examining the dyes from M & Ms and Skittles because those items of candy were potentially interesting to students, involved simple materials with which they were familiar, and could easily connect to a unit on food and nutrition. While studying food coloring and the relative safety of different dyes I believed we also could study the chemical constituents of the foods consumed by students in various meals. As part of a unit on food and nutrition I considered that students might grow sprouts, radishes, and other edible plants. Also, within the chemistry course, I thought they might grow fast plants, study life cycles, and learn how to grow nutritious plants, such as corn, in relatively quick time. I did not expect that these activities would replace chemistry but set a context in which concepts of chemistry could be explicated.

Narrative accounts like this can be used in a publication as a vignette—thick descriptions that provide detailed accounts of my experiences in a holistic, unfolding sense that is well-captured by narratives.

Peer Debriefing

I wrote several papers that were published and in the process applied sociocultural theory to make sense of my experience. By publishing with a student teacher, doctoral student and one of the high school students I was learning from their perspectives and in the papers made sure that their perspectives were retained. However it was in my first autobiographical piece from this study that Michael, as a peer reviewer, made the comment that my habitus was being breached. I did not like to read that at first because it seemed to impugn my teaching—yet in hindsight it was a critical review that allowed the research to progress in leaps and bounds. Once I realized that my teaching, as praxis, was not working as I intended I began to see that, in becoming conscious of what was happening, my teaching lacked fluency and was not timely, anticipatory or appropriate. This realization drew attention to the ontological characteristics of teaching and focused attention back on how I was implementing my methods course. Clearly there were major contradictions between my experiences in teaching at City High and how I was expecting my student teachers to learn to teach.

Writing papers and presenting them at national meetings opened the door for peer debriefing and when I returned from the April meetings I was determined to coteach with Donovan, rather than always be the central teacher. From that point onward the classes were much more productive and the doctoral student also got involved in coteaching. With more teachers the students were able to expand their agencies and learn more science and the coteachers were able to experience more teaching and learn to teach by being at one another's elbows. As coteachers we also were coresearchers and had direct access to important experiences associated with learning to teach, teaching science, and learning science. From this point on-

wards all of my research in urban science classes employed a methodology of co-teaching.

Learning from the Literature

A key resource at any stage of research is the research and theorizing of others. In my urban research there are three good examples of the ways in which others' scholarship made a profound difference to the focus and practice of my research. The first example of a central resource was a pair of publications by a colleague of mine from the sociology department at the University of Pennsylvania. Elijah Anderson had written two books, *Streetwise* (Anderson, 1990) and *Code of the Street* (Anderson, 1999). In these books he wrote about the culture of African American youth in West Philadelphia. In particular, he wrote about the poverty extant in this part of the city and the ways in which respect assumes the place of a currency. Respect had to be shown and it had to be earned. I read with great fervor and built new lenses for making sense of my autobiography and making sense of what people were telling me about my teaching and their learning. The students were earning respect among themselves by showing their disrespect for me. Anderson laid out a culture that was foreign to me and as I gleaned insights into it, I was able to make sense of what had happened in my class and then to educate others about what I was learning and even to catalyze changes in the learning environments of the classes I taught.

My involvement in sociocultural theory was somewhat ad hoc, often related to the citations of colleagues and their recommendations about which scholars and works were germane to my research. Of course, doctoral students were a wonderful source of new ideas and resources to study. However, in the early 1990s I realized my reading needed to be much more systematic and I decided to study a course in African American psychology and then two doctoral-level courses in theoretical sociology. These courses allowed me to identify new ways of looking at my research, which was deeply influenced by Wade Boykin's ideas about African American dispositions and the triple quandary faced by participants from minority ethnic and racial groups (Boykin, 1986). An even greater emphasis was due to William Sewell's perspectives on culture, structure and agency (Sewell, 1992, 1999). Direct outcomes of my re-education were dramatic changes in focus and methodology, especially in my uses of microanalysis to augment what I referred to then as critical ethnography.

My entrée into microanalysis placed a strong focus on interactions of participants with structures (i.e., resources). My theoretical framework, which was essentially post-Bourdieuian, did not successfully connect interactions with the creation of productive learning environments. Regina Smardon, and later Stacy Olitsky, took courses from Randall Collins, who was completing a book on *Interaction Ritual Chains* (Collins, 2004). They introduced me to his theoretical framework and immediately we saw applications in our research. Over a period of years we incorporated Collins's sociology of emotions into our theoretical framework to produce

a coherent theory that afforded research across the micro, meso, and macro levels of social life.

Incorporating Microanalysis into Critical Ethnography

During my studies of others' teaching and the associated learning environments I incorporated critical ethnography as I described earlier and microanalysis, based on the uses of videotape. In the next section I focus on the methodology employed in microanalysis using two studies undertaken by Alex (Tobin, 2006a) and Victoria (Tobin, 2006b) respectively. As I have done previously, I use excerpts from a paper written about this research to make salient points.

Microanalysis involves the use of videotape to examine practices in detail by replaying excerpts and manipulating the replay speed to search for patterns and associated contradictions. I use the iMovie application to produce and analyze videoclips. For users of the Windows Operating system the applications I have found most useful are QuickTime Pro and Studio Mediasuite (version 10 by Pinnacle). Transana is a cross-platform application that many researchers use⁵.

What's Happening?

When I do microanalyses I explore agency|structure relationships in detail. First, I address the general question of "what is happening?" and then undertake a detailed analysis of "why is that happening?". In the following example, the answer to what is happening is referenced to the practices of key participants during a selected vignette. How do you decide whether or not a vignette is salient? I watch videotape and identify episodes that are relevant to the research questions. The episode should depict either a good example of what tends to happen or a contradiction to what usually happens. The first thing I do is to write a short description of what the episode represents—for example, in this episode a female shows unusually intense engagement in a dissection lab. It is unusual in that most students participate in sporadic ways and are easily distracted. Also, it is often the case that males are more often engaged than females. The amount and quality of the engagement make this episode quite salient to the roles of urban youth in lab activities that connect directly to their interests and in which they have the autonomy to choose what, how, when and with whom. Also salient in this episode is the central role of Alex, the science teacher. In contrast to what is often advocated vis a vis the role of a teacher in a lab, Alex enacts his roles in a very central way, exhibiting his competence in science fluently and showing students what and how to participate. When he joins students he does so with purpose and structures their experiences so that they can participate autonomously in his absence.

