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## Math, Class, and Katrina Aftermath: The Impact of Experiences Teaching Mathematics to Low-income Middle School Students on Middle-income Teachers' Pedagogical Strategies

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Math, Class, and Katrina Aftermath:  
The Impact of Experiences Teaching Mathematics to  
Low-income Middle School Students on Middle-income  
Teachers' Pedagogical Strategies

A Dissertation

Submitted to the Graduate Faculty of the  
University of New Orleans  
in partial fulfillment of the  
requirements for the degree of

Doctor of Philosophy  
in  
Curriculum and Instruction

by

Susan Jeanine Ikenberry

M.A., City University of New York

December 2014

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## **ABSTRACT**

Despite a century of educational reforms, no matter how achievement is measured, learning and opportunity gaps can still be predicted by race and socioeconomic status. Teachers and schools are blamed for functioning to reproduce social inequality. This study investigated teacher agency and transformative potentials. It considered how teachers modified their pedagogical practices when teaching low-income and high-poverty students. In order to capture teacher beliefs and logic, a qualitative approach was used involving in-depth interviews of a small number of participants.

The research used the context of the dislocation of students from high-poverty Orleans Parish schools in the year following Hurricane Katrina and their absorption into often higher income schools to understand middle-class teachers' perspectives on their new students' learning needs and how they adjusted their practice. Participants were middle-school mathematics teachers ranging in experience and orientation. Evacuees had weaker mathematics backgrounds (often two years below grade level). In all cases, evacuees were in classes with non-evacuees.

Teachers made different pedagogical choices: continuing to use diverse methods aimed at higher-order understanding, or moving to direct instructional strategies; remediating or accelerating students with below-grade-level mathematics skills; and whether or not to help students acculturate (code-switch) from one set of classroom norms and etiquettes to another. Key factors influencing

choices included: socioeconomic makeup of their classes; teachers' level of mathematics expertise; emphasis on test scores; teachers' views of students' culture; and teachers' peer environments. The study provides insights into teacher and classroom mechanisms that contributed to Katrina evacuee multi-year achievement gains.

**KEYWORDS:** Mathematics Pedagogy, Socioeconomic Heterogeneity, Integration, Katrina, Poverty and Achievement, Acceleration, Culture, Acculturation, Peer-effect

# CHAPTER ONE: INTRODUCTION

## Introduction

Mathematics education has had a central position in educational reforms in the United States, at least since World War II and the rise of involvement of science and industry in driving educational policy. From Sputnik to New Math and *A Nation at Risk*, and from Standards to No Child Left Behind and the Common Core, reforms have attempted to leverage mathematics learning and achievement. The heightened focus on mathematics and science is the result of many converging interests, ranging from positioning the United States on the cutting-edge of science and technology to regain an international market advantage to developing an educated workforce to match an evolving knowledge economy.<sup>1</sup> But heightened

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<sup>1</sup> See discussions of how United States mathematics students fare on international assessments (Berliner, 2006; Tienken, 2013; Riddle, 2014). While the PISA (Programme for International Student Assessment) assessment is based more on constructivist pedagogy, the TIMSS (Trends in International Mathematics and Science Study) is somewhat more similar to United States-style traditional objectivist pedagogy. Using TIMSS 2003 data, Berliner points out that United States' low-income students (eligible for free or reduced lunch) score well below the international average (p. 963). According to Tienken, "...the PISA results, to be brutally honest, show that a host of developed nations are out-educating us. Finland, Korea, and Canada are consistent high-performers. And the jewel of China's education system, Shanghai, debuted this year as the highest scoring participant globally" (p. 56).

Riddle looks at PISA scores by United States socioeconomic class. When comparing schools in the United States that have less than 10% poverty with countries that have less than 10% poverty nationally, these wealthier United States schools score the highest in the world. But when comparing United States schools with over 75% poverty with other countries, the United States ranks above Mexico and below Turkey and Chile. According to Riddle, "while the U.S. is the top country in global competitiveness, we also have the highest percentage of students living in poverty and, regretfully, poverty impacts test scores." "While there is no relationship between poverty and ability, the relationship between poverty and achievement is almost foolproof." "Researchers report that perhaps



interest in mathematics education also has to do with fulfilling one of the nation's *raison d'etre* – guaranteeing equal opportunity to its citizens, while acknowledging that the development of *all* students' intellectual potential is essential to determining tomorrow's best ways forward. Mathematics' role in the latter half of the 20<sup>th</sup> century as a gate-keeper to higher education and better-paying jobs has been widely recognized. As the United States economy becomes further integrated into a new global, market-driven configuration that is creating new winners and losers (or increasing the distance between existing winners and losers), the importance of an excellent education – in mathematics, science, as well as the liberal arts – seems to be only the minimum starting point today's youth will need in order to take advantage of new and changing opportunities.

The last century's reforms were guided by differing views of what constitutes a high quality mathematics curriculum, of the importance of pedagogical form, and of who needs to know what. However, no matter how achievement is measured, there has remained a learning gap – and therefore an opportunity gap – by race and by socioeconomic status. In effect, the history of education in the United States has had two narratives. One story presents an impressive list of a succession of school reforms that improve curricula and pedagogy and presumes that economic goals, such as social and economic democracy and global market competitiveness, can be achieved by providing all students with a first class education. The other narrative is one of an education system that reproduces and maintains existing social and

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the only true linear relationship in the social sciences is the relationship between poverty and student performance.”

economic hierarchies, in which opportunities are preserved for those who come from privilege and limited for those who come from disadvantage.

The discrepancy between intended purposes and functional outcomes of education in general and mathematics education in particular has fueled many generations of research, each taking a new sight on the objective conditions and mapping out a revised course. Gutiérrez (2002) observed:

Patterns of inequity in mathematics education have been with us for most of this past century. Educational researchers have been grappling with the problem and have dedicated extensive economic resources to developing viable solutions. However, to date, we can still predict with a fair degree of accuracy how well students will participate in, achieve in, and use mathematics by knowing only their race, class, ethnicity, sex, and/or proficiency in the dominant language. (p. 179)

Clearly results of reforms have not matched intentions.

Many would agree that the most significant determinants in these disappointing outcomes lie outside schools in the structure of social and economic differences in United States society.<sup>2</sup> However, most reforms have centered on

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<sup>2</sup> Sirin (2005) has survey research documenting the connection between lower achievement and poverty. He reports: "As the main finding of this review shows, school success is greatly influenced by students' family SES. This finding indicates that our society may be failing in one of the greatest commitments of every modern society, that is, the responsibility to provide educational opportunities for each student regardless of social and economic background. Unfortunately, many poor students come to schools without the social and economic benefits held by many middle- to high-SES students. At present, one in five children in the United States lives in poverty, which puts many of these students at risk for poor school performance or failure (Dalaker & Proctor, 2000). Thus, to significantly reduce the gap in achievement between low-and high-SES students, policy decisions at the local, state, and federal levels must aim at leveling the playing field for students deemed to be at risk academically as a result of their family SES." (Sirin, 2005, pp. 445-446)

schools “with no sense of the structural, the political and the historical as constraints” (Grace, 1984, p. xii). Many thinkers who look more broadly at education’s place in society have concluded that education has minimal impact on social inequality. According to Richard Rothstein (2002), “no study has been able to attribute more than half the variation in student achievement to what schools do, and most find schools responsible for no more than a quarter” (p. 11). Jack Demaine (2003) writes, “the school is responsible for only up to about 15% of the variation in performance of its pupils” (pp. 133-134). In fact, a good case can be made that schools, rather than altering inequality, “reproduce class differences and division” (Demaine, 2003, p. 133-134). That is, low-income and high-income students do not graduate from high school with the same type of preparation and options. (A fuller exploration of this issue and its implications is covered in Chapter Two.)

If reforms are to be constructed so that they will have greater social impact, reformers must certainly give greater consideration to determinants of learning and achievement that reside outside the classroom. According to Michael Apple (1999), reforms that intend to transform inequality in schools must also be concerned with “exogenous socio-economic features” such as income disparities, lack of access to healthcare and housing, and both subtle and outright “racial exclusion and degradation....Unless discussions of critical pedagogy are themselves grounded in a

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For additional data correlating income with academic achievement, see also: The ETS Center for Research on Human Capital and Education’s 2013 study, *Poverty and Education: Finding the Way Forward*. [http://www.ets.org/s/research/pdf/poverty\\_and\\_education\\_report.pdf](http://www.ets.org/s/research/pdf/poverty_and_education_report.pdf)

recognition of these realities, they too may fall into the trap of assuming schools can do it alone” (p. 8).

At the same time it is important that reform-minded people go beyond policy and take into consideration the realities inside the classroom itself. It is in the classroom that the encounter between reforms and well-intended teaching on the one hand, and the legacy of social and economic inequality (forces that seek to reproduce inequality) on the other, takes place. The classroom is the most visible locus – or, in Paulo Freire’s terms “nucleus of contradiction” – of this struggle between reproduction and change, or between structure and agency. It is here that teachers interpret, define, and negotiate top-down structures (including policies, reforms, testing requirements, and resources) vis-à-vis contextual constraints (such as students’ socioeconomic background and preparation, students’ acquired learning preferences, school and teacher community of peers, and conventional beliefs about students’ abilities and prospects). Through practice and problem-solving, teachers construct their understandings of their students’ learning dispositions and culture; at the same time, these constructions reflexively inform how teachers construct their professional and pedagogical wisdom. Through this dialectical process, the delicate balance between reproducing inequality and engineering change is tipped in favor of one or the other.

This study argues that in order to produce reforms with effects that correspond to intentions, it is first necessary to understand how agendas to change social and educational structures become something other than intended. Although

there are many places to observe this problem, this study is particularly interested in mathematics teachers' intentions and actions. Therefore, this study will look at the level of teachers and seek to understand how individual agency and innovation (such as constructivist-based mathematics professional reform practices) fare when countering the legacies of top-down and bottom-up social economic structures (such as students from low-income and high-poverty backgrounds). In other words, this study is concerned with how structure is altered and maintained through the interplay of theory and practice.

## **Background**

Despite generations of equity-oriented reforms in education, the continued gap between middle and low-income, white and minority students' mathematics achievement has been well-documented (e.g., Rothstein, 2002). Although much of educational inequity has its roots in the social and economic inequity of the larger society, most research has focused on variables internal to the education system, e.g., school administration, curriculum, and especially teacher pedagogy. Low-income students, for example, are more likely to be taught mathematics by traditional or direct instructional approaches, rather than by strategies that promote more in-depth, conceptual, and transferable understanding (types of practices promoted by professional reform standards). Much reform attention has been concerned with retraining and reeducating teachers of low-income students to bring them in line with professional and state standards. However, a growing body

of literature reports that teachers, especially those in low-income schools alter their rhetoric but not their fundamental practice, modify and dilute reform agendas, or resist change altogether.

### **Disconnect: Reform Ideal versus Low-Income “Realities”**

One explanation for this resistance or noncompliance is that teachers of low-income students often report that they experience a disconnect between reforms and policies, on the one hand, and the realities they experience in the classroom, on the other. As a consequence, they remain committed to the methods they have developed and adapted, which they believe work, if not well, at least better. The tension between reforms that target higher-order mathematics learning, on the one hand, and the adjustment of pedagogy to circumstances of the low-income classroom (usually to direct instructional approaches), is real. The current investigator first became aware of this tension during a pre-student-teaching training session led by a veteran teacher in the New Orleans public school system. When we objected to her support of more direct instructional approaches, she pointed her finger at those of us preparing to teach mathematics and said, “*All you math people with your high standards – you’ve got to come down out of your ivory tower to the real world [of students in New Orleans public schools]...*”<sup>3</sup> This advice was echoed by teachers we encountered during our student-teaching who told us to throw out all we had learned at the university and see how it “really” works when teaching students who have been up all night walking the streets, have come to school with rope burns,

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<sup>3</sup> Spoken by a supervisor of student-teachers to prospective math teachers, Fall 1995, a southern university.

found a mother who has committed suicide, have a brother in prison for committing murder, or is pregnant at fourteen.

One important reality teachers may contend with is students themselves who can pressure teachers to use the direct instructional approaches to which they are accustomed (Haberman, 1991; Spillane & Jennings, 1997). Sarah Lubienski, for example, found that reform-oriented problem-solving pedagogy worked better with her higher socioeconomic status students (SES) than with her lower SES students who desired a return to traditional pedagogy:

. . . in contrast with the reformers' rhetoric of "mathematical empowerment," some of my students reacted to the more open, challenging mathematics problems by becoming overly frustrated and feeling increasingly mathematically disempowered. The lower SES students, particularly the females, seemed to internalize their struggles and "shut down," preferring a more traditional, directive role from the teacher and text. These students longed to return to the days in which they could see more direct results for their efforts (e.g., 48 out of 50 correct on the day's worksheet). (2000, p. 476)

Lubienski goes so far as to suggest reform methods "disempower" low-income students (2000). (See also Baxter, Woodward, & Olson, 2001; Ross, 2000.) Others suggest that reform or "standards-based strategies" (SBS) assume a number of cultural understandings that are not shared by all students. Thus, white, African American, Asian, Native American, and Latino students may sit next to each other in a classroom but some may not benefit as much as others. Yvelyne Germain-

McCarthy and Katharine Owens argue that all students deserve the higher quality instruction but that teachers should be assisted in taking into account students' experiences and cultures, helping students translate from home to their schools' cultural way of doing things, and adjusting practices according to whether students are more accustomed to cooperative rather than individualistic and competitive learning (2005).

### **Teacher “Wisdom”: A Static Given? Or Operative Teacher Knowledge Formed in Low-Income Environment?**

Most educators today would agree that student learning is an active process. Jean Piaget, for example, sees knowledge as primarily operative, that is, about change and transformation. Learners develop cognitive structures or schemes through interacting with their environments. The process is a dialectic: the learner applies an existing scheme or conceptual framework to a new situation (“assimilation”); if assimilation does not work, the learner changes the scheme (“accommodation”) in an effort to get it to work or to adapt it to changed circumstances (Campbell, 2006).