The selection of an episode is followed by detailed analysis that focuses on the unfolding agency|structure relationships in terms of verbal and non-verbal interactions among selected participants. The analyses involve the production of a transcript that includes details of the words spoken as a function of time, body movements and the appropriation of resources.

Science in the *Science Education and Technology* small learning community was taught in a former shop room—a large room in the basement of City High. My initial impression, based on entry to the classroom, was how different the classroom felt and looked. There were no students seated in the desks where whole class interactions usually occurred and Alex was nowhere to be seen. Clusters of students were interacting at workbenches dispersed throughout the large classroom. At the dissection table four students were examining the latex gloves, dissection kits, and aprons. As they got themselves ready to start their dissections Alex emerged from the storeroom with a frog, still in a plastic bag. As Kareem, one of the students, placed the frog on the dissecting tray, Alex began to interact with the students about their roles and the resources they could use to support their learning. In addition to the lab equipment and materials the resources available to support the students' learning included manuals for the organisms they were to dissect, a computer connected to the Internet with a high-speed T1 line, reference books, peers, and Alex.

During an eight-minute vignette selected from the beginning of a lesson Alex came to the dissection group on four occasions. His first visit to the group was brisk, lasting less than a minute. While he was with the group he explained what equipment was available for them to use and reviewed the division of labor that the group might adopt. He negotiated with Katrina who had dissected a frog yesterday and discussed what she needed to include in a report on the dissection of a starfish. He suggested to her that she dissect a grasshopper today, adjacent to the other three students in the group, who would dissect a frog. Alex listened attentively to Katrina and requests for equipment from the others in the group. Then he explained to them the value of doing their dissections close to one another, thereby affording comparisons of the structures of the two organisms that were very different from one another. He then left the group purposefully, to get what they needed from the storeroom. Immediately, the group commenced various forms of participation.

Within a minute Alex returned to the group with a grasshopper to be dissected. As he arrived the two females requested gloves, since Katrina did not yet have any and Samantha's gloves were too small. Alex affirmed that he would get them and, noticing Katrina pull back the frog's outer skin with her fingers, discussed safety and explained that students should treat the animal with respect, using a probe to hold back the skin, lift organs and so forth. As Alex spoke to the students they stopped what they were doing and oriented their heads to listen to him. After explaining to them how to use the probe he volunteered to give them his dissection kit, which contained a greater array of scalpels and dissection tools. After 50 seconds with the group Alex left with the comment "go to work!"

From the moment Alex arrived at the group he was an active participant. He interacted with Katrina and Darnell and challenged what they were doing and why they were doing it. Based on his experience he knew they would want to cut and

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remove the organs without a plan and so he asked questions that would pique their curiosity, directing them to other resources so that they would know what to look for, in determining the sex of their frog for example. Alex showed his knowledge of the anatomy of the frog and at the same time made it clear to the students that they would decide what to do and when and how to do it. That is, through his verbal and non-verbal practices Alex expanded the agency of all three students who remained in the group during the above interactions. Figure 2.7 shows the orientation of the four participants in this episode.



Figure 2.7. The participants lean forward to interact about dissecting a frog.

Utterances and Time as Resources

As an example of how verbal interactions are used as a resource, I provide a transcript of a segment of a frog dissection in which Alex interacts with Katrina and Darnell. The conventions I use are similar to those employed by Roth (2005) and are printed using Courier font, because each character is assigned equal spacing, making it possible to vertically align speech utterances that occur at the same time.

The following transcript⁶ depicts fast talk and fluent action as participants use gestures, tool manipulation, and body sways to interact successfully with one another and material resources. Chains of verbal and non-verbal interactions are in synchrony and produce successful outcomes and obvious signs of enjoyment, interest and sustained involvement from all participants.

1. Katrina: These two things
2. Darnell: =Well what about it?
(1.4)
3. Katrina: Let's find out where it's going
(0.6)
4. Alex: See but that's why you cut things. Well. You, make a decision.

5. Katrina: =It's coming. It's got. It's got. I think it's coming this way.
 6. Darnell: =It's the smaller thing. It's right there.
 7. Alex: =Where?
 8. Darnell: =This.
 9. Alex: =Yeah. The end of it is called the cloaca. That's probably gonna be the gall bladder. But you figure that out.
 (0.8)
 10. Alex: Take. Start taking organs off from the top end then. Right?
 11. Darnell: =Are you serious?
 12. Katrina: =Can we cut it here? (0.4) Can we cut it here?
 13. Darnell: =No. No. You're going to cut its gender loops
 14. Alex: =Awright. Let me tell you.
 15. Katrina: =I'm cutting it.
 16. Darnell: =No. You're not.
 17. Alex: =First of all, do you know if it's a female or a male?
 (0.5)
 18. Darnell: Yep.
 (0.8)
 19. Alex: That's a question for you
 20. Darnell: =I don't see nuthin' there so I guess ((points to the groin))
 21. Alex: =Well if it's in there on the bottom there. If it's a female you know (1.1) actually on the end of that website it'll tell you what to do to figure out if it's a male or a female. I think it's a male to tell you the truth.
 (0.6)
 22. Alex: I need to go from
 23. Katrina: =Can I cut it around here?
 (0.3)
 24. Alex: I I don't know.
 (0.8)
 25. Eventually you might want to cut here but I don't know if you want to cut here yet.
 (0.8)
 26. Right. (0.2) See. (0.3) Do the organs first and then find out
 (1.3)
 27. Darnell: Why for?
 28. Alex: =Because the opening for the anus is going to be different for from everybody. Right?
 29. Darnell: =Awright.
 30. Alex: =Now what are you doing with your hand?
 (0.5)
 31. Katrina: Me?
 (0.4)
 32. Alex: Yeah.
 (0.5)
 33. Katrina: I'm doing what I can.
 (1.2)
 34. Alex: Okay. What's your plan? What are you guys gonna do? What and why are you doing what you're doing? Right now you're just exploring and just poking around?
 35. Darnell: =Yeah. [I'm not. I'm not
 36. Katrina: [I'm finding that You see this rough thing attach with this?
 37. Alex: =Hm. Hm.

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38. Katrina: =allow me to see if this one prefer that it makes it um
um
(1.2)
39. Alex: You wanna see how the opening goes from the mouth to over
there. Right?
40. Katrina: =Hm. Hm.
41. Alex: =Right?
(0.9)
42. Darnell: Awright. I take this out from right here?
(0.7)
43. Katrina: Oh. It's [the heart?
44. Darnell: [I can dig deeper down in there?
(0.2)
45. Alex: Yeah. (0.4) Did you want to remove the liver?
46. Darnell: =Yeah.
47. Alex: =So what I'd say before you do that, go on the website and
see if it suggests a cut because they'll suggest to you how to cut
and where to cut to get the liver out easily and not destroy anything
else. Okay?
((Darnell leaves to access the website))
(0.6)
48. Alex: Put your aprons on, both of you. Put aprons on you won't
stink. (0.5) ((Alex strides away from the group)) Aprons are over
there. So you won't stink when you go home. ((Both girls move to get
aprons and Alex leaves to interact with another group))

Alex spoke for 22 of the 48 moves and in so doing provided suggestions for dissecting the frog (moves 10, 25, 26, 39, 45), asked questions to create a focus (moves 21, 47), showed evidence of interest and curiosity (moves 7, 28), suggested resources for the students to access (moves 21, 47), affirmed the autonomy of students (move 4), used canonical knowledge (move 9), challenged students (move 34), showed uncertainty (move 24), and emphasized safety (move 48). Only 1 of the 22 verbal moves focused on what not to do and was likely to create negative emotional energy (move 48). On this occasion Alex waited until there was a transition and Darnell had moved off before he spoke firmly, briskly stressing what had to be done and alluding to an earlier joke about avoiding the “stinking up” of clothing due to splashing of the formaldehyde used to preserve the frog.

Katrina was central in the dissection because of her prior experience, knowledge, and where she sat—directly in front of the dissecting tray with the others on either side of her. Since Katrina had the dissecting tools throughout the interaction it is no surprise that 9 of her 12 verbal moves consisted of talk about the organism. Of the other 3 verbal moves, one was clarifying, one was explaining, and the third affirmed an agreement. Hence Katrina's talk was an extension of her manipulation of the dissecting tools and her gestures, many of which pointed to specific organs.

Darnell was between Katrina and Alex and interacted with both of them, often providing short verbal affirmations to acknowledge what they had said. Sometimes these took the form of acknowledgement (move 18), agreement (moves 29, 46) and disagreement (moves 13, 16). Also, because he had dissection tools in his hand, many of his verbal moves were about the frog (moves 6, 8, 20, 42, 44). Other verbal moves involved challenging Katrina (move 2), expressing surprise (move 11), raising a query (move 27), and explaining (move 35). None of his turns at talk were

especially long, the longest being six to eight words about the organism being dissected.

Pam was silent and attentive throughout the interaction, observing how to use the dissection tools and listening to Katrina and Alex. Her attention was intensive and at times she leant forward to observe closely. Pam's head moves and body orientation and sways were in synchrony with the dynamic structure of the frog dissection. Her participation appeared to be an active form of observation. As soon as Pam collected her apron she was ready to assume Katrina's place as the central person involved in dissecting the frog.

The pauses in the transcribed episode ranged from immeasurable to 1.4 seconds. Few pauses exceeded 1 second. In fact, the transcript shows many instances of overlapping speech and speaker exchanges that were not separated by a discernible pause. Twenty-seven of the 48 moves were separated by immeasurable pauses of 0.1 seconds or less. My interpretation is that the participants were coparticipating and maintained brisk interchanges that added to rather than detracted from making sense of the task at hand—to dissect the frog and learn about its anatomy. The longer pauses occur between and within moves. The distinction is somewhat arbitrary since I could have created a new move whenever a pause of more than 0.2 seconds occurred. I did not, however, preferring to change moves with speaker or when the semantic focus changed. Fourteen pauses separated different speakers. That is, pauses were resources for changing speaker, affording the agency of speakers and presumably the listeners as well. I analyzed these interactions to see if there were patterns. Five of the 14 pauses followed an utterance from Alex, three to Darnell (0.5, 1.3, 0.9) and two to Katrina (0.5, 0.5). Four of the speaker exchanges involved Darnell, transferring twice to Katrina (1.4, 0.7) and twice to Alex (0.8, 0.2). The remaining five transfers were from Katrina to Alex (0.6, 0.3, 0.4, 1.2, 1.2). This trend more than likely reflects Alex's central role in creating structures to allow students to be autonomous in proceeding with the dissection in his absence. Katrina spoke about the frog and when she paused for a sufficient time Alex followed up with the verbal moves previously described. The transfers associated with pauses of 1.2 seconds were salient in the interaction in that in each case Alex spoke for longer, the first calling for a group plan and the second suggesting a procedure they might follow in their dissection of the frog. Even though these verbal moves followed Katrina's comments, they were directed at Darnell and Pam who would have to create the plan and in a short time assume full responsibility for dissecting the frog⁷.

Eleven discernible pauses were not associated with a change of speaker. These pauses ranged from a low of 0.2 to a high of 1.1. With one exception all of these discernible pauses occurred in Alex's speech. Katrina showed the group where to cut, paused for 0.4 seconds, and then asked if she could cut an organ in a particular spot. In all other instances, it was Alex who used discernible pauses and retained a turn at talk. On most occasions, and for all speakers other than Alex, discernible pauses signaled the end of a turn at talk.