Education reformers, however, do not tend to apply this operative model of knowledge construction to teachers. They have tended to view teachers' pedagogical frameworks as static and passed down from generation to generation by teachers who cling to tradition. In focusing on teacher biases, low expectations, or unenlightened practices, they have ignored the dialectic between teachers' experience in a low-income context and the evolution of their pedagogical wisdom (Olsen & Kirtman, 2002). This study argues that teachers' pedagogical frameworks



are formed through a dialectical process similar to Piaget's model of assimilation and accommodation as teachers attempt to apply past knowledge to new contexts, find results differ or don't work, and modify their knowledge. This approach should not be confused with cognitive models that use an individual unit. The dialectical process that this study examines is situated within a social, cultural, and economic context. The social environment, however, also includes teachers' constructions of their students' culture and their perceptions of the importance of mathematics to their students' prospects. These constructions have a reflexive property in that they are both a product of and influence teachers' practice.

## **Statement of the Problem**

This study is concerned with how mathematics teachers' practice is forged in working with low-income or high-poverty students. More specifically, it asks: how do teachers interpret and construct their understanding of their low-income students' culture- and class-related learning dispositions (*habitus*), and what pedagogical wisdom do they develop about how to adjust or modify their instructional practices. This study contends that teachers' pedagogical wisdom is forged through negotiation and problem-solving in the context of the experienced realities of their classrooms. A more general concern is how teachers' wisdom, although generally aimed at altering social inequality, may be transformative for some students but, in the end, may contribute to reproducing social inequality for most.

## **Theoretical Frameworks**

This study is guided by two theoretical discourses – structure and agency, and social constructivism, both of which are more fully treated in Chapter Two. The following provides an initial overview.

### **Structure and Agency**

This study draws on social structural and agency or practice theories common in social science. Structure theories “argue that beneath the surface proliferation of forms, a few relatively simple and relatively uniform mechanisms are operating” that determine these social and ideological constructions (Ortner, 1984, p. 136). Structure theorists include such influential figures as Karl Marx, Sigmund Freud, Émile Durkheim, and many of their descendants. Forms of structuralism vary from those concerned with how *underlying mental structures*, including language, universal psychological or mental codes, or individual perception structure knowledge and experience (e.g., Jean Piaget, Lev Vygotsky, and Claude Lévi-Strauss), to those concerned with how *social, economic, and political structures* influence, constrain, or organize knowledge construction as well as human experience (e.g., critical and social reproduction theorists).

This study is concerned with how various groups of people’s experiences and behavior *differ* according to their relationship to structures such as economic resources, cultural resources, and power (e.g., socioeconomic class, gender, or culture). Unlike mental structuralism that is concerned with undifferentiated

individuals, social structure theories represent heuristic models for understanding differences between the experiences of whole groups or classes of people who vary in their access to key resources. Social structure theories also help identify various possible determinants or constraints on human behavior and weigh them according to their relative importance.<sup>4</sup> Many of these theorists trace their ancestry through British sociology back to Karl Marx and Emile Durkheim. Marxist and many non-Marxist<sup>5</sup> social theories place greater emphasis upon material or economic determinants than on spirit or cognitive and ideational determinants. The structures that social structure theorists are concerned with lie outside of the individual in economic, political, and social arenas.

Social structural theories can illuminate large-scale processes such as, in this particular study, how education may participate in the perpetuation or reproduction of an unequal economic and social class structures (see Chapter Two.) Illuminating large-scale processes helps make sense of dynamics and relations experienced locally (in schools and classrooms) and individually (by teachers and students).

Orientations that focus primarily on these macro-level structural determinants, however, often minimize human agency, portray humans as over-determined and passive, and are not helpful in understanding innovation, transformative action, or even the dynamics of complicitly reproducing existing

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<sup>4</sup> Anthropologist Eric Wolf calls this a “weighted approach” – that, although there are many determinants of individual actions and cultural forms (e.g., economic, political, cultural, ideological, etc.), some determinants have more weight or impact (1986, personal conversation).

<sup>5</sup> According to Wolf, “[Marx] remains a hidden interlocutor in much social science discourse. It has been said, with reason, that the social sciences constitute one long dialogue with the ghost of Marx” (1982, p. 21).

unequal relations. Thus, this study is also interested in agency and adopts a practice or interaction model combining structure and agency. A practice perspective situates “actors within a structural and historical field of problematic relations – relations of rivalry and inequality” (Ortner, 1989, p. 12-13). It looks at how actors are influenced, constrained, or defined by structures, but also at how they act to alter, modify, or use those structures. Pierre Bourdieu’s concept of *habitus* (“structuring structures” that structure and generate practice, but that can be adapted to agents’ goals), which is explored in Chapter Two, can be considered a practice orientation (1977a, p. 72). In this study, a practice orientation brings into view how teachers negotiate constraints they experience or perceive (such as students’ cultural and class backgrounds and dispositions, school structure and resources, state and national mandates, and student opportunities) and attempt to define a course through these constraints that will positively impact their students’ learning and opportunities.

### **Social Constructivism**

This study is also concerned with social constructivist theories of teaching and learning. Constructivists are interested in how individual people or groups of people construct knowledge and meaning for themselves in relationship to some context. Constructivist views place a high value on reasoning within a community of thinkers and on sense-making. Since reasoning and sense-making begin with individuals’ existing understandings, constructivist educators look at learners’ prior

knowledge and conceptual understanding, and provide scaffolded<sup>6</sup> activities, communication, and dialogue in order to help students construct new knowledge. Constructivism differs from objectivist views that hold that all knowledge comes from and is verified by perception.

Constructivism is important for this study in that: a) the constructivist-objectivist dichotomy provides a heuristic tool in understanding two often opposing influences on students, teachers, and schools that have dominated United States educational reform for more than a century; b) constructivism underlies current professional mathematics standards and pedagogical guidelines; c) constructivism assumes a pedagogical approach that requires longer, more in-depth investigation, which impacts teachers' instruction in the current assessment-driven climate; d) constructivist pedagogy is generally thought to have greater transformative potential for students, although when viewed in terms of its immediate return on the marketplace, its value is less clear-cut; and e) constructivism's nemesis – decontextualized direct instruction of byte-sized knowledge – is generally thought to be disempowering and to contribute to the reproduction of disparities in learning opportunities.

## **Purpose of the Study**

Mathematics teachers of low-income students are often cited for using traditional or direct instructional approaches (also known as “pedagogies of poverty”) (Haberman, 1991; Ladson-Billings, 1997; Welner, 1999; Ross, McDougall,

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<sup>6</sup> Scaffolding is understood here to refer to instructional strategies organized in a sequential manner such that a student is able to move from existing knowledge to a higher level of understanding, which the student could not have attained independently.

Hogaboam-Gray, & LeSage, 2003; for an earlier opposing view, see Good, 1979). These approaches are held by reformers to be in great part responsible for low-income students' lower achievement levels. Accordingly, much effort and money has been devoted to enlightening teachers and introducing them to alternative pedagogical choices. However, recent research has shown practices of teachers in low-income contexts to be particularly resistant to change and some have questioned the appropriateness of reform teaching (e.g., problem-solving and higher order learning) to non-middle-class students (Haberman, 1991; Lubienski, 2000, 2002). As a result, questions have emerged about the real, as opposed to ideal, relationships between pedagogy and class.

This study examines the connection between socioeconomic class and teachers' mathematics pedagogy. More specifically, it asks what is the dialectic between teachers' real-world experiences with low-income students and the pedagogical wisdom they construct. A diachronic study of the evolving impact of low socioeconomic class on pedagogy is needed to answer this question. An operative rather than static model of teacher knowledge construction is also implied.

The post-Hurricane Katrina evacuation of New Orleans' low-income public school children and their absorption into often higher income schools with middle-income teachers during the 2005-2006 school year provided an excellent opportunity to study the impact of socioeconomic class (teaching low-income students) on existing pedagogy used in middle-class schools.<sup>7</sup> The study should help us

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<sup>7</sup> Prior to Katrina, three out of four public school students in Orleans Parish received free or reduced lunch (a standard though not perfect measure of poverty), 93.5% were Black or African American,

understand how teachers alter their teaching strategies through the problem-solving and dialectical nature of teacher practice when teaching low-income students. Do middle-class teachers continue to deliver middle-class pedagogy and curriculum to their low-income students, or do they move toward traditional and direct instructional approaches? Although there are many dimensions to the issue of low-income pedagogy, e.g., student dispositions and learning preferences, school and administrative structures, communities of teacher peers, and parental factors, the beginning point of the present study is teachers: their interpretations and assessments of class-related problems and their resulting pedagogical decisions. Ultimately, no program for reform can be implemented without first having a sound basis in teachers' experience or without relating to what teachers believe to be true or real.

## **Research Questions**

The research questions that guide this study are as follows:

1. How do teachers describe their pedagogical practices prior to the 2005-2006 school year when they absorbed Hurricane Katrina evacuee students?
2. How did teachers view their evacuee students' learning needs?
3. How do teachers describe their pedagogical practices after they absorbed Hurricane Katrina evacuee students?

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and most middle school students attended schools that were eligible for state takeover. Orleans Parish contained Louisiana's worst-performing schools (LA Department of Education). Four out of ten adults in one section of Orleans Parish (the Lower Ninth Ward) had neither a high school diploma nor a GED (U.S. Census Bureau).

4. In responding to the changed circumstances and needs of the students, how do the teachers explain their reasoning and logic behind the decisions they made in modifying their pedagogical practices?

## **Significance of the Study**

### **Implications for Reform**

Pierre Bourdieu wrote:

. . . social science must take as its object both this reality and the perception of this reality, the perspectives, the points of view which, by virtue of their position in objective social space, agents have on this reality. The spontaneous visions of the social world, the “folk theories” ethnomethodologists talk about, or what I call “spontaneous sociology,” but also scientific theories, sociology included, are part of social reality.... (1989, 18).

This study contends that teachers’ construction of “wisdom” about their low-income students and how they should be taught – right or wrong – must be taken as a reality and as a beginning point by any reform effort if it is to win teachers’ support and commitment.

### **Implications for Theories of Education’s Role in Reproducing Inequity**

The study is also important in that it hopes to extend our understanding about the way in which education can be individually transformative for some students or, despite teachers’ well-intended pedagogical adaptations for their low-



income students, can continue to reinforce and reproduce inequality. It is in the encounter between equity-minded reform directives and social-economic realities of the classroom – mediated by a teacher (who some say by definition are change agents)<sup>8</sup> – that either the possibilities for transformation are found or the reproduction of inequity takes place. This encounter between forces (socioeconomic realities) that contrive to perpetuate the way things are, and pedagogical efforts that hope to improve the nature and depth of low-income students' mathematics competence represents an important site where students' life chances are negotiated.

## **Limitations of the Study**

The study is limited in a number of ways. The following are some of the most significant:

### **Confounding Variables Affecting Evacuee Student Academic Behavior**

There are many other factors associated with being uprooted from their homes, schools, and communities that may influence evacuee students' responses to a new classroom environment. For example:

a) They may feel temporary and not wish to be engaged with the curriculum, with non-evacuee students, or with the school in general.

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<sup>8</sup> See Smulyan, 2004.

b) They may be absent a great deal due to an unstable living situation or due to a desire to stay close to the family in a time of uncertainty and stress (a mindset sometimes referred to as “circle-the-wagon”).

c) They may suffer from depression or Post-Traumatic Stress Disorder.

At the same time, many of the effects on children associated with traumas from Hurricane Katrina experiences are not dissimilar to those experienced by children living in poverty.

### **Small Qualitative versus Large Quantitative Study**

The type of information needed to answer the study’s research questions is best obtained by using a qualitative approach – i.e., through in-depth interviews. For practical reasons this results in a smaller number of participants than a quantitative study that, for example, uses a broadly disseminated questionnaire. Both approaches have limitations in generalizability of findings. In this case, where all possible responses are not known in advance to the researcher and where the interest is in an evolution in teacher thinking and practice, a qualitative study, even though small, is more appropriate. A follow-up quantitative study could be carried out at a later date to verify, broaden, or strengthen conclusions.

## **Organization of the Study**

This study is divided into five chapters containing the following content:

Chapter One introduces the problem, provides the background and context of the study, introduces the theoretical frameworks that will be used, lists the research questions, and states the significance and limitations of the study.

Chapter Two contains a review of the literature related to this study. It is divided into two parts. Part One considers the question of whether education has played a transformative or a reproductive role for students coming to school from low-income and disadvantaged backgrounds. It uses a structure and agency theoretical framework to shed light on school-level experiences – how they reflect large-scale economic and political determinants but also are spaces for transformative or adaptive agency. Part Two considers the professional theory and complex realities that influence teacher practice: a) two different orientations to teaching and learning, one based on constructivist pedagogy and mathematics professional standards, the other beginning from a managerial and marketplace orientation relying predominantly on direct instructional styles; and b) complexities of high-poverty teaching, including learning gaps, student pedagogical preferences, trauma associated with poverty and racism, behavior management, school climate, and the impact of high-stakes testing.

Chapter Three provides a description of the methodology and procedures of the study. It presents the research questions and the research design, describes the

Hurricane Katrina context of the study, and explains the methods employed in data collection and data analysis.

Chapter Four presents the findings of this study, first by individual participant and second through a cross-comparison of responses. It considers teachers' responses to the research questions and explores some themes that emerged.

Chapter Five, the final chapter, relates the findings of this study to some important current issues in the research literature. The chapter concludes with implications for teacher practice, teacher education, and further study.

## CHAPTER TWO: REVIEW OF LITERATURE

### **Introduction: Modern Teachers' Pedagogical Dilemmas, Framed by Outcomes in the Progressive Era**

Should education be universally child-centered: teaching students to think critically, problem-solve collaboratively, construct knowledge from thought and experience, acquire the fundamental skills needed to become life-long learners, and be prepared for a full range of professional opportunities? Or should schools serve society by efficiently producing students with the discipline, specific skills, and content knowledge appropriate for them to assume what schools believe will be their intended adult positions in the labor force? Which of these orientations should be the primary driver of education? This is a modern debate that is a century-old, and it is left to individual teachers to settle each school day in their classrooms in highly structured and defined school contexts. How these questions are answered has import for all students, but has significant consequences for the educational experience and futures to which lower income and high-poverty students can look forward.