There is a high degree of synchrony among the participants as Katrina, Darnell and Alex interact and Pam leans forward to observe. Katrina and Darnell continue

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to use the dissecting tools as they verbally interact with Alex and ascertain how to structure the dissection of the frog. Figure 2.8 shows the coordination of Katrina's and Darnell's hands as they examine various organs and discuss how to proceed. The ungloved hand of Alex points to the cloaca (move 9) as he identifies what is possibly the gall bladder. Interaction chains involving Alex, Katrina and Darnell are in synchrony, mutually constituting a dynamic structure that affords individual and collective agency of all participants.



Figure 2.8. As Alex points, Katrina and Darnell use a probe and forceps to explore the frog's organs synchronously.

The analyses suggest that sense making during interactions about a material object, this time a frog's organs, extend far beyond talk, and that the meaning arises from more than the spoken words; requiring (in this case) a frog and the tools, gestures and body orientations used to create and sustain focus among participants. The transcript shows that the talk flows quickly from speaker to speaker, with short turns at talk, and some overlapping speech. The speech structures the interactions, contributing to meaning making in many ways as the purposes of dissecting the frog become clearer and emerge from the unfolding experiences. These interactions are not rehearsed or a result of careful planning by any of the participants. Alex has experience of teaching dissection to other classes and students within this class and in previous years he has enacted dissection activities in his classes. However, what happens in this vignette is similar to what has happened before and unique in the ways in which participants interact with one another and appropriate structures to meet their goals—which change from the first to the 47th turn at talk.

Pitch and Amplitude of Utterances

In the above analysis I did not explore the intonation of the voice or variations in the amplitude within and between speakers. PRAAT is a cross-platform tool that can be used to analyze audio files to provide measures of variables such as time, pitch and amplitude of utterances (Boersma & Weenink, 2006). I usually export the sound from iMovie or QuickTime Pro, as an AIF file, which can be read into PRAAT and is ready for analysis. Because PRAAT provides plots of pitch and amplitude against time (for example) we can examine variations in pitch and amplitude as a function of time.

In a study of the ways in which teachers were able to adapt their culture to align with that of the students, Victoria (teacher) and Mirabelle (student) were involved in a series of interactions in which emotions were salient. Victoria was showing the class how to obtain information about chemical valence from the periodic table. Mirabelle listened to Victoria and then attempted to provide an alternative model for valence. Victoria did not accept the model as viable and the exchange between Victoria, Mirabelle and several of her classmates involved many examples of cultural alignment and misalignment. Data resources include a transcript, analyses of the audio file to obtain measures of time, pitch and amplitude, and analyses of a video to obtain descriptions of gestures and body movements.

Victoria: Look at the placement on (83 dB, 294 Hz) the table
(0.3) of the element. So that's the trick for figuring
out the valence electrons. ((Mirabelle raises her
hand.)) Yes Mirabelle.
(0.1)

Mirabelle: I figured out (79 dB, 233 Hz) a system way you can remember.
(0.8) [How many val- valence electrons?

Victoria [yeah. So this is the trick. The
placement on the table, is how you can remember how
many electrons there are. (1.2) So now it's two boxes
over?
(0.7)

Mirabelle: I'm not talkin' about that.
(0.6)

Victoria: What are you talking about? (77 dB, 227 Hz)
(0.9)

Mirabelle: Arrright. (75 dB, 213 Hz)
(0.6)

Victoria: You just said placement for valence electrons
[so that's the trick.

Mirabelle: [Yeah, there's another way you can figure it out.
(1.2)

Victoria: This is (79 dB, 321 Hz) the way to do this.

Victoria reviews valence of elements in terms of electron configuration and the placement of elements on the periodic table. She wants students to be able to look at the group in which the element is placed and predict its valence. She refers to this as a "trick for figuring out valence electrons." Mirabelle, seated at the end of the second of three rows, raises her hand and volunteers that she has "figured out a way you can remember how many valence electrons." However, before she can

complete her sentence, Victoria speaks in overlapping speech that “Yeah. This is the trick.”

As Victoria continues to explain how to figure out valence from the periodic table Mirabelle interrupts her to emphasize that she is speaking about something different. Numerous non-verbal interactions between students communicate solidarity among them. At 30 seconds, as Victoria says, “This *is* the way to do this.” Tasha, the student sitting adjacent to Mirabelle, turns her head toward her, smiling broadly as she makes eye contact. Victoria’s statement is a challenge to Mirabelle and the way she says it, raising intensity and pitch, may have created a resonant structure for Mirabelle and other students in the class. Heads turn, attention is focused on Mirabelle, and there is anticipation about what is to follow. Mirabelle inclines her head to one side, makes eye contact with Tasha, and smiles. As others in the class turn their heads they too have supportive expressions on their faces, although they do not appear to make direct eye contact with Mirabelle. The head turns and eye gaze of many students suggest that Mirabelle’s explanation is a mutual focus for them. Mirabelle’s explanation is loud, expressive and rhythmic and she uses her right arm to gesture toward the periodic table and the teacher, pointing at times with her index finger and at other times spreading her fingers for emphasis (Figure 2.9). The student researchers recognize this as typical of how Mirabelle interacts when challenged in out-of-school settings, one of them characterizing it as bullying.

The following excerpt from my analytic notes provides a glimpse into the interactions featuring Tasha, Mirabelle and Stacy (seated in the front row) in the first five seconds of the episode.

Tasha was in synch with Mirabelle in several ways. The two females turned their heads toward each other and smiled broadly at one another. Also as Mirabelle gestured toward the periodic table Tasha gestured at about the same frequency and each held a focus that was evident in eye gaze and head tilt. Stacy turned to look at Mirabelle and as she made eye contact with her, Tasha smiled and also turned to look at Mirabelle. The look on Stacy’s face is one of empathy.

In the first five seconds there is other non-verbal evidence of mutual focus. Students in the front row orient themselves either to look at Mirabelle or to watch the periodic table as they listen to her oral presentation.