However modern the dilemma over educational strategies for students by socioeconomic background appears, its framework was established more than a century ago in the Progressive Era. The late 19<sup>th</sup> and early 20<sup>th</sup> century in the United States was a period of rapid industrialization, urbanization, a massive influx of immigrants, cultures and languages, and rising poverty. It was a period of expanding interest in humanitarian concerns (gender, race, immigrant status,

economic standing, suffering), especially in the wake of the Civil War and in promoting “moral and intellectual advancement” (Reese, 2001, p. 3). It was a period of growing confidence in the rewards industrialization could bring and in its efficient organization of labor to produce these financial successes. It was also a period of confidence in an ideology of “science,” in the name of which such varied ideas as Social Darwinism (which ranked cultures in a teleological order leading from primitive societies to its culmination in early 20<sup>th</sup> century United States and European society) and bold new experiments in social engineering (including eugenics and race betterment) and educational organization (structuring credentialing and controlling access to opportunity) were supported (Hogan, 1996, p. 264). The magnitude of the demographic and economic changes that were experienced during this time convinced popular opinion that the 19<sup>th</sup> century Common School form of education needed to be replaced. These reformers became known as the “progressives.”

Although the term “progressive” has been applied to a large spectrum of overlapping views, this study will follow the example most common in the literature of referring to two broad groups that have had enduring influence on education: the “pedagogical progressives” (also known as child-centered, liberal, or in current literature “progressives”) and the “administrative progressives” (also known as teacher-centered, conservative, or the social efficiency movement) (Labaree, 2005, p. 279).

Pedagogical progressivism is generally linked with the thinking of John Dewey who articulated some essential areas where pedagogical progressivism differed from traditional educational views. Dewey believed education should begin with students' prior experiences and proceed by: exposing students to new experiences with high potential for taking them to new understandings; providing students with opportunities to intellectually integrate new and old experiences; and sequencing students' experiences so as to result in understanding that gradually approximates knowledge of a subject-area (Dewey, 1938, pp. 40, 73-74). Dewey's constructivist-type view of knowledge was influenced by his understanding of scientific method, directed by ideas, theories, and hypotheses that are tested and continuously revised and applied to new problems (1938, pp. 86-87). Similarly, in education, the student must always regard new understanding, "not as a fixed possession but as agency and instrumentality for opening new fields which make new demands upon existing powers of observation and of intelligent use of memory" (1938, 75). That is, "New facts and new ideas thus obtained become the ground for further experiences in which new problems are presented. The process is a continuous spiral" (1938, p. 79). To this end, Dewey emphasized that students should participate in determining "the purposes which direct [their] activities in the learning process" (1938, pp. 66-67). He also stressed the importance of social and collaborative skills, including social conventions such as manners ("the oil which prevents or reduces friction") and the essential life lessons of "accommodation and adaptation" (1938, pp. 59, 60). Dewey's method required a great deal more of

teachers who needed to determine students' prior knowledge and experiences, strategically identify a sequence of new experiences with high growth potential that are within the students' "range," and help students intellectually integrate new knowledge (1938, pp. 40, 76, 79).

According to the pedagogical progressives associated with Dewey's educational orientation, education had narrow as well as broad applications: it should be both child-centered and an agent of social reform. Pedagogical progressives understood children to be naturally interested, active, and curious; the educator's role should be to liberate the potential of *each* unique child. But education should also socialize *all* children for an equal and harmonious world, undivided by class, race, or gender (Lagemann, 1989, pp. 194, 199). Teachers were to be researchers engaged in inquiry-based construction of educational knowledge and administrators should be teacher-researchers who take time out from teaching.<sup>9</sup>

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<sup>9</sup> According to Weitz (1993): Dewey followed Socrates in the *Theatetus*, who says his role as "philosopher and teacher...is like his mother's who is a midwife. It is to assist the soul 'in travail of birth.' This idea of the role of educator is carried on by Dewey who views individuals as essential natures characterized by inherent proclivities which must be realized for individuals to come into the fullness of their being. It is, in his view, the task of education to attain the fullest realization of individuals as a categorical imperative" (p. 430). Dewey, who saw each individual as unique in character and intellect, believed "good education is centered around the realization of an individual's unique native gifts, and the value behind this idea is the belief that the good society ought to offer the opportunity for the fulfillment of individual destinies" (p. 430). Weitz refers to Dewey's words in *Democracy and Education*: "Nature offers simply the germs which education is to develop and perfect. The peculiarity of truly human life is that man has to create himself by his own voluntary efforts; he has to make himself a truly moral, rational, and free being. This creative effort is carried on by the educational activities of...generations....Each generation is inclined to educate its young so as to get along in the present world instead of with a view to the proper end of education: the promotion of the best possible realization of humanity as humanity" (Dewey, 1916, Ch. 7). According to Weitz, Dewey believed equality is key to democratic credo, and believed in equal opportunity (but not equal endowment); education should liberate children from social restraints that impede them from developing their natural potential (1993, p. 433).



Administrative progressivism, on the other hand, was inspired by the works of people like Charles Judd, Edward L. Thorndike, Franklin Bobbitt, and David Snedden. Unlike the pedagogical progressives, they were not concerned with the unique talents and potentials of individual students or in students themselves defining areas of interest to develop knowledge, although they did promote individualization in the form of individualized testing and sorting.<sup>10</sup> Rather, they believed students would realize what is important to learn through understanding what was important to their teachers (Lagemann, 1989, p. 205). Operating in a context of converging classes, cultures, and races, the purpose of schools was to manage, order, and evaluate students, and match them to an education that corresponded to what schools deemed were their probable adult vocational roles (Lagemann 1989: p. 212). Many choices for children were made based on “hereditarian and racial determinist attitudes” (Lagemann, 1989, p. 212).

Assumptions were also made about teachers. Borrowing from principles developed in the emerging field of business management, administrative progressives such as Franklin Bobbitt defined the proper role of teachers: they should be considered workers, should be given very specific and detailed instructions on the content and methods of their work, and were not expected to have more than a basic education (Lagemann, 1989, p. 207). Similarly, Charles

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<sup>10</sup> The efficiency movement promoted individualization in education but the meaning was very different from what Dewey had in mind. According to Besag: “[the efficiency movement]... gave great impetus to the testing and measuring of children in the schools. The avowed purpose of this testing was to individualize instruction on an institutional basis, that is, the purpose was to separate children into various ability groups, deviation groups (behaviorally disturbed, learning disability, etc.,) and ethnic and racial groups on the basis of supposed individual differences and inferiorities” (1981, p. 63).

Judd believed there should be a clear separation of the roles of teachers (who should be female and did not need advanced credentials) and researchers and managers (who should be male and have earned a Ph.D.) (Lagemann, 1989, p. 205). While some accuse the pedagogical progressives of a romance with impractical humanism (Labaree 2005), others have said the administrative progressives had a romance with the science of measurement and quantification. This tendency was later realized in the zealous use of IQ testing to scientifically sort students by their future potential and differentiate instruction accordingly.

Although the vocabulary has evolved, pedagogical progressivism represents one side of current debates over the goals and methods of education more than a century later. According to David Labaree, pedagogical progressivism can be recognized where teachers are:

. . . basing instruction on the needs, interests, and developmental state of the child; ...teaching students the skills they need in order to learn any subject, instead of focusing on transmitting a particular subject; ...promoting discovery and self-directed learning by the student through active engagement; ...having students work on projects that express student purposes and that integrate the disciplines around socially relevant themes; ...promoting values of community, cooperation, tolerance, justice and democratic equality... [it is] 'child-centered instruction,' 'discovery learning' and 'learning how to learn'... And in the current language of American

education schools there is a single label that captures this entire approach to education: constructivism. (2005, p. 277)

Above and beyond these instructional strategies, the pedagogical progressives established an important connection between form of education and the establishment of democratic society – that education can and should be transformative for differently advantaged students.

Administrative progressivism represents another side of current educational debates. It has been linked to: teacher-centered or subject-centered instruction; differentiation of instruction by background, behavior, and ability; re-segregated schools and classes; vocational versus college-intending curriculum; and mass testing.

Although the discussion of these two broad differing approaches to education has been posed as a century-long debate between two abiding theories, the practical relationship between them is more complex. Ellen Lagemann has written, “I often argued to students... that one cannot understand the history of education in the United States during the twentieth century unless one realizes that Edward L. Thorndike won and John Dewey lost” (1989, p. 185). Perhaps because Dewey abruptly left direct involvement in education after only eight years, as Lagemann suggests, the development of the applied side of his theories stymied, particularly the knowledge that might have been generated from reflecting on decades of additional practice and from modifying his thinking accordingly. Lagemann argues that the underdeveloped nature of the practical applications of pedagogical

progressivism is partly responsible for its implementation more in private schools and in individual classrooms rather than coming to characterize public education as a whole. Administrative progressivism, on the other hand, came to dominate public school teaching. While teachers are trained by university teacher-education programs that are heavily influenced by pedagogical progressivism, schools are governed and managed by political and business leaders (e.g., superintendents, school board members, state policy-makers), not by teachers. According to Labaree, business owners and politicians liked the management orientation of administrative progressivism because it promised:

. . . to tailor instruction to the needs of employers, to Americanize the children of immigrants, and to provide students with the skills and attitudes they would need to perform and to accept their future roles in society. For people who could make these reforms happen, this was the right message at the right time. (2005, p. 285)

Recognizing this differential impact of the pedagogical and administrative progressives is important in understanding how an unresolved and very real tension was set in motion – between what teachers are taught in the university about best practices (heavily influenced by constructivist, child-centered theories) and the realities of the school structures and contexts in which they operate.

#### *Organization of the Chapter*

The U. S. government was founded with understanding that it would guarantee equal opportunity to its citizens. It has largely chosen to accomplish this

through education. In the first part of this chapter (Part One) the question will be considered: to what extent does the dominant educational model play a transformative role in increasing students' life chances or a social reproductive role in preparing students for futures according to the class of their parents? The unit of analysis will be broad and social. Drawing on the works of Pierre Bourdieu, Paulo Freire, Samuel Bowles and Herbert Gintis, and others, this first part also brings to light some of the larger socioeconomic structural forces that frame the experiences of students and teachers in individual classrooms.

However, before social phenomena such as reproduction or transformation are reflected in societal-wide statistics, they must first occur individually, locally, and culturally in the classroom. If the beginning point of Part One is the larger society, the beginning point of Part Two is the teacher – his or her theory and practice. Part Two takes a closer look at two opposing educational models – the dominant managerial and the constructivist pedagogical orientations (introduced in Part One) that are available to teachers in general and mathematics teachers in particular. These models influence teachers as they interpret, define, and negotiate school policies, requirements, and resources. They also contribute to the pedagogical wisdom teachers construct as they relate educational ideals to the complexities of teaching in low-income and high-poverty situations. These complexities are considered in the final section of Part Two. Finally, it will be noted that little is known about the interior mechanism of the black box of teacher logic – what calculus do teachers use in relating these variables in an effort to produce a

positive result for their disadvantaged students? This is the focus of the current study.

**Part One:**  
**Dewey Lost and Thorndike Won – Implications of the Dominant Educational Model for Inequality and Opportunity**

**Introduction: Teachers and Schools Transforming Society – Or Not: Theories about Education’s Reproductive and Transformative Functions and Potentials**

Teachers believe they make a difference in the lives of their students and in society. Many choose teaching over other careers because they see education “as a way of changing society” – either by effecting broad social change goals related to social inequality, or by a “more concrete focus on how their work could empower individual students, suggesting that this would lead to the social change they envisioned” (Smulyan, 2004, pp. 535, 539). They reflect the predominant view in the United States that a goal or at least a function of instruction should be some form of social transformation – that schooling should or will improve students’ life chances.<sup>11</sup>

But is education transformative? There is not agreement that it is and a good case can be made that it is not. In fact, despite a century of evolving education policies and resource investment, the best predictor of children’s futures is the

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<sup>11</sup> See Levin (2007) for a discussion of the use of education in democratic society to achieve social equality: “Capitalist societies are characterized by large differences among families in income and wealth....Presumably these unequal conditions can be largely overcome if high-quality education is provided to all citizens” (p. 1382). See also Anyon & Greene (2007) on the No child Left Behind educational reform portrayed as an anti-poverty measure.

socioeconomic class of their parents. The first part of this chapter considers this problem using the theoretical organizing principles of structure and agency. The following questions are addressed in Part One:

1. To what extent is the popular view that education transforms opportunity for all, including the disadvantaged, accurate? How does, should, or can education relate to social and economic disadvantage and the structures that maintain it? The influential works of Pierre Bourdieu, Paulo Freire, and Samuel Bowles and Herbert Gintis will be considered to shed light on these questions and to provide insight on what teachers can hope to achieve in their classrooms. These educational theorists address the relationship between cultural dispositions and the educational sorting or differentiation process (Bourdieu), the implications of the pedagogical method for transforming or reproducing student opportunities (Freire), and the correspondence of instruction and extra-academic norming to students' class background and future opportunities (Bowles and Gintis). The focus of this part of the chapter is broad and structural.

2. How do individuals within the educational system attempt to modify outcomes of the educational framework to optimize advantages or increase opportunities? While the prior section concerns broad structures, this section focuses on agency. First, consideration will be given to influential works on student agency, which have shown the complex and often self-defeating actions of youth as they attempt to modify the structures that limit them (Willis, 1977; Bourgois, 1995). Second, consideration will be given to the place of more positive and transformative

examples of student agency or resistance and to the need for better criteria for determining what counts as transformative action (Solorzano & Delgado Bernal, 2001; Giroux, 1983). Finally, consideration will be given to teacher agency. It will be noted that research is needed to better explain the logic of teachers' choices about instruction and curriculum for low socioeconomic students, which is the subject of the current research.

## **Structure – Education and Inequality Discourse: Reproducing and Transformative**

### **Pierre Bourdieu: Education Reproducing Culturally**

Pierre Bourdieu, writing in the 1960s until his death in 2002, was concerned with how an unequal social order is able to maintain itself, ensuring privilege to the sons and daughters of upper classes while guaranteeing lower-class children membership in the same lower-class. He identified the educational system as the key mechanism in reproducing inequality. He related his thinking to philosophical and economic theories that were current in France, including structuralism, subjectivism, and Marxist theories of capital and class relations, and he conducted sociological research to investigate actual differences and mechanisms.