The interaction sequence is characterized by several breaches when Victoria and Mirabelle speak at the same time and in opposition to one another. The intensity and pitch analyses show that Victoria speaks loudly and at a fairly high pitch as she explains about valence electrons to the whole class. When called upon Mirabelle speaks discernibly softer, 4 dB less intense and at a slightly lower frequency. Nonetheless, for a student speaking to a teacher the initial statement is relatively loud. After she completes her first explanation of what she wants to say she pauses for 0.8 seconds. This pause then becomes a resource for Victoria to take back the turn at talk. However, it is also a resource for Mirabelle to continue with her turn at talk. Accordingly, there is overlapping speech as Victoria reiterates her trick for

calculating valence. Her turn at talk contains a relatively long pause of more than a second and even though Mirabelle attempts to interrupt, her effort is not loud and her hand partly covers her mouth. Victoria continues and after a pause of 0.7 seconds Mirabelle steps in, and informs the teacher that she is not talking about that. A rapid exchange occurs until Mirabelle makes it clear that she is proposing an alternative model. Mirabelle's assertion is followed by a pause of more than a second, after which Victoria is emphatic, raising her voice to 79 dB, noticeably above Mirabelle's previous turns at talk, which peak at approximately 75 dB.



Figure 2.9. The spatial orientation of the students.

Both speakers showed signs of frustration and there is a hint of anger from both of them. Mirabelle cannot locate spaces to explain her model for valence in Victoria's stream of talk. At the same time Victoria is focused on explaining to all students a way to quickly find out the valence, especially if they need to know to respond to a test question. Whereas Victoria has the symbolic capital of being the teacher, Mirabelle is supported by structures associated with solidarity among at least several peers. Hence, even though Victoria is emphatic that her way is the right way, Mirabelle uses her agency to make a case for an alternative model for valence.

DOING HIGH QUALITY RESEARCH IN CLASSROOMS

Qualitative research is an investigation of cultural enactment that describes what happens in terms of patterns that have thin coherence and contradictions to those patterns. These patterns are pieces of evidence that "hang together" and are deemed to have salience to the research. Some of the places in which patterns can be seen

are in interactions among participants, schema of a field, and the participants' practices. My preference is to describe an identified pattern, and provide evidence for the pattern in the form of thick description, included in a vignette. To the extent possible multiple data resources should support each claim. It is not sufficient to identify and describe the patterns of coherence and ignore the contradictions. Special efforts should be made to identify contradictions, understand what they represent, and illustrate them with vignettes.

At a very basic level the patterns of coherence and contradictions are regarded as assertions about social life in the fields involved in a study. Similarly, they might be regarded as answers to research questions. Intellectual efforts to explain why patterns of coherence and contradictions occur should connect to the theoretical framework that underpins a study and to the empirical and theoretical works undertaken by a researcher and others. Explanations of why phenomena occur are theoretical and should elaborate on what was known prior to the study. Citations to other studies and scholarly works should be substantive and not symbolic. That is, a citation should include an explicit connection of what is learned in a study to salient aspects of the cited works. What should be clear is what has been learned from a particular study, its implications, and what needs to be done next.

Obtaining evidence for claims necessitates prolonged engagement and the use of multiple grain sizes for analyses. Roth uses a zoom lens as a metaphor for thinking about the process. For me the key to effective classroom research is learning from coparticipation in the classroom as curricula are enacted. Making sense of these experiences is the initial step in a process that employs mesoscopic analyses in which time is not manipulated. The data resources for such analyses include field notes, analytic memoranda, video replay, transcripts of conversations, including interviews, and digital photos of artifacts such as students' work, blackboard inscriptions and wall charts. My interest, in teaching and learning, focuses on the ways in which teachers and students access and appropriate, that is interact, with classroom structures. Hence, as I intensively analyze the all data resources my interest is in interactions of selected participants with social, material and symbolic resources. On the basis of these intensive analyses patterns and associated contradictions emerge. The point to emphasize here is that the patterns and contradictions are based on mesoscopic analyses.

Theoretically, evidence for any claims at the mesoscopic level should be available at the microscopic level. Of course, such evidence would be confirming and disconfirming, with the confirming instances constituting a pattern that has thin coherence. Based on my theoretical framework for cultural enactment, any pattern of thin coherence would be dialectically related to contradictions and my search would involve the identification of evidence for coherence and contradictions at the microscopic level. In this context the question of what would be a salient video clip is referenced to the mesoscopic claim. A useful episode to analyze microscopically would be one that depicts a particular instance of a pattern I have identified or contradictions to that pattern.

Returning to the metaphor of zooming, it is also possible to zoom out, which, in this case suggests a macroscopic or multi-field analysis. The macroscopic issue, in

this instance, is whether or not claims made based on mesoscopic analyses are evident in other fields—that is at other times, in other types of activities associated with this class (e.g., whole class interactive; small group; individualized; labs; field trips), and in classes with different participants (e.g., same teacher with different students; same students with different teacher; different teacher and different students). In making macroscopic claims it is useful not only to project forward, but also to look backwards and situate claims historically. Also, by looking at other classes and, if relevant, other parts of the school (e.g., hallways, lunchroom, entrance foyer), claims can be made about the extent to which patterns apply in other fields. Over time it is useful to examine how culture associated with fields outside of the school permeate the porous boundaries of the school fields (e.g., such as a science classroom). It goes without saying that macroscopic analyses would explore the extent to which culture produced in a classroom permeates fields outside of the classroom, since it is assumed that education will make a positive difference on social life writ large. Hence it is within the ambit of classroom researchers to undertake studies that span the micro-, meso- and macroscopic levels of social life, building understandings of cultural production, as reproduction and transformation.

Having laid out the terrain I conclude with a cautionary note. It is always best to focus on quality and the scope of a study must be referenced to the resources available to support high quality scholarship. Whatever is planned and done should be done well, quality is a first criterion, and it has been my experience that researchers (even senior researchers) err on the side of attempting to do too much. Hence, at the planning stage of a study, identify the boundaries and, as the study unfolds, re-examine earlier decisions to ensure that what is done meets the authenticity criteria and that all claims are nuanced—paying attention to contradictions and supporting claims with compelling evidence, describing how much of it there is, and providing salient examples with thick descriptions. When I have clearly described what I have learned in a study it is for readers to decide if they are convinced and whether any of what I have learned is applicable to and has implications for their professional activities.

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NOTES

¹ The extent to which participants assume control for what happens or attribute control to others

² Female pronouns are used when male or female forms could be used.

³ Based on questions and comments by Joe Kincheloe at a recent doctoral defense I decided to add to what I had originally written in this section.

⁴ iChat is a videoconferencing application that runs on Macintosh computers

⁵ <http://www.transana.org/>

⁶ I use transcription conventions employed by Roth (2005).

- [beginning of overlapping talk or gesture;
- = equal sign at the beginning of turn indicates no gap between two speakers;
- (2.1) elapsed time in tenths of a second; sound intensity (dB) and pitch (Hz) also are in parentheses.
- :: colons indicate lengthening of the preceding phoneme, approximately one tenth of a second for each colon used;
- a dash indicates sudden stop in talk;
- ↑↓ arrows indicate shifts to higher or lower pitch in the immediately following utterance part;
- °uh hu° utterances surrounded by degree signs are less loud than the surrounding talk;
- (()) double parentheses (italicized) are used to enclose comments and descriptions.

⁷ Katrina would soon leave to dissect a grasshopper.

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PAM JOYCE AND JOELLE TUTELA

3. WE MAKE OUR ROAD BY TALKING

Preparing to do Educational Research

POSITIONING OURSELVES

Similar to the book, *We Make the Road by Walking* by Paulo Freire and Myles Horton, we (Pam and Joelle) are two social activists who emphasize the importance of critical pedagogy, social justice, equity as well as the use of revolutionary teaching practices for democratic education. In this chapter we discuss our journey from teaching in a urban-suburban high school, thirty minutes outside New York City, to entering a doctoral program in urban education, to researching and writing our dissertations; we make our road by talking. This chapter is written to help novice doctoral students examine their own lives, so that their life experiences can be incorporated into the process of educational research. In effect, it presents the dissertation process as an opportunity to open a wide array of spaces that can lead to transformative action. Like, Freire and Horton, we have an educational conversation about how we moved from teacher-practitioners to teacher-researchers. We write this chapter on doctoral research as a conversation because it captures three key aspects in producing doctoral research: the development of a theoretical framework, the employment of dialogue as a methodology and the use of personal narratives as a way of transformation. In this chapter, we use the theoretical perspectives of critical pedagogy and feminism to help guide our conversation, focus our dialogue, and understand our personal narratives. Through our educational conversation, we tell how our personal histories have informed our vision for democratic teaching and ultimately, led us to pursue our doctorates. In this context, our womyn's ways of knowing are validated, as we come to understand how teaching is political and how schools deskill teachers. With these insights in place we discuss the value of personal narrative in doctoral research.

The Womyn: Joelle and Pam in Third Person

Joelle Tutela is an Italian-American female who was raised in the affluent community of Short Hills, New Jersey. Like most teenager, Growing up was complicated for Joelle. On the outside, her appearance was the typical wealthy white privileged teenager, but being raised by a large extended, Italian, Roman Catholic family; a mother who immigrated from Italy and a first generation father, fitting in was not always easy. She lived on a block where most of her friends were latch key kids while she was always under the supervision of an extended family.

Joelle developed an early awareness of cultural difference and an interest in social justice and equity as a result of growing up with her parents, three brothers, one sister and her grandmother and frequent visits made from her aunts, uncles and cousins who lived near by. She, also regularly visited her relatives in Piedimonte Matese, a small town in the foothills of the Appennini Mountains in Italy. It was there that she became fascinated by differences between American and Italian customs, forms of governments, governmental participation, and way of life. In particular, she was impressed by the active involvement and political awareness of Italians of all ages and always wondered why predominately so many Americans did not actively and critically participate in our democracy.

The idea of promoting cultural pluralism and improving Americans' active governmental involvement were not the only reasons, Joelle wished to pursue a career in education. She was also influenced by the inequity of education that her mother, Francesca, received at an urban high school in New Jersey. In the fall of 1957, Francesca registered for classes as the first Italian immigrant and was excited to start her new life as a student in the United States. She learned English very quickly and excelled in all of her classes, even making the honor roll. She became actively involved in the school's drama club and student government. Due to financial constraints, Francesca had to get a job. New to the country and eager to work, she decided to meet with her guidance counselor for advice on available jobs for teenagers on the honor roll and actively involved in the extracurricular activities at the local high school. Without examining Francesca's school records or asking her why she was interested in attending college, the counselor recommended that since she was an immigrant she should apply for a job at the local raincoat factory. Again, in Francesca's senior year, she met with her guidance counselor; this time to discuss her life plans after high school. Francesca asked her counselor, about the process of attending college and her counselor suggested that she get a job because "college was not for her kind." These two examples of discrimination in Francesca's life reflect how the educational system in the United States lacks equity as it prepares children from different social backgrounds for different roles within the economic division of labor. More importantly, these examples represent the need for culturally responsive teaching and research.

Joelle's interest in contrasting lifestyles and cultural differences within her widespread family as well as trying to eradicate the injustice her mother received in school, led her to pursue her education in higher education and ultimately, start a small learning community at Steele Divide Division High School, called Social Justice. In the planning of Social Justice, Joelle drew from her interdisciplinary graduate studies at Columbia University and New York University. Her time at Columbia University gave her a thorough grounding in women's history, African-American history and Native-American history; her three years at New York University taught her to use the arts to complement historical research and pedagogy. Thus, the small learning community that she designed combined history, English, and the arts in an investigation of the contradictions between democratic ideals and the realities of American life. She designed Social Justice to motivate students to develop their own voices and to provide creative outlets of expression in concert

with their diverse learning styles and sociocultural backgrounds. Her overall rationale for the design of Social Justice stemmed from her belief that exposure to a more expansive version of American history and involvement in the community would foster student empowerment and equity.