Bourdieu's personal experience moving from a lower-class childhood in a rural backwater region of France to a position among the educated elite was paradigmatic to the development of his theory. Bourdieu was one of very few students raised in these circumstances who had the opportunity to attend an elite high school and later a selective secondary school. In order to succeed he found he



had to leave behind his provincial language and dialect, values, attitudes, and dispositions (later he used the term *habitus* to refer to these cultural attributes) and replace them with new attitudes, values, ways of thinking, and forms of knowledge (Robbins, 2000). Despite Bourdieu's adaptation and academic success (graduating, along with Jacques Derrida, at the top of his class), he continued to see himself as an outsider. Indeed, much of Bourdieu's later work attempted to establish the legitimacy of local or provincial knowledge and values, discredit commonly-held beliefs that elite knowledge is absolute and natural, and show how education helps maintain unequal access to life opportunities.

Bourdieu's insights from his personal experience were deepened through his experience in colonial Algeria where he observed traditional Algerian peasants being transformed into an underclass (subproletariat) and inserted at the bottom of a larger colonial system. He became acutely aware of their lack of access to resources needed to meet their basic needs or to achieve their social and economic goals. He observed many sliding into persistent indebted relationships (Bourdieu, 1973). Bourdieu was interested in the fact that the subproletariat viewed education as the primary means to bettering their condition, and attributed their lack of success to poor schooling. They felt the state<sup>12</sup> held a monopoly over it and restricted their access. Nevertheless, they had high – and very unrealistic – hopes for educating their children. Again, this situation closely paralleled Bourdieu's experience in rural France where the majority of youth were not selected for

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<sup>12</sup> "State" is used here in the political science sense to refer to the nation-state – the political and administrative apparatus of a nation.

admittance to elite schools and were thereby denied access to France's most important means of increasing life chances. These early experiences led Bourdieu to focus his academic research on how the educational system served to legitimize and maintain an unequal society.

### ***Habitus: Between Structure and Subjectivist Agency***

At the time that Bourdieu was beginning his career, social science was dominated by two major philosophical orientations. The first, structuralism,<sup>13</sup> was described by Bourdieu:

By structuralism or structuralist, I mean that there exist, within the social world itself and not only within symbolic systems (language, myths, etc.), objective structures independent of the consciousness and will of agents, which are capable of guiding and constraining their practices or their representations. (1989, p. 14)

Structuralism as developed in the works of Lévi-Strauss stressed underlying patterns or structures common to all cultures:

. . . Lévi-Strauss, criticizing Mauss' 'phenomenological' approach to gift exchange, makes a complete break with native experience and the native theory of that experience, positing that it is the exchange as a constructed object which 'constitutes the primary phenomenon, and not the individual operations into which social life breaks it down,' or, in other words, that the

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<sup>13</sup> Structuralism is a form of objectivism. In some articles Bourdieu poses the opposition between structuralism and agency of existentialism (1968b). In later articles he poses the opposition between subjectivism and objectivism (1989). Other objectivists (besides Lévi-Strauss and structuralism) include Marx and Durkheim.

‘mechanical laws’ of the cycle of reciprocity are the unconscious principle of the obligation to give, the obligation to give in return, and the obligation to receive. (Bourdieu, 1977/1981, p. 88)

These structures take the form of binary oppositions such as culture versus nature, raw versus cooked, hot versus cold, and male versus female. The social scientist’s objective is to understand this deep formal structure, which is expressed in all cultural or symbolic phenomena (e.g. myths, marriage customs, and kinship patterns).

Bourdieu was critical of structuralism for a number of reasons. First, its strict objectivism precluded exploration of the issue of human agency (practices, strategies, creativity...) or consideration of subjective aspects of culture which motivate humans. That is, structuralism, at “the moment of objectivation... contains the necessity of its own supersedure” (1968b, p. 703). By reducing phenomena to objective relations, it loses “the lived-through experience” (1968b, p. 704). By focusing on constraints and structure, the human experience seems automatized. Secondly, a focus on structure at the expense of action or change leads structuralism to be synchronic, emphasizing how a social system is maintained but unable to explain change.

Bourdieu was not entirely critical of structuralism. In fact he has called himself a “constructivist structuralist” or “structuralist constructivist” (1989, p. 14). He thought structuralism’s major contribution lay in its application of relational thinking, in the mathematical sense, to the social; that is, it “identifies the real not

with substances but with relations (1989, p. 16). In addition, he agreed with the structuralist break with contemporary approaches in sociology that reduced culture to statistics (1968b). Similarly, he saw as positive the structuralist rejection of holistic must-study-all-parts ethnographic approaches.

The second philosophical orientation that dominated social science at the beginning of Bourdieu's career was subjectivism, which included action theory or "psychologism." This view placed a high value on "consciousness" and could "reduce the social world to the representations that agents have of it, the task of social science consisting then in producing an 'account of the accounts' produced by social subjects" (1989, p. 15). Jean-Paul Sartre's philosophy of action, which promoted subjective meaning and individual agency would be an early example of subjectivism. Sartre implied that each action was a result of conscious intent or choice, rather than a result of custom or formed by constraints (structure): "Sartre makes each action a sort of unprecedented confrontation between the subject and the world" (1977a, p. 73). Later subjectivists would include constructivists (discussed in Part Two) and postmodernists.

Bourdieu was critical of subjectivists who thought social reality could be explained by looking at the realities of human lives and what they think. According to the subjectivist view:

It is these thought objects of theirs [humans] which determine their behavior by motivating it. The thought objects constructed by the social scientist in order to grasp this social reality have to be founded upon the thought objects

constructed by the common-sense thinking of men, living their daily life within their social world. (1989, p. 15).

Bourdieu, however, agreed with the subjectivist view of a cultural agent as active and creative. The subjectivist view could better understand the motives, vision, and strategies of an individual actor while the structuralist view could better see the structures that constrain or provide opportunities to individuals.

Bourdieu developed his concept of *habitus* as an alternative to what he considered to be a false dichotomy or opposition between structuralist objectivism on the one hand and subjectivism on the other. He defined *habitus* as:

. . . systems of durable, transposable *dispositions*, structured structures predisposed to function as structuring structures, that is, as principles of the generation and structuring of practices and representations which can be objectively 'regulated' and 'regular' without in any way being the product of obedience to rules, objectively adapted to their goals without presupposing a conscious aiming at ends or an express mastery of the operations necessary to attain them and, being all this, collectively orchestrated without being the product of the orchestrating action of a conductor. (1977a, p. 72)

On the one hand *habitus* structures lives and activity: the subjective choices one makes (e.g., who to marry), attitudes toward school and self, potential for being selected or deselected to attend high level schools, decisions about what career to follow, emotional responses to art, preferences and tastes, and so on are all affected by one's social position and material conditions (objective structure). At the same

time *habitus* is itself socially structured. Unlike structuralism, *habitus* (the concept that replaces structuralism's categories) is not universal but is situated in a specific time and context.

*Habitus* is common to a particular group or class in a particular period.<sup>14</sup> This uniformity of *habitus* is a result of common experiences resulting from common “structuring determinations.” Experiences that contribute to *habitus* begin with those acquired in the family. Family *habitus* in turn provides the basis for and is altered by schooling and then again by later experiences including work. Although *habitus* is a concept to be applied to any group or culture, Bourdieu had in mind the traditional French (or Algerian) provincial (or local) *habitus* as contrasted to a dominant elite *habitus* (which included the scholastic or intellectual elite).

But, while Bourdieu placed a high value on understanding the *logic* of an agent's practice, he was not interested in using the concepts of *habitus* and disposition simply to describe a social agent's viewpoint. He was interested in the struggles between dominated and dominating classes who are “unequally equipped” (1989, p. 22).<sup>15</sup> Although he agreed with Marx that the fundamental issue is “competition for the appropriation of scarce goods,” Bourdieu did not reduce power

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<sup>14</sup> “Personal' style...is never more than a *deviation* in relation to the *style* of a period or class so that it relates back to the common style not only by its conformity...but also by the difference which makes the whole 'manner'” (1977a, p. 86).

<sup>15</sup> Bourdieu believed Marx's critical error was in “treating classes on paper as real classes” and “in concluding from the objective homogeneity of conditions, of conditionings, and thus dispositions, which flows from the identity of position in social space, that the agents involved exist as a unified group, as a class” (1989, p. 17). The difference between Marx and Bourdieu on this issue may be less philosophical and more a reflection of the changing conditions of labor. Sharply delineated classes, for example, may have mirrored sharp divisions between industrial laborers and owners of the means of production that were more common when Marx was writing. Although access to wealth was sharply differentiated during Bourdieu's time, its non-industrial base has made class divisions less visible.

to economic capital (1989, p. 17). He identified several different types of capital or power, which vary in relative weight: economic capital (capital that is “directly convertible into money and may be institutionalized in the forms of property rights”), cultural capital (which is less directly convertible into economic capital and can include educational qualifications), social capital (this can refer to capital such as titles that may be inherited), and symbolic capital (e.g., prestige and recognition) (Bourdieu, 1986; Johnson, 1993).

Finally, in order to place relations (or struggles) between *positions* rather than between individual agents (in other words, to keep his unit of analysis social or cultural rather than individual), Bourdieu introduced the concept of structured space called “fields” (e.g., political field, economic field, cultural field, educational field, etc.) (1985, p. 17). The concept of field is also useful in that it enables looking simultaneously at cultural, social, and ideological dynamics without immediately reducing all relations to one determinant such as economics (1985, p. 20).<sup>16</sup>

### **Education: Differentiates and Legitimizes**

Bourdieu asked what kept hierarchy, inequality, and class domination in place. His answer was education – by restricting and channeling access to credentials, by legitimizing the system, and by defining one class’ knowledge as the only legitimate knowledge.

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<sup>16</sup> Bourdieu writes: “If it is true that, in advanced societies, economic and cultural factors have the greatest power of differentiation, the fact remains that the potency of economic and social differences is never too great that one cannot organize agents on the basis of other principles of division – ethnic, religious, or national ones, for instance” (1989, p. 19).

a) *Access to transcending hierarchy*: Bourdieu was interested in how the dominant classes control access to education thereby maintaining a monopoly over who is credentialed and able to move into higher levels of the social hierarchy. He noted that those who possess economic capital are in a better position to possess cultural capital (i.e., education). Ironically, they are also most able to do without cultural capital – i.e., they don't need educational credentialing to get into Father's firm (1977b). Cultural capital is most important to those who do not possess economic capital (although they are still not guaranteed a job in the firm). Cultural or educational power is most useful within an educational domain where education controls access of jobs. Although educational systems lend legitimacy to the belief that the economic hierarchy is based on merit (i.e., the ideology that wealth is based on merit), education conceals its real function – to reproduce the existing social hierarchy.

On the level of *habitus*, families of different classes do not provide the same type of cultural and social exposure to their children. Although one might expect schools to even this out, in fact they tend to “reinforce and to consecrate by its sanctions the initial inequalities” (1977b, p. 493). That is, education requires an initial familiarity with dominant or high culture (it does not teach this). This familiarity means students have instruments of appropriation (they can learn and benefit from exposure to more culture). Since students from lower classes do not have the instruments of appropriation, more exposure to dominant culture only



reinforces the higher classes' monopoly over culture (1977b, p. 494).<sup>17</sup> More specifically, classroom teachers teach the dominant definition of legitimate culture but not all students benefit equally. Those who "had early access to legitimate culture, in a cultured household" are given a great advantage (1984, p. 2). For example, "a work of art has meaning and interest only for someone who possesses the cultural competence...the code, into which it is encoded" (1984, p. 2). Without this code a person "feels lost in a chaos of sounds and rhythms, colours and lines, without rhyme or reason" (1984, p. 2).

Lower-class students also develop negative attitudes toward themselves (self-depreciation) and toward school (devaluation of school). These factors eventually lead to their self-elimination from the educational system (1977b, p. 495). Bourdieu concluded, "by concealing from them the objective truth of the mechanisms and social motives....the educational system masks...the arbitrary nature of the actual demarcation of its public...imposing...the legitimacy of its products and its hierarchies" (1977b, p. 496).

b) *Knowledge and control*: Bourdieu's experience of transcending classes through the educational system also enabled him to see the arbitrary nature of

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<sup>17</sup> Bourdieu gives the example of appreciation of art, which is associated with upper classes: "The museum gives to all, as a public legacy, the monuments of a splendid past, instruments of the sumptuous glorification of the great figures of bygone ages: this is false generosity, because free entrance is also optional entrance, reserved for those who, endowed with the ability to appropriate the works, have the privilege of using this freedom and who find themselves consequently legitimized in their privilege, that is to say in the possession of the means of appropriating cultural wealth..." (1968a, p. 611). Elsewhere he notes: "It is not infrequent that working-class visitors express explicitly the feeling of exclusion" (1968a, p. 610fn).

DiMaggio explains: "Transmitting knowledge in codes accessible only to those who, upon entering, already possess the linguistic and cultural capital required to appropriate it, school communication consigns the poor to failure and ensures the success of the well to do. A differentiated system of higher and secondary education channels children of different classes into different positions in the economy" (1979, p. 1464).

dominant knowledge, which otherwise appears natural and goes unquestioned. He concludes that education's ideology served as a mechanism to maintain and reproduce existing class relations. Bourdieu writes:

Different classes and class fractions are engaged in a specifically symbolic struggle to impose the definition of the social world most in conformity with their interests. The field of ideological positions reproduces in transfigured form the field of social positions. They may carry on this struggle either directly in the symbolic conflicts of everyday life or indirectly through the struggle waged by the specialists in symbolic production (full time producers), in which the object at stake is the monopoly of legitimate symbolic violence – that is to say, the power to impose (and even indeed to inculcate) instruments of knowledge and expression of social reality (taxonomies), which are arbitrary (but unrecognized as such). The field of symbolic production is a microcosm of the struggle between the classes. It is by serving their own interests in the struggle internal to the field of production (and to this extent alone) that these producers serve the interests of groups external to their field of production. (1977c, p. 115, as cited in DiMaggio, 1979, p. 1461)

The concept of symbolic violence, then, refers to the promotion of a view of the world that supports the interests of those who benefit most from a socioeconomic system. It portrays an unequal system serving the interests of some over others as fair and necessary (Giroux, 1983, p. 267). Thus, students are taught to believe the system is fair, but do not experience the fairness or the promises. Coming as Bourdieu did

from an outsider position to a dominant class, he saw the arbitrariness of the knowledge (vision of reality) that was being transmitted. Yet, to others this knowledge appeared natural and absolute. He became concerned with how systems of domination were maintained and reproduced “without conscious recognition by a society’s members” (DiMaggio, 1979, p. 1461). He concluded that, in modern industrialized society, education was key to reproducing and legitimizing the class structure.

### **Value and Limitations of Bourdieu’s Theories to Understanding Teacher Logic**

For the purposes of the present research, the following concepts developed by Bourdieu are useful in understanding the complex relationship between teachers and low-income students:

1. The importance of looking at educational processes relationally, that the exchange between the teacher and the lower-income student is not merely personal and individual, but represents an unequal power relationship between dominant culture values and knowledge on the one hand, and students whose *habitus* and dispositions do not add up to social or cultural capital in the dominant system.
2. Symbolic violence and the importance of the ideational level of inequality that is ignored or underdeveloped by the structuralists. This would include situations where students are given differential access to dominant knowledge, whose potentials are evaluated according to their background or *habitus*, and whose

resulting educational trajectories are “flatlined,” not characteristically leading to social mobility.<sup>18</sup>

3. Success in learning new content is neither ahistorical nor noncontextual. Students’ prior knowledge provides essential scaffolding that either allows students to quickly acquire new but related knowledge or blocks acquisition because prior knowledge is not directly related. This is not a new concept. Lev Vygotsky not only related students’ preparedness to learn to prior learning (“Every thought tends to connect something with something else, to establish a relation between things” (Vygotsky, 1934/1986, p. 218)), but he also related human consciousness and understanding to a social class and material context. His zone of proximal development is one application of this concept – that is, that students need to be brought to a level or zone just below the new concept in order for them to be able to integrate it. Research based on this concept is extensive, including studies that observe how initial differences in students first entering school become much greater each successive year (Panofsky, 2003).

4. Problem of agency – although Bourdieu proposes to overcome the problems of structuralism (a reified structure and over-determined individuals) and individualism/subjectivism (all individual or personal choice-making and down-played structure), his *habitus* does not quite accomplish this. People in this model, although sharing a *habitus*, are restricted to choices of action from a very limited menu provided by the field in which they operate. This restriction on agency makes

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<sup>18</sup> See Panofsky’s (2003) examples of symbolic violence.

it difficult to explain change. By overlooking human and cultural creativity it leads to a pessimistic view of human agency and of the possibilities to overcome limitations.

### **Paulo Freire: Transforming versus Reproducing Pedagogies**

Paulo Freire shares a concern with Bourdieu for the role of education in transforming or maintaining social inequality and oppression. Like Bourdieu, Freire had experienced living in two worlds. As a child during Brazil's economic crisis of 1929 when his family fell from a middle-class existence into conditions of extreme poverty, Freire endured the listlessness that accompanies hunger and that made him unable to keep up in school. As an adult, Freire lived in the upper middle-class world of an academic. For Freire, the fundamental problem of the modern age is the circumstance of domination and the resulting dehumanization that forms the experience and reality of so many who live in poverty. His goal, however, is not only restitution of rights and opportunities, but ultimately the achievement of a form of humanism in which classes disappear, both oppressor and oppressed are reconciled, and every person is a subject whose actions transform the world.

### **The Mechanism of Reproduction**

The system that Freire would like to change is one in which one class benefits from the domination and oppression of another. He refutes the common assumption that the poor are marginal to society and that the solution to oppression is to

integrate them into society. He writes: “they have always been ‘inside’ – inside the structure which made them ‘beings for others’” (Freire, 1970/1973, p. 61). Because the oppressor class profits from this system of inequality, it is in their interests to maintain and reproduce it. Characteristics of the lower classes that are essential to the continuance of this system include: belief in the legitimacy of their subservience; dependency and fear of freedom from their dependent relationship; docility, cooperativeness, and passivity; and acceptance of the dominant classes’ defining of how things are and must be.

Freire and Bourdieu are in agreement that education, far from being neutral, is actually the system that reproduces and maintains this system of inequality and oppression. Unlike Bourdieu, however, Freire also sees education as the primary mechanism for transforming society. He distinguishes two opposing educational models – “banking” and dialogical – that have very different ends and means.

The “banking” educational model reproduces a system of oppression by mirroring an oppressive society. Starting from the assumptions that humans are “adaptable, manageable beings” and “the more the oppressed can be led to adapt to that situation, the more easily they can become dominated,” the banking educational model aims to form people’s consciousness (Freire, 1970/1973, p. 60). Teachers’ narration of reality fills students qua containers with content qua deposits. Students receive, memorize, repeat, and store content of small scope and are ideally meek, patient, listening, and conforming (Freire, 1970/1973, p. 57). The teacher defines for the students a static, predictable reality that is unconnected to

students' lives or experience and appears compartmentalized, isolated, and alien (Freire, 1970/1973, p.57). The banking pedagogy stunts the development of students' critical thinking abilities, fosters a sense of dependency, inhibits creativity, and discourages the development of logical thinking that questioning discourse would produce (Freire, 1970/1973, p.71). Over time students internalize and accept their ignorance and lack of abilities as justifying the teacher's existence and superiority (Freire, 1970/1973, p.59). They become so "submerged" in the dominant class' view of reality that they are unable to perceive the oppressive nature of their situation (Freire, 1970/1973, p.36).

### **Education as Transformation**

Freire points out that the transformation of an oppressive system will not come about at the hand of the oppressor class. Nor can well-meaning leaders (subjects) deliver liberation to the oppressed (objects). Rather, it is the oppressed themselves who must become subjects themselves, identify the problem, and determine that it will change (Freire, 1970/1973, p.54). According to Freire, the beginning point must be conscientization (*conscientização*) of the oppressed – that is, altering the way people understand themselves in the world and how they engage with it. This educational process, which he calls a dialogical pedagogy, has the intention of producing conscientization.

Dialogical pedagogy is fundamentally constructivist. Freire begins with the premise that, "To exist, humanly, is to name the world, to change it" (Freire, 1970/1973, p. 76). By naming he means to reflect on, question, compare, and define

the world in community with others, i.e., to construct knowledge. A dialogical pedagogy is essential to engaging people in critical thinking. The teacher and students are in a partnership: “Teachers and students..., co-intent on reality, are both subjects, not only in the task of unveiling that reality, and thereby coming to know it critically, but in the task of re-creating that knowledge (Freire, 1970/1973, p. 50).

Dialogical pedagogy is also problem-posing (Freire, 1970/1973, p. 67). Student and teacher together discern issues that are meaningful to the student’s experience and understandings. Although Freire says the issues to consider must be appropriate to the “inhabitants’ level of awareness” and experience (Freire, 1970/1973, p. 105), he does not mean static levels or stages. Rather, he has a very dynamic view of level for he understands all people to be in the process of becoming, just at different points in this movement (Freire, 1970/1973, p. 72). The issues selected are often “nuclei of contradictions” (Freire, 1970/1973, p. 105) that provide rich opportunities for students to reflect, discover themselves to be in a “situation,” and move from local immediate concerns to issues of larger scope (Freire, 1970/1973, p. 100).<sup>19</sup> Through this process, people are situated back into history making it possible for them to engage with the forces that have created the present and to achieve a different future (Freire, 1970/1973, p. 72). For Freire, there is a dialectic between thought and action. A problem that has been identified as a nexus of contradictions provides a focus for the learning process. Understanding

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<sup>19</sup> Compare Freire’s “nuclei of contradictions” to Dewey’s “rich experiences” conducive to students’ intellectual growth through conjecture, hypothesis testing, and revising ideas in order to better understand phenomena (1938, p. 40).



the contradiction and realizing its implications creates tension and conflict in the learner and leads to action. The pedagogical effect may begin small but will eventually result in progressive achievements on larger scales.

### **Value and Limitations of Freire's Theories to Understanding Teacher Logic**

The following concepts developed by Freire are relevant to understanding the complex relationship between teachers and low-income students:

1. There are multiple ways of thinking about the relationship between the content of learning (curriculum) and the methods (pedagogy). In some contexts they are treated as separate. A state may prescribe a common curriculum and it is up to teachers to use methods that will produce positive measurable results on common assessments. Methods may vary to some degree (which will be discussed more fully elsewhere). For Freire, however, the medium (the pedagogical process) is the message (what is learned). Freire's method, which is based on co-intended content originating in students' lived experiences, dialogical critical questioning and reflection, and a problem focus, teaches students the constructed nature of knowledge and history and restores agency to them. Similarly, the banking method, in which knowledge is received and history comes to students from elsewhere, teaches students their dependent status in a society that disadvantages them.

2. Freire's dichotomization of the dialogical and banking pedagogies recalls a similar tension during the Progressive Era between humanist constructivists (pedagogical) progressives such as Dewey on the one hand and the social

engineering or management (administrative) progressives on the other. Earlier Lagemann was quoted as saying the key thing to understand for current educational discourse is “that Edward L. Thorndike won and John Dewey lost” (1989, p. 185). However, on a practical level both educational philosophies persist today. University teacher education programs often represent a constructivist orientation while public schools are more formally managed. The interest of the current study is in how these two very different orientations are negotiated by teachers within disadvantaged school contexts.

3. Freire is very optimistic about human nature and makes it clear he understands all humans to be in the process of becoming with differences being in the level of consciousness achieved so far, but he does not seem to award equal value to popular (folk) and dominant knowledge. He gives a great deal of weight to the almost ignorant and essentially backward characteristics produced by oppression and reinforced through the educational system. However, he could just as well have noted the cultural creativity and innovative narrative-construction that are equally characteristic of all peoples, including the oppressed. Although in a situation of cultural convergence such as one population being incorporated into a larger socio-political system (e.g., in the case of Brazil when Freire was writing) it may seem that one has knowledge of the world and the other does not (indeed, much of the development literature of the time focused on identifying cultural characteristics that kept people backward and prevented modernization), the anthropological literature shows that people of all cultures have created models of

the world as well as shared understandings of how things function, how they fit into the world, and their histories (Wolf, 1999, p. 3). Bourdieu initially viewed knowledges as culturally relative, e.g., knowledge generated by regional peoples or lower classes and knowledge espoused by the dominant class. However, he became more concerned with the permanent impediment to gaining access to dominant knowledge that is created by the dominated classes' initial *habitus* of their birth. Bourdieu would not be supportive of "the populist illusion" of creating alternative class-authentic knowledges as Freire is suggesting (Burawoy, 2011, p. 4), since this would further remove opportunities from the grasp of low-income or working class people.

4. Freire also emphasizes the passivity of the oppressed. Yet people do mediate and resist the oppressive structures imposed upon them. He acknowledges the negative side of this resistance when he speaks of the oppressed's split self – sometimes the oppressor, sometimes the oppressed – and that people may appear to be progressive but may play an anti-liberatory role: "The leaders must believe in the potentialities of the people...but they must always mistrust the *ambiguity* of the oppressed men, mistrust the oppressor 'housed' in the latter" (1970/1973, p. 169). This theme has since been taken up by education researchers who look at lower-class students' acts of resistance that, in the end, lock them into a future with few opportunities (discussed in Part Two).

5. It was previously shown that, although Bourdieu saw education's power in reproducing the privilege of the dominant class, he did not think education has a

similar power in transforming existing class relations. The only way to transform education is to transform unequal socioeconomic relations first. Freire, on the other hand, is optimistic about the power of a critical dialogical pedagogy that a) considers experienced contradictions and leads to restitutive action and b) provisions learners with lifelong skills for acquiring and constructing new and authentic knowledge; education can achieve social transformation and end oppressive relations.

### **Samuel Bowles and Herbert Gintis – Hidden Curriculum<sup>20</sup>**

Samuel Bowles' and Herbert Gintis' *Schooling in Capitalist America* (1976) grew out of a new wave of educational research in the 1960s and 1970s when poverty had been “rediscovered” and when social reformers were questioning the ability of education to achieve social and economic goals (Swartz, 2003, p. 167). The

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<sup>20</sup> Another person who is central to this discourse is Louis Althusser (“Ideology and Ideological State Apparatuses”) (1970/1971). He begins his argument with Marx’s point that, when considering a society, you must note how it reproduces (perpetuates) itself over time. That is, an economic system requires a continuous supply of people who work, lead, invest, etc. and continuity in skills, knowledge, and norms. The state plays the role of maintaining the economic system. In capitalist society, the state functions to reproduce a socioeconomic system that benefits some (a dominant class) more than others. It does this by using either repressive or, preferably, ideological means. (Hence, Althusser calls it the Ideological State Apparatus (ISA).) In some societies, particularly in the past, the ideological control occurred through a state religion (the Church). According to Althusser, in modern parliamentary-type capitalist democracies the perpetuation of the system occurs through *education*. Since “ideology is a ‘representation’ of the imaginary relationship of individuals to their real conditions of existence...not the existing [real] relations of production...in which they live” (Althusser, 1970/1971, pp. 162, 165), then education is about providing each group of students “with the ideology which suits the role it has to fulfill in class society” (p. 155). For example, the lower classes learn ethics, civic responsibility, national loyalty, etc.; managing classes learn skills necessary for giving orders and communicating; the military and police learn to give orders, “enforce obedience ‘without discussion,’” and to recite political rhetoric (pp. 155-156). In order for an ideological system to function, it must appear neutral. Thus, the school is represented “as a neutral environment purged of ideology..., where teachers respectful of the ‘conscience’ and ‘freedom’ of the children who are entrusted to them...by their ‘parents’...open up for them the path to the freedom, morality and responsibility of adults by their own examples, by knowledge, literature and their ‘liberating’ virtues” (pp. 156-157).

authors wanted to reexamine the assumptions commonly held about education's "tripartite goal: the fostering of social equality, the promotion of the full development of creative potentials in youth, and the integration of new generations into the social order" (Bowles & Gintis, 1976, p. ix). They were interested in explaining why successive waves of educational reforms have been unsuccessful in altering income inequality. Unlike earlier educational reform literature that looked *internally* (within schools) for factors that explained the educational system's disappointing social outcomes, Bowles' and Gintis' structural-functionalist and Marxian analysis connected the functioning of United States schools to *external* socio-political macroeconomic determinants.