Pam Joyce is an Afro-Caribbean female born in America and raised in a strict West Indian household by parents who emigrated from Jamaica to start a new life in New York. During the 1960s and 1970s, Pam lived in St. Albans, which was at that time a predominately white middle class neighborhood in Queens, New York. In the 60s, a small group of West Indians and African Americans began to buy homes in the area, which inevitably led to a drastic and sudden change in the demographics. Upon the arrival of these minority groups, there was a mass exodus of white homeowners causing the real estate market to plummet. Eventually, this led to a drastic decline in the quality of the public schools. It was in St. Albans that Pam first experienced the sad reality of the racist geographic demarcations of society. Since Pam's parents were new to the country and unfamiliar with the American school system, navigating the academic system proved to be a challenge. In order for Pam to receive a good education, her parents decided to send her to Catholic School.

Although, Pam's parents were not Catholics, they enrolled Pam in a Catholic in order for her to receive a "good" education. During this time, many black families believed that their children would get a better education in a religious school rather than in a predominantly minority public school. Since education was ranked as a priority by her parents, they opted for the quality education—a decision that assured a racially mixed student body. Both of her parents spoke with West Indian accents known as patois. Her dad had an added twist to his accent because he was born in Costa Rica and raised in Jamaica leaving him with a West Indian accent that sped rapidly off his tongue due to the influence of the Spanish language.

Coupled with this multifaceted array of rich ancestral roots was embedded a traditional and straight-laced outlook on life. Surprisingly, with such a restrictive background, Pam was gradually propelled over the years to seek out and fight for more democratic ways of being. In her effort to shed her internalized "stay to the norm" mentality, Pam left the safe zone of the "norm" and eventually settled into a more progressive way of thought.

Her college years reflect her dedication to personal and intellectual growth. She attended Queens College for a Bachelor's Degree in Early Childhood and Elementary Education, Montclair State University for a Masters Degree in Reading, and currently the City University of New York's Graduate Center for a PhD in Urban Education. Pam's experience ranges from developing transdisciplinary literacy curriculum, support programs for parents and students, supervising new teachers, and writing for educational publications. As a result, years of schooling have kept her on the cutting edge of educational research and have continued to ignite her passion for teaching as well as learning.

Pam's dissertation is a personal labor of love designed to help shatter the bonds of injustice in the educational system that she experienced in both private and public schools. Her hope is to abort those feelings of inadequacy that numerous minor-

ity students continue to endure on a daily basis often throughout a lifetime not only in school but also in adult life. She uses a reflective journal text as a vehicle to make that possible.

Old traditions make it difficult to deviate from the “norm” especially for womyn. Pam and Joelle experienced rather similar family backgrounds, growing up with first generation parents, which involved deep-rooted family traditions. In addition, both were daughters of immigrants and whose families stressed education as a vehicle for change. They have also shared a thirst for knowledge, which is apparent from their extensive schooling and desire to create new possibilities. Taking these similarities into consideration it is important to understand the historically and culturally engrained definitions of femininity and womanhood and acknowledge how individuals such as Pam and Joelle came to write this chapter and start the process of making a difference.

The Setting of Storm Steel Divide High School

We met during orientation for new teachers at Storm Steel Divide Division High School, SSDD, and have been best friends and colleagues ever since. SSDD is a suburban high school in Highlander, New Jersey. The city of Highlander represents socioeconomic and racial diversity, yet a well-known railroad track divides its population. On one side of the tracks reside predominantly middle-class to upper-class white, or European, residents; on the other side, lies Lowlander, populated by lower-income residents, many of them of color. The Highlander public school district, nationally recognized as a model for a racially integrated district, had ensured that racial balance was achieved and maintained in all of its schools. Nevertheless, there is a persistent academic achievement and opportunity gap – along racial lines. SSDD is 40 percent white and 60 percent nonwhite, no less than 78 percent of the students who are classified as Special Education are nonwhite, and 79 percent of the students who fail one or more classes are African-American.

The Need for Change

We both came to SSDD from large, dysfunctional urban high schools and were eager to begin our first year at the school. During that first year, we spent countless hours on the phone and much of the conversation involved improving the achievement and opportunity gap at the school. Since that first year of teaching at SSDD, we have been committed to move beyond a celebration of cultural diversity to a systematic scrutiny of historical systems of power, privilege and authority through various new courses we created. During these personal innovative times we were met with covert and overt sabotaging responses. Consequently, we attribute much of our growth spurts in critical consciousness to these deskilling moments. Through these debilitating encounters, we were able “to name [our] discontent and act on such an articulation” (Kincheloe, 2003, p. 2). In effect, we found a voice, continued to fight for our beliefs, and came to terms with the “what is” at SSDD.

These transformative experiences helped us to realize the potential damage of a restrictive environment to the human potential of teachers as well as students.

As advocates of a more democratic reconceptualization of education, we were aware of the demoralizing effects of teacher and student deskilling practices and in response sought multiple ways to address that situation. In addition to creating new courses and moving away from prepackaged curricular material, we became actively involved in our community, going beyond school walls in our teaching practices, discovering critical voice, and eventually coming to terms with the need for furthering our studies.

“Teachers are ‘studied down’ in the sense that those who control the research use their inquiry to inform themselves about their subordinates (mere practitioners), later using their information to manipulate and control them” (Kincheloe, 2003, p. 35). As teacher researchers, we go against the grain and dispel the myth that teachers are only qualified to “follow the leader”. As demonstrated in this chapter, we creatively use text which represents our passion for “what can be”. In dialogue, we become involved in collapsing the traditional approach to educational research. In actuality, we jump out of the box and dare to conceptualize and interpret our own experiences. Ultimately, contrary to Taylorist efficiency that involved the “reduction of the role of the laborer,” we enhance the role of the laborer—which in this case was our roles as teachers (Kincheloe, 2003, p. 119).

Research is central to enhancing the role of the teacher. It is complicated because it involves change in the “self” which often requires divorcing traditional perspectives as well as changes outside of “self” such as educational institutions. Thinking of research as a tri-level cognitive act as Kincheloe suggests, helps to appreciate the complexity of the feat. In summarizing the three level cognitive act of research: *Level 1* represents puzzle-solving, *Level 2* represents self-monitoring, reflection, and meta cognition, and *Level 3* involves questioning the process as well as making sense of it and contextualizing the work itself (2003, p. 153-154). The cognitive research act in its entirety epitomizes teachers as change agents and as educators. As educators, we feel we have a “moral obligation to be agents of change” (Villegas & Lucas, 2002 p. 64). We adhere to Villegas’s suggested list for teacher preparation, which can be both applicable to new and veteran teachers. In order for teachers to be change agents Villegas proposes that they:

- Emphasize the moral dimension of education.
- Guide prospective teachers in developing their own personal vision of education and teaching.
- Promote the development of empathy for students of diverse backgrounds.
- Nurture passion and idealism as well as a realistic understanding of obstacles to change, provide evidence that schools can become more equitable, teach about change process, and promote activism outside as well as inside the classroom.
- Emphasize the importance of and the development of skills for collective action and collaboration (2002, p. 59).

This list is by no means exhaustive in an ever-changing society but provides a starting point and acts as a guide for all teachers. In addition, it provides an in-

formed framework for teachers to promote democratic practices in the educational system.

Womyn's Way of Knowing

In a field, which is dominated by white males, it is important to examine how womyn and students of color prevail through this process. This chapter examines how two female doctoral students, one Jamaican-American and one Italian-American, identify themselves, validate their modes of knowing and learning and most importantly, talk about how they do their research. Over the past several decades, scholars have made many strides in uncovering the diverse roles of womyn in society as well as validating and promoting what some call womyn's ways of knowing (as diverse as they may be when class, culture, and race are considered), although much more needs to be done.

Since the 1970s much work has acknowledged how womyn's voice has been missing from research as well as research subjects. Carol Gilligan in her book, *In Different Voice Psychological Theory and Women's Development*, reveals the importance of searching for, hearing and understanding womyn's voices. She argues that due to fundamental and physiological differences, womyn see the world differently from men; they interpret it through their own perceptions. She asserts that when we acknowledge and promote these differences, the understanding of human development can finally become complete. According to Gilligan, "women . . . define themselves in a context of human relationships" and have "sensitivity to the needs of others . . . [which leads] women to attend to their voices other than their own and to include in their judgment other points of view" (Gilligan, 1994, pp. 16-17). By using this expansive perspective, issues of race and class can also be included, and are central topics in our educational research agenda.

By using the model of conversation, which is considered by many as a feminine way of understanding, we are able to validate our ways of knowing and include marginalized voices as part of our research agenda. "To have voice is to be human, to have something to say is to be a person. But speaking depends on listening and being heard; it is a relational act" (Gilligan, 1994, p. xvi). By validating conversation as a way of understanding, womyn begin to define themselves on their own terms. Conversation is a dialectical act and provides for a connection between the people talking because it "requires careful listening; it implies a mutually shared agreement that together you are creating the optimum setting so that . . . ideas can grow and . . . reaches deep into the experience of each participant; it also draws on the analytical abilities of each" (Belenky, Clinchy, Goldberger & Tarule, 1986, p. 144). Thus, conversation includes "discourse and exploration, talking and listening, questioning, argument, speculation and sharing" and ultimately allows womyn to hear their own voices, connect to others, acquire and communicate new knowledge and most importantly, know the world from others peoples' point of view (Belenky et al., 1986, p. 144). As a result of the flow of conversation between us, we are able to establish our own point of view and through these experiences we feel strongly about the need for the exploration and validation of feminist ways of knowing.

Using a feminist paradigm as an archetype begins to break the typical sexist stereotypes that prevail in our society. Such a model develops a more accurate portrayal of womyn and provides representations of female accomplishment. This chapter explores our research, as we use conversation to frame how we came to write our dissertations.

In the search for finding the womyn's voice in research, it is important to recognize historical and cultural influences on womyn's ways of knowing. Throughout history, white womyn have been disadvantaged by gender but empowered by race while black womyn had to face the double discrimination of sexism and racism. This reality prompted black womyn to set a personal agenda. They took feminism one-step further defining it as womanism, which affirmed that the fight for womyn's rights includes both race and class, issues (Gordon, 1994, p. 113). We speak about both race and class issues from personal perspectives and incorporate this information into our scholarly conversation.

Paulo Freire in *Pedagogy of the Oppressed* asserts the importance of dialogue. For him, it is a rebirth and a necessary step for transformation and ultimately, liberation (Freire, 1990, pp. 47, 52). Freire believes that dialogue is central to human life and combines both reflection and action leading to praxis. Emancipatory dialogue, Freire maintained, has six central characteristics:

- Love, a commitment to others;
- Humility, learning and acting together without arrogance;
- Critical faith in man, the ability to reinvent one's self;
- Hope, for action and change;
- Critical thinking, reality is a transformative process; and
- Trust, a bond (Freire, 1990, p. 75-81).

Freire speaks about the importance of transforming education from a passive act to an active act and affirms the importance of dialogue as this vehicle for change. To avoid education as a banking system where students are empty vessels who record, memorize and repeat what the teachers says, dialogue breaks the chains of the banking system and allows for both the teacher and student to become jointly responsible for learning (Freire, 1990, p. 58-66). Dialogue is an act of creation and helps humans understand and investigate the world from their own web of reality while concurrently working to awaken them as conscious beings (Freire, 1990, p. 89). Freire's analysis of dialogue helps prove the importance of conversation as a way of knowing, ultimately, validating womyn's ways of knowing. Interestingly enough, Horton and Freire in their book (Horton & Freire, 1990), *We Make the Road by Walking* record their conversation on justice and equity, using what many might call a feminine way of communicating. In this chapter, we engage in dialogue, in Freirean style as a means of creatively approaching the dissertation process.