### **The Economic Imperative Underlying Educational Reform**

According to Bowles and Gintis, education reflects and reproduces the economic framework in which it is situated and in this sense is not an independent system. In the following passage they explain how they understand reproduction:

Economic life exhibits a complex and relatively stable pattern of power and property relationships. The perpetuation of these social relationships... is by no means automatic... stability in the economic sphere is the result of explicit mechanisms constituted to maintain and extend the dominant patterns of power and privilege. We call the sum total of these mechanisms and their actions the reproduction process. (1976, p. 126)

The reproduction of existing unequal relations cannot happen by force alone. Social relations and a consciousness that matches dominant relationships are also reproduced:

. . . beliefs, values, self-concepts, types of solidarity and fragmentation, as well as modes of personal behavior and development – are integral to the perpetuation, validation, and smooth operation of economic institutions. The reproduction of social relations of production depends on the reproduction of consciousness. (1976, p. 127)

Education plays a central role in this process. Schools prepare students with “the technical and cognitive skills required for adequate job performance” and legitimate unequal economic relations through creating the appearance of economic rewards objectively based on merit (1976, pp. 129, 130).

Bowles’ and Gintis’ argument rests on a historical examination of education reforms and their socioeconomic contexts. They contend that education has long been purposed for social and economic goals. In fact, there has been a nearly two-centuries-long coevolution, sometimes collaborative but often contentious, between two threads: one that promotes the full potential and equal opportunity of all students, and the other that prepares students to be productive, cooperative, self-regulating workers who have internalized proper norms. Two examples most relevant to their argument (19<sup>th</sup> century and Progressive-era reforms) are summarized below:

a) *Economic Shift to: the factory system. Education Reform: the Common School Movement.* In the early 19<sup>th</sup> century, Lowell, Massachusetts was a textile mill town. As manufacturing grew and as increasing numbers of immigrant and rural workers were recruited, mill owners looked for alternatives to the squalor and poverty that typified England's textile-based industrialization. They found that elementary schools were very effective in preparing children for labor in the mills, especially in transmitting non-cognitive behaviors such as subordination and obedience. Soon, there occurred an expansion of schools that were based more on discipline and virtues than on academics (1976, pp. 160-163). It was commonly believed that these norms should be learned in the family but that poor and immigrant families were undisciplined and inadequate to the task (1976, p. 162). As textile prices fluctuated, mill owners supported the transfer of the cost of education to the public.

According to Bowles and Gintis, other 19<sup>th</sup> century education reformers were worried about the increase in social divisions that corresponded to growing economic disparities. Horace Mann was concerned with the dangers of the idea held by the lower classes that some "are poor because others are rich" (1976, p. 166). He proposed that education be used as a "balance wheel of the social machinery" that would mix students of different backgrounds together and replace the poor's feelings of envy for the rich with feelings of respect because those social distinctions would be seen as ostensibly open to them as well (1976, p. 167). Public education gained further backing by industrialists as a means of countering Populist ideas that were

spreading among poor – ideas that attributed poverty to the structure of the economy (1976, pp. 177-178). Mann’s achievements in reforming the Massachusetts school system were soon replicated in manufacturing areas across the country: “Where manufacturing did employ any significant numbers of people, public schools followed” (1976, p. 176).

*b) Economic Shift to: corporate capitalism. Educational reform: the Progressive educational movement – two competing models.* Nearly a half century later, during the Progressive Era, the economy again experienced a shift – this time to corporate capitalism, which was more highly integrated into a world economy (1976, p. 183). Again, large numbers of immigrants were recruited and rural to urban migration increased. Populist ideas again appealed to laborers whose concern with poverty provided a voice for widespread unrest. According to Bowles and Gintis, the new large-scale centralized corporation meant owners and their representatives could no longer have direct personal control over workers, something that became particularly problematic as unrest grew. Hence, a hierarchical system emerged in which segments of workers (often divided by race or ethnicity) reported to a large new middle group of managers (1976, p. 184). Management best practices were developed by people such as Frederick Winslow Taylor who “urged the reduction of most jobs to the carrying out of simple and highly explicit directives” (1976, p. 185).

Education reform was promoted by employers, democratic-minded progressives, and by labor, but they had very different goals in mind. Pedagogical



progressives saw in education a solution to urban poverty and a possibility of full human development. Labor was looking for a means of upward mobility as a way out of futureless low wages. They saw in education “the only remaining path toward mobility, security, and social respectability” (1976, p. 186). Finally, employers and elites wanted a way of thwarting labor unrest and of assuring a manageable, productive workforce. They supported education as a way of instilling discipline and self-control, and of fragmenting and dividing a potentially powerful labor force (1976, p. 186).

The reforms that were actually realized were those in line with the interests of employers. In place of the Common School where students from diverse backgrounds received the same curriculum, a system of tracking was instituted, which directed students toward places in the labor force deemed appropriate to their potential:

The frankness with which students were channeled into curriculum tracks on the basis of their ethnic, racial, and economic background in the early twentieth century raised serious doubts about the ‘openness’ of the social class structure. By the end of the 1920s, the relationship between social background and a child’s chances of promotion or tracking assignments would be disguised...by another reform: ‘objective’ educational testing. (1976, p. 195)

What became of the Progressive reforms focused on the democratic extension of opportunity and on the development of the full human potential? According to

Bowles and Gintis, not only did they misidentify education as the fundamental obstacle and means to social equality, but also their ideas were incompatible “within the context of capitalist relations of production” (1976, pp. 40, 200). While “John Dewey lost” in practical terms, the authors argue the continuing presence of liberal beliefs in equal opportunity through education serves to obscure and legitimize the actual impact of schools (Lagemann, 1989, p. 185).

### **Differentiated Correspondence of Schooling to Structure of Work**

Bowles and Gintis have argued that education, far from equalizing student opportunities, sorts and prepares students for their place in a stratified workforce. Underlying this process is what has been termed the “hidden curriculum”: that “schools do different things to different children. Boys and girls, blacks and whites, rich and poor are treated differently. Affluent suburban schools, working-class schools, and ghetto schools all exhibit a distinctive pattern of sanctions and rewards” (1976, p. 42).

In fact, according to Bowles and Gintis, the structure of education varies from school to school according to the students’ most likely job destination. This matching or “correspondence” between occupational and educational structures is differentiated by class structure. According to the authors, “These differences in social relationships among and within schools, in part, reflect both the social backgrounds of the student body and their likely future economic positions” (1976, p. 132). Schools attended by students who are expected to fill the lowest levels of the workforce emphasize following rules, have a “coercive authority structure,”

rigidly limit students' activities, and operate with fewer financial and other resources (1976, p. 132). Middle-income schools emphasize dependability and internalized control, reward identification with the school and authority, include more independent activities, and operate with greater resources. Higher level schools have a more open structure, involve less supervision and greater self-motivation, and operate with the highest level of resources. These differences in educational delivery hold true whether it be between schools in different class neighborhoods, or between different tracks (vocational, college preparation, etc.) within the same school.

Regardless of whether a school is working or middle-class, the authors' research confirms general types of behaviors reinforced or penalized in public schools. Those that were most frequently penalized were traits "incompatible with conformity to the hierarchical division of labor – creativity, independence, and aggressivity" (1976, p. 136). The overall best predictor for good grades was "submission to authority" (1976, p. 137).

### **Comparisons: Bourdieu, Freire, and Bowles and Gintis**

While Bowles and Gintis, Bourdieu, and Freire are in agreement that education as we know it functions to reproduce social inequality, they differ on what part of the mechanism of reproduction is most important. Bowles and Gintis argue that the form and function of education is determined by the economic base and economic relationships. A "hidden curriculum" of non-cognitive content (such as direction-following, submissiveness, and responsibility) that corresponds to

students' class backgrounds ensures that students are essentially programmed to join their parents' job level or class. For Bourdieu, education has some autonomy from the economic sector (is not micro-managed by the economic sector) (see Rikowski, 1997, p. 558). Reproduction is related to the interplay of culture (*habitus*) and dominant education: education functions as a gate-keeper of access to the dominant culture that is necessary for dominant class membership. Students' lower-class *habitus* is a kind of *Weltanschauung* connected to ingrained behaviors and responses that forever denies them the ability to learn and embody the dominant habitus. Freire believes traditional education upholds a set of unequal power relationships. He is primarily focused on the pedagogical method and approach to knowledge (banking education) that engineers students' consciousness so that they not only are subservient and do not question their dependency, but are also no longer aware of their oppression (submerged consciousness).

Bowles and Gintis, Bourdieu, and Freire also disagree about how an unequal order can be changed. Bowles and Gintis are very clear – changes must first occur in the economic base structure, which will then come to be reflected in the educational and ideological realm. Without changing economic relations, educating all students at the highest levels will only create “job blues” (1976, p. 49).

Democracy in the United States currently applies only to a very small sector of life – electoral politics. It must be extended to the way we structure work and profit-making. Bourdieu grew increasingly pessimistic about the possibility of change, i.e., of moving from a lower-class *habitus* to a higher one through the educational

process. He grew to believe that the *habitus* at birth was, at a fundamental level, unalterable, even with education. Therefore, a transformation in class relations in the economic sector would need to come first. For Freire, liberation requires of the oppressed conscientization – developing the ability to construct knowledge, reflect, and intellectually engage with (“name”) the locality, region, and world they live in. Oppression presupposes ignorance. To understand is to act and change. Thus, Freire is very optimistic about the power of education.

### **Value and Limitations of Bowles’ and Gintis’ Theories to Understanding Teacher Logic**

The following points indicate both the value and limitations of *Schooling in Capitalist America* for understanding the transformative and reproductive relations that occur on a day-to-day basis in classrooms and between teachers and students.

1. By turning attention to external economic determinants of how education functions in society as well as to the differential impact of schools by socioeconomic class, Bowles and Gintis’ *Schooling in Capitalist America* was a groundbreaking work in the discourse around education’s role in social reform. Their concept of correspondence between the class background of the students and school structure (e.g., rigid, rule-driven, coercive education that prepares low-income students to take direction and respect authority) provides an important insight into the educational reproductive process.

2. However, because for Bowles and Gintis the structure of work and the economy are so important in determining the nature of schools, very little study went into illuminating on the ground how this differential impact of schooling

actually works. Although broad macro-level dynamics must first occur on a daily basis between real human beings in specific locations, the school in a structural functionalist analysis is essentially a black box. What is lost by ignoring this level of analysis are the complexities, the unevenness of reproduction, the chemistry of opposing and converging interests, the negotiation, and the meaningful lived-in experiences of students and teachers. What is also missed is the personal dynamic between the level of intentions and the level of actual results.

3. Similarly, as with structural-functionalist models in general, what is sacrificed to the cause of building a coherent large-scale model is the individual. People tend to disappear. History is made “behind their backs”; no room is given “for moments of self-creation, mediation, and resistance” (Giroux, 1983, p. 259). It may be true that individuals do not operate within contexts of unlimited choices. But neither are they victims acting out of necessity or according to strict materialist dictates. Anthropologist Eric Wolf summarizes the crux of the issue of human agency:

. . . men are not ‘caught upon the hook of socialization’ or ‘broken upon the wheel of culture’; they are capable of using the materials of culture to respond in alternative ways to the challenges of a given situation. Yet...these alternative responses are not limitless. They represent alternative strategies in the face of necessity (1974, p. 46).

If humans are at the same time structured and creative, then a study of an instance of reproduction or change would benefit from a consideration of both the structural

forces that limit or frame their experience and the acts of agency that they express. Far from static, this field of activity (in Bourdieu's sense) is dynamic and often contains the unexpected. Most importantly, this field always represents a juncture or nexus: it is a node in the cross-path of the macro, the local, the societal, and the individual where change and reproduction are battled out on a day to day basis. This is the subject of the present research.

4. The state apparatus (centralized government, public sector), as Bowles and Gintis portray it, is simply an instrument of domination. However, according to Svi Shapiro and others, although the state does indeed function to ensure a given social formation (e.g., the United States social system) continues to function, and although it does generally represent the interests of the wealthy and the status quo over other groups, it also serves a negotiating function (Shapiro, 1982). That is, there is "play" in how things get worked out, in part because the state needs the educational system to appear as a legitimate means of opportunity and prosperity (a founding principle of the U. S. government), even if this contradicts its actual function. The need for legitimation, thus, is a handle that is used by some to negotiate more equal or democratic programs or policies.

5. Related to this is the fact that, even if schools do not actually positively affect unequal social and economic differentials because they are a central source of democratic ideas and values in our society, they provide the seeds for recognition of non-democratic circumstances and can lead to conflict and efforts to alter circumstances (Swartz, 2003, p. 173).

6. Finally, *Schooling* argues that the educational system reproduces inequalities that exist first in the larger economy. According to David Swartz, “the problem might be more complex in that schools can create inequality as well as reflect and reinforce existing patterns funneled into them from the social class structure. [For example,] ...school tracking... points up how schools...can be independent sources of educational inequality” (2003, p. 176).

### **Evidence of Reproduction from the Classroom**

The more macro-level sociological and theoretical works of Bowles and Gintis and other reproduction theorists have led some educational researchers to look more closely at the school and classroom level to find evidence of these processes at work in situ. Terms often used by this literature are “the hidden curriculum,” “the pedagogy of poverty,” and deficit views of students’ culture and academic preparation. This section reviews the influential works of two educational researchers, Jean Anyon and Martin Haberman, who identify some important factors in teaching that may lead to differential student outcomes. This discussion will be related to the overall theme of this section: education and the reproduction of social inequality. It will show that the type and quality of instruction that students receive often correlates with students’ socioeconomic backgrounds. Instructional type and quality will be taken up in a later section of this chapter, situating it within the context of two broad competing pedagogical tendencies in



United States educational reform history, and then relating it to mathematics teaching and learning.

Anyon researched types of student work and interactions at five elementary schools in New Jersey and compared her findings to the socioeconomic status and other demographic characteristics of the students' families. She was evaluating the following arguments:

1. From Bowles and Gintis, "that students from different social class backgrounds are rewarded for classroom behaviors that correspond to personality traits allegedly rewarded in the different occupational strata – the working classes for docility and obedience, the managerial classes for initiative and personal assertiveness" (Anyon, 1980, p. 67).

2. From Bourdieu, Basil Bernstein, and Apple, "that knowledge and skills leading to social power and reward (e.g., medical, legal, managerial) are made available to the advantaged social groups but are withheld from the working classes, to whom a more 'practical' curriculum is offered (e.g., manual skills, clerical knowledge)" (Anyon, 1980, p. 67).

In analyzing her findings, Anyon classified examples of instruction according to the types of knowledge and skills conveyed. "Reproductive instruction" would focus on "aspects of school knowledge that contribute directly to legitimation and perpetuation of ideologies, practices, and privileges constitutive of present economic and political structures" (Anyon, 1981, pp. 31-32). "Nonreproductive instruction," on the other hand, "facilitates fundamental transformation of ideologies and

practices on the basis of which objects, services, and ideas (and other cultural products) are produced, owned, distributed, and publicly evaluated” (Anyon, 1981, pp. 31-32).

Anyon found that in working class schools instruction did *not* provide the students with a critical or conceptual understanding of the world as they fit into it, or knowledge in such a form that they could then manipulate and apply it. Rather, the curriculum and pedagogy emphasized “mechanical behaviors” that did not focus on sustained conceptual understanding. Anyon argues that this type of instruction matches the jobs the students are destined to hold, such as “carrying out the policies, plans, and regulations of others” (Anyon, 1981, pp. 32-33). She also notes that, wherever the major emphasis is on control, there will be seeds of resistance. Such resistance has the potential for transformative action, but could also lead to self-defeating resistance.

Instruction in middle-class schools linked curriculum and skills to its “market value” – that acquiring this knowledge can be exchanged for entrance to college and eventually white collar professional jobs (Anyon, 1981, pp. 33-34). With working class instruction, however, knowledge was packaged for passing tests and did not focus on “reflection, critical thought, or making sense”; rather, it focused on objectified (commoditized) and quantified types of knowledge (Anyon, 1981, pp. 33-34).

Affluent schools, on the other hand, emphasized “individual development....A priority on personal expression, personal ‘meaning making’ and the ‘construction of

reality” (Anyon, 1981, p. 35). The types of learning and knowledge the teachers conveyed were consistent with understanding that “they will get paid for doing creative, conceptual work” (Anyon, 1981, p. 35). There was also an emphasis upon empiricism and testable knowledge. Finally, students in affluent schools were taught (more than at working class or middle-class schools) “to be creative, to think for themselves, and to make sense” (Anyon, 1981, p. 36). Anyon argues, however, that teaching critical and independent thinking can introduce contradictions that could counter the basic reproductive composition of the curriculum. That is, she sees a contradiction between creative, personal, independent thought and “the systemic, increasingly rationalized nature of school and professional work in U.S. society” (Anyon, 1981, pp. 36-37).

As was previously noted, the correspondence of types of knowledge and skills conveyed with the socioeconomic level of the students is referred to as the “hidden curriculum.” Martin Haberman focuses more specifically on instruction. He identified a cluster of pedagogical practices he called the “pedagogy of poverty” that, he argues, when practiced to the exclusion of other strategies, are responsible for the low quality of urban education in high-poverty schools (Haberman, 1991). These practices are not simply a matter of individual teachers’ pedagogical choices but are embedded in a climate that is locked in by student, parent, community, and teacher accepted understandings of what education and good teaching are. The core pedagogical practices that he identifies as the “pedagogy of poverty” are: “giving information, asking questions, giving directions, making assignments, monitoring

seatwork, reviewing assignments, giving tests, reviewing tests, assigning homework, reviewing homework, settling disputes, punishing noncompliance, marking papers, and giving grades” (Haberman, 1991, p. 291). According to Haberman:

Taken separately, there may be nothing wrong with these activities. There are occasions when any one of the 14 acts might have a beneficial effect.

Taken together and performed to the systematic exclusion of other acts they have become the pedagogical coin of the realm in urban schools. They constitute the pedagogy of poverty – not merely what teachers do and what youngsters expect but, for different reasons, what parents, the community, and the general public assume teaching to be....” (1991, p. 291)

Pedagogical strategies that characterize “good teaching” (i.e., are less reproductive and more transformative) include: engaging students with issues that are relevant to them and meaningful, teaching “major concepts, big ideas, and general principles” rather than teaching them to pursue “isolated facts,” involving students in the planning of what is to be learned, actively involving students in learning, using heterogeneous rather than homogeneous grouping, asking students “to think about an idea in a way that questions common sense or a widely accepted assumption, that relates new ideas to ones learned previously, or that applies an idea to the problems of living,” directly involving students “real-life” experiences, involving students in “redoing, polishing, or perfecting their work,” asking student to reflect on their beliefs and experiences and evaluate their thinking, engaging

students in discussions of human differences, and of applications of ideals “such as fairness, equity, or justice,” and providing students with skills in accessing information (Haberman, 1991, pp. 293-294).

According to Haberman, one of the factors that keeps in place the pedagogy of poverty and strategies based on management and control is the fear of and low expectations for minorities and the poor based on deficit views of their cultures. “People with limited vision frequently see value in limited and limiting forms of pedagogy. They believe that at-risk students are served best by a directive, controlling pedagogy” (Haberman, 1991, p. 291). Haberman also criticizes views that oppose “humane and developmental teaching aimed at educating a free people” and that are based on the belief that this “‘permissiveness’ is the root cause of our nation's educational problems” (Haberman, 1991, p. 291).

Haberman concludes that the pedagogical strategies used in low-income urban schools do not and cannot provide students with self-directed lifelong learning skills, nor do students learn at levels anywhere near their potentials. Additionally, the focus on compliance leads to both passive resentment and overt resistance. Finally, teachers tend to burn out at high rates. Thus, Haberman argues, “the pedagogy of poverty does not work” (1991, p. 292).<sup>21</sup>

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<sup>21</sup> “The pedagogy of poverty is sufficiently powerful to undermine the implementation of any reform effort because it determines the way pupils spend their time, the nature of the behaviors they practice, and the bases of their self-concepts as learners. Essentially, it is a pedagogy in which learners can ‘succeed’ without becoming either involved or thoughtful” (Haberman, 1991, p. 292).

“The students' stake in maintaining the pedagogy of poverty is of the strongest possible kind: it absolves them of responsibility for learning and puts the burden on the teachers, who must be accountable for *making* them learn. In their own unknowing but crafty way, students do not want to trade a system in which they can make their teachers ineffective for one in which they would themselves become accountable and responsible for what they learn. It would be risky for students to

## **Agency – Three Theories Highlighting Authentic Attempts to Modify Structure**

Although studies like *Schooling in Capitalist America* were valuable in drawing attention to economic determinants of educational systems and to schools' reproduction functions, they also generated new lines of research that sought to overcome the limitations of the school-as-black box, the over-determination of individuals (students, teachers), and the lack of allowance for human or cultural agency. This omission has led to research that documents the interplay between structures and subjects as they struggle to increase their life chances. These acts of agency or resistance against unequal or oppressive structures often involve education. Schools are where many students first become aware of contradictions between the ideals of opportunity and the perceived realities of socioeconomic entrapment. The following section considers insights provided by: Paul Willis into the complex outcomes of working class students' resistance to education's false promises; Philippe Bourgois into cultural and organizational practices of schools that lead students to drop out and try to survive in a self-defeating informal economy; and Solorzano, Bernal, and others who provide examples of transformative resistance, discuss varieties of agency and resistance, and consider their relative import.

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swap a 'try and make me' system for one that says, 'Let's see how well and how much you really can do'" (Haberman, 1991, pp. 292-393).

## **Paul Willis: *Learning to Labour***

Paul Willis' ethnographic work *Learning to Labour: How Working Class Kids Get Working Class Jobs* is one such study. Willis is interested in why, in a liberal democratic society, young working class kids would let middle-class kids get middle-class jobs and why would they go voluntarily into working class jobs that do not pay well, are undesirable, and involve meaningless manual work – “in a word...[located] at the bottom of a class society” (Willis, 1977, p. 1).

### **The Ethnographic Findings**

Willis studied a group of working class boys just prior to and then right after the end of their school years. ‘The lads’ formed a counter-school culture characterized by their opposition to the dominant ‘school paradigm’ (giving obedience in exchange for knowledge and certification) and to conformists (‘ear’oles’) who buy into the promises (Willis, 1983, p. 129). ‘The lads’ adopted distinctive hair and dress styles and distinguished themselves from other students by engaging in adult-type behaviors (smoking, wearing flashy clothes, dropping in as a group at the pub, attending commercial dances, taking girls out, and bragging about sexual conquests and prowess) (Willis, 1977, p. 39). They mastered the art of avoiding doing whatever teachers, the institution, and its rules prescribed in order to maintain their self-direction and personal mobility (Willis, 1977, p. 39). Their adult-type behaviors were costly and led them to take on any jobs they could find, “in small businesses, shops, on milk rounds, as cleaners, key cutters, ice-cream salesmen, and as stackers in supermarkets” (Willis, 1977, p. 39). For example:

From the fourth form onwards, Spike thinks his work at a linen wholesaler's is more important than school. He gladly takes days and weeks off school to work. He is proud of the money he earns and spends: he even contributed to his parents' gas bill when they've had a 'bad week.' (Willis, 1977, p. 39)

Although they considered the work they do "real work", and school as some kind of enforced holiday," in fact there are "many profound similarities between school counter-culture and shop floor culture" including a "kind of contained resentment towards those who manage and direct them" (Willis, 1977, pp. 39, 40). The work 'the lads' found while still in school was the beginning point for many of 'the lads' of their insertion into the labor force at the lowest level.

### **Education's Role**

Willis does not reject the general reproduction model of education in which schools prepare working class students to take working class jobs. But he rejects simple correspondence theory. He observes a great deal of cultural play, negotiation, and dialectics in the process. "The lads' do not buy into the 'school paradigm' that requires obedience in exchange for knowledge and certification (Willis, 1983, p. 129). As a group they see that very few succeed and are profoundly skeptical. They are aware that "no amount of certification amongst the working class will produce more jobs or more...mobility" (Willis, 1983, p. 129).

However, by struggling so hard against the school's knowledge and norming that supposedly prepare them for middle-class jobs, they are embracing "a real orientation towards manual work" (Willis, 1983, p. 130). This process – that



includes both a commitment to underachievement (rejection of the school's "mentalism") in the guise of proclaiming their masculinity, as well as an attraction to the "fun" and "excitement" of adult relations ("worldly precocity") – is actually ushering them into "adult relations of exploitation" (Willis, 1983, p. 130). In other words, their form of resistance to an unequal class system ensures their insertion into the economy at the lowest level, otherwise known as the reproduction of inequality.

### **Value and Limitations of Willis' Theory to the Present Study**

1. According to Willis, education produces "the opposite of 'social democratic hope' [and is guilty of] producing inequality" (Willis, 1983, p. 111). However, in explaining this process reproduction theory:

. . . moves too quickly to a simple inversion, to their opposites... Capital requires it, therefore, schools do it! Humans become dummies, dupes or zombies....The school is even the main site for this cosmic drawing. But for all we are told of how this actually happens schools may as well be 'black boxes.' (Willis, 1983, p. 111)

Unlike strict structural functionalists who imply that what individuals (students, teachers) and schools do or how they function is in direct response to the needs of the economy, Willis focuses attention on "the *contested* nature of cultural and social reproduction" (Willis, 1983, p. 138, fn15):

In fact neither structure nor agency is understandable alone – they *need* each other....there has to be some kind of dialectical relation – not between free

subjects...and determining structures... – but between subjects formed in struggle and resistance to structures formed in and reproduced by struggle, and resistance against domination. (Willis, 1983, pp. 134-135)

Similarly, he observes humans creatively use culture to resist or modify structures: “Struggle and contestation is a whole mode of the existence of ‘democratic’ capitalism” (Willis, 1983, p. 136). Relating this to the present research on the impact of schooling in increasing or limiting students’ potential and life chances, this suggests consideration should be given to how teachers and/or students creatively modify, improve, contest, further, or transform the structures and policy frameworks in which they teach and learn.

2. Another important point Willis makes is that it is those who most need opportunities who reject school (Willis, 1983, p. 110). Additionally, those who reject the “education paradigm” often have more apt insights into the nature of reproduction and the probability of their chances for mobility than do their conforming peers whose sight is clouded by humanistic and developmental ideologies that underlie the institution and its curriculum (Willis, 1983, p. 110). This suggests the importance of understanding the logic behind choices and actions of students and teachers.

3. Willis also points out that, although in the end, ‘the lads’ resistance led to their “willing” incorporation into the bottom level of class society, this must not be seen as support for the class system:

Certainly many ‘resistances’ fall short of challenging basic social structures....[But] just because resistances do not overthrow a dominant system...[they are not] related only to its support. Resistance may be deeply implicated in accommodation, but *not* in a way which is inevitable, planned and wholly programmed....Resistance is part of the wide field of a general human praxis, where human beings are created as they create collectively their conditions of life, showing *always* the ‘mismatch’, ‘ragged edge’ and unpredictability of the relation between what is ‘reproductive’ and ‘confirming’ in their actions, and what is dissatisfied resistant and challenging. Here is scope for change, for politics, for *becoming* – not for utopianism or despair. (Willis, 1983, pp. 136-137)

This suggests for the present research that the contradictory level, where the logic behind actions may be progressive but the practical implications may be limiting or contribute to keeping people “stuck,” may also be where transformative practices originate.

4. Finally, Willis notes that when understanding individuals’ choices and actions, it is important to remember that there are two different sets of logic working simultaneously. Individual logic may differ from the logic of the group of which they are members:

To the *individual* working class person mobility in this society may mean something. Some working class individuals do ‘make it’ and any particular individual may hope to be one of them. To the *class or group* at its own

proper level, however, mobility means nothing at all. The only true mobility at this level would be the destruction of the whole class society [since in a class society there is always a class at the bottom]. (Willis, 1977, p. 128)

The working class *is* the bottom half of this gradient no matter how its atoms move. (Willis, 1977, p. 129)

Teachers tend to ply students with the first logic (individual upward mobility), but a look at a class or group level shows a different truth. According to this view, in promoting the logic of individual opportunity despite the fact of lower-class persistence at the bottom of society, educators are *de facto* contributing to legitimizing an unequal and unfair process.

Part of the social democratic belief in education...seems to be that the aggregate of all these opportunities created by the upward push of education actually transforms the possibilities for all the working class, and so challenges the class structure itself.

In fact...opportunities are created only by the upward pull of the economy, and then only in relatively small numbers for the working class. No conceivable number of certificates amongst the working class will make for a classless society, or convince industrialists and employers – even if they were able – that they should create more jobs. (Willis, 1977, p. 127)

## **Philippe Bourgois: *In Search of Respect***

Philippe Bourgois considers Willis' study *Learning to Labour* a groundbreaking work in that it showed the contradictory nature of a youth culture that simultaneously resists but also shapes its own oppression and ultimately "buttresses society's status quo" (Bourgois, 1996, p. 250). He believes educators and policy-makers are often prevented from seeing or understanding the complex relationship between external structures that keep poverty in place – such as that in the Puerto Rican neighborhood of Spanish Harlem (El Barrio), New York City – in part because they are hidden behind the extremely visible acts "of terror and violence and its daily self-administration by inner-city residents against their neighbors and themselves" (1996, p. 249). Through the use of inner-city ethnography he seeks to reveal the complexities of social marginalization and segregation among Puerto Rican school drop-outs who are engaged in the informal drug economy (Bourgois, 1995, p. 249).

Bourgois draws on Bourdieu's cultural production theory and the concept of cultural capital as a way of restoring agency and autonomy to individuals within a structure of oppression. He looks at how, "through cultural practices of opposition, individuals shape the oppression that larger forces impose upon them" (Bourgois, 1995, p. 17). He distinguishes his approach from: conservative blame-the-victim views (the underserving poor); culture-of-poverty views (Oscar Lewis, Daniel Patrick Moynihan) that focus on behavior and ignore racial discrimination and class exploitation; postmodernist ethnographers and radical deconstructionists (more

focused on “playful syntaxes, and polyphonous voices, rather than on engaging with tangible daily struggles;” and strict economic and political structuralist views that ignore agency (Bourgois, 1995, pp. 14, 17).

### **Education’s Role**

Although Bourgois’ ethnographic research of youth street culture did not take place in schools, he considers it a school ethnography:

I never set foot inside a school or interviewed either teachers or administrators, and only very rarely encountered formally enrolled students. Nevertheless I consider my crack dealer conversations to be school ethnography. (Bourgois, 1996, p. 251)

While “schools remain the most important state institution for mediating mainstream society’s relationship to inner-city children” (Bourgois, 1996, p. 251), most education ethnographies “fail to venture into hallways, playgrounds, or the surrounding streets, tenements, and housing projects” (Bourgois, 1996, p. 251). Thus, they “miss the prime movers of street culture: dropouts...[who] learn a great deal at school – but almost none of it in the classroom” (Bourgois, 1996, p. 251).

Many students experience an initial conflict between home and school. For example, a child finds the school culture undermines and ridicules his or her mother who cannot speak English and is illiterate. This creates a conflict in the child between home and a school that devalues Mother. At some point the child may decide that “success in the classroom would have betrayed his love for [his mother]” (Bourgois, 1995, p. 176). From elementary school resistance including truancy,

petty crime, and substance abuse, a student is on a path that leads to placement in the lowest tracks and marginalization. This was the case with two of Bourgois' youth crack dealers: Primo's resistance to school led to his placement in low-IQ classes while Caesar's rage led to his intermittent institutionalization and medication (Bourgois, 1995, p. 190).

Bourgois documents that surviving in school was a nursery for criminal careers. Kids have to develop "*violent personas*" and abilities to fight in order to survive, especially if they move from school to school. Eddie, one of Bourgois' informants, attempted suicide at age seven (Bourgois, 1995, p. 183). Schools were a breeding ground for cruelty and brutality. Bourgois found his youth crack dealers established or learned their future careers in the underground economy while in school:

Over the past two generations, this school has effectively channeled hundreds of children like Primo, Caesar, and even Jaycee, into careers of drug dealing, violent substance abuse, social security insurance, and single motherhood... (Bourgois, 1995, pp. 193-194)

### **How Agency Leads to Self-Destruction, a.k.a. Reproduction**

Although education is the main institution through which inner-city children learn their inferior relationship to the larger society, their experiences have been shaped by larger structures. Bourgois puts them into a historical context:

a) Economic dislocation of the youth's grand- or great-grandparents soon after the United States invaded Puerto Rico in 1898. In a very short period an economy

based on small plot farming was converted to one based on large-scale agribusiness with a small number of United States owners. Masses of dislocated small highland farmers sought wage labor on the coastal sugar plantations where they lived in quickly constructed shantytowns. Because the economy could not absorb the surplus labor that had been moved off the land, a third of Puerto Rico's population emigrated to the United States between 1945 and 1960 (a greater proportion than that of Ireland) – many ended up in New York City. Many immigrants found work in garment industry sweat shops, but only for a short time because industries were at that time leaving the City for cheaper offshore locations. During the first two decades of Bourgois' crack dealers' lives, the City lost half its factory jobs. Of the jobs that remained, many were lower paying and in the service sector (Bourgois, 1995, p. 51). According to Bourgois:

Literally overnight, the new immigrants whose rural-based cultural orientation and self-esteem was constructed around interpersonal webs of *respeto* [respect] organized around complex categories of age, gender, and kinship found themselves transformed into 'racially' inferior pariahs. Ever since their arrival in the United States they have been despised and humiliated with a virulence that is specific to North America's history of polarized race relations and ethnically segmented immigrant labor markets (Bourgois, 1995, p. 53).



Facing discrimination and without employment options, yet wanting the American Dream, youth especially turned to creating their own opportunities in the informal or underground economy:

The anguish of growing up poor in the richest city in the world is compounded by the cultural assault that El Barrio youths often face when they venture out of their neighborhood. This has spawned what I call 'inner-city street culture': a complex and conflictual web of beliefs, symbols, modes of interaction, values, and ideologies that have emerged in opposition to exclusion from mainstream society. Street culture offers an alternative forum for autonomous personal dignity; [it is a] spontaneous set of rebellious practices that in the long term have emerged as an oppositional style, [not a] coherent, conscious universe of political opposition. (Bourgois, 1995, p. 8)

When youth leave school they often first seek well-paid legal jobs. But they soon find how few jobs they are eligible for and how little service-sector jobs pay. They are frequently unsuccessful in these jobs and return to El Barrio's underground economy. However, earning money and *respeto* through the illegal drug culture comes at a high price:

Contradictorily...the street culture of resistance is predicated on the destruction of its participants and the community harboring them...although street culture emerges out of a personal search of dignity and a rejection of racism and subjugation, it ultimately becomes an active agent in personal degradation and community ruin. (Bourgois, 1995, p. 9)

Brutality is directed against “themselves and their immediate community rather than against their structural oppressors” (Bourgois, 1995, p. 326).

Like Willis, Bourgois’ ethnographic study shows how many youth whose complex needs are not met by the educational system end up rejecting what Willis calls the ‘school paradigm’ – after they have learned in schools to be successful in the often violent illegal economy. In a very unglamorized way, Bourgois shows again how rejection of schooling is on the one hand a form of resistance to an unfair system, and, on the other hand, a condemnation of a violent and marginal existence that in turn destroys a community.

### **Value and Limitations of Bourgois’ Theory to the Present Study**

1. Bourgois adds complexity to the traditional views of underachievement that focus on student ability and motivation. He links low-performance to conflicts between school and home culture, to resistance to an unfair system at the most visible point (school) where a child experiences it, and to a realization of the disappointing disconnect between education’s promised and actual rewards.

2. Bourgois makes an important connection between education and the informal economy of youth street culture. Most United States students learn that education guarantees equal opportunity to all, promises improved life chances, offers the possibility of earning while engaged in something meaningful, and leads to greater rewards with increasing experience. When they discover this is not the case, especially for many low-income students in United States schools today, the informal illegal economy, including highly violent forms, remains a viable, albeit

self-destructive option. Where there is little correlation between a high commitment to schoolwork and a payoff in future opportunity, the project of schooling is compromised.

3. Bourgois shows how, even in oppressive conditions including poverty and discrimination, people will act to modify their circumstances and alter their destinies. Bourgois, like Willis, shows that to understand both reproductive processes and the potential for transformation, one should look at instances of agency where individuals attempt to negotiate and alter broad structures that tend to constrain or limit their life options.

### **Solorzano and Delgado Bernal: Transformational Resistance**

One of the criticisms of early resistance literature has been that it focuses on self-defeating examples of agency when there are many other examples of more positive transformative action. Since the publication of *Learning to Labour* many studies have emerged providing a wide range of examples of student and teacher opposition or resistance. Daniel Solorzano and Dolores Delgado Bernal (2001) review two historic examples of student resistance that resulted in positive change or long-term personal benefits. They also raise some important questions about what transformative action is and is not, how to distinguish different types of transformative action, and what qualifies an action as transformative.

Solorzano and Delgado Bernal present two instances of transformational school resistance by students in Los Angeles. One occurred in 1968 when “10,000

students walked out of the predominately Chicana and Chicano high schools in East Los Angeles to protest the inferior quality of their education” (Solorzano & Delgado Bernal, 2001, p. 309). Students presented a list of grievances that had accumulated from numerous years of formal requests that had been ignored – “including smaller class sizes, bilingual education, and more emphasis on Chicano history” (Solorzano & Delgado Bernal, 2001, p. 309). A second example occurred in 1993 when students from diverse backgrounds occupied a University of California at Los Angeles (UCLA) building “to protest the chancellor’s decision to not support the expansion of the Chicano Studies Program to departmental status” (Solorzano & Delgado Bernal, 2001, p. 309). Over one hundred student arrests were followed by weeks of student protests, demonstrations, and a hunger strike. The authors examined oral histories and interviews with students who participated in the actions and found common themes in their understanding of what was oppressive or unfair, their goals for social justice, and their experience of having had a mentor or parent who modeled positive forms of action.

In order to distinguish transformative agency from self-destructive agency that reinforces unequal structures, Solorzano and Delgado Bernal identify types of agency. They draw upon the works of Henry Giroux who identifies several criteria for determining whether an act of resistance has transformational potential or whether it merges with (accommodates and conforms to) dominant views. Rather than making a determination on the basis of the behavior or act, Giroux argues one must understand the thinking and motivation or logic of the subject. An act is

transformative if the individual's interests are emancipatory or the motivation is to achieve social justice (Giroux, 1983, p. 291). Giroux notes that the subjects' motivation is frequently ambiguous – that is, they cannot articulate a critique of the situation. In such a case one should ask the following questions: What sequence of events or history led up to the act? What is the nature of the relations between those involved? What cultural forms did the subject have available to “mediate and respond to...structures of domination and constraint” (Giroux, 1983, p. 290).

Solorzano and Delgado Bernal use Giroux's notion of interest and critique of the context to identify four types of school resistance:

1. “Reactionary behavior,” in which the “student is not motivated by an interest in social justice and may challenge the teacher or other authority figures ‘just for kicks’ or ‘to see the teacher sweat’” (Solorzano & Delgado Bernal, 2001, p. 317).

2. “Self-defeating resistance,” in which students do have some critique “of their oppressive social conditions but are not motivated by an interest in social justice” (Solorzano & Delgado Bernal, 2001, p. 317). This term might refer to students who are critical of education's promises of opportunity and drop out of high school, but end up reproducing unequal social conditions by filling society's lowest level of jobs or engaging in the illegal economy.<sup>22</sup> Solorzano and Delgado Bernal

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<sup>22</sup> Giroux (1983) suggests that researchers should not just study transformational forms of resistance, but also look at the pulls on students from outside the school. Serious consideration should be given to “the counter-logic that pulls students away from schools into the streets, the bars, and the shopfloor culture....The social spheres that make up this counter-logic may represent the few remaining terrains that provide the oppressed with the possibility of human agency and autonomy. Yet, these terrains appear to represent less a form of resistance than an expression of solidarity and self-affirmation” (p. 293).

agree with Peter McLaren who, in his ethnography of a Catholic school serving low-income immigrants, pointed out that: “Resistance among working-class students rarely occurs through legitimate channels of checks and balances that exist in educational organizations. Rather, resistance among the disaffected and disenfranchised are often tacit, informal, unwitting, and unconscious” (1986/1993, p. 147).

3. “Conformist resistance,” in which students believe in the need for social justice and social change, but lack a “critique of the systems of oppression” (Solorzano & Delgado Bernal, 2001, p. 318). They blame their own culture, and find solutions in adapting to the existing educational structure (rather than adapting or modifying educational programs to the needs and interests of the students).

4. “Transformational resistance,” in which students believe in the necessity of social justice and have a critique of how the system disadvantages or oppresses them. The authors distinguish two types of transformational resistance: a) Internal forms of transformational resistance occur when students have a critique of the objective realities of their disadvantaged status but choose to “conform to institutional or cultural norms and expectations” in order to achieve a larger goal (Solorzano & Delgado Bernal, 2001, p. 325). This would include students who want to be successful in the existing school structure in order to “prove them wrong” or “give back” to their communities (Solorzano & Delgado Bernal, 2001, p. 325). b) External forms of transformational resistance include: the participation in boycotts

by civil rights activists, the East Los Angeles student walkouts for higher quality education, and the UCLA student actions.

### **Summary of Themes Arising from the Reproduction and Agency Discourses, and Questions They Raise for the Present Study**

Although it is commonly accepted in the United States that education plays a transformative role in society by increasing opportunity, it is also widely known that the best predictor of children's future income levels is the income of their parents. Bourdieu, Bowles and Gintis, and many others have investigated various aspects of how, on a structural and functional level, education reproduces existing social and economic inequality. However, macro-level models answer some questions but not others. In a debate on structural functionalism with Maurice Godelier, anthropologist Eric Wolf argued that, instead of focusing on functionalist reproduction of social relations, it is much more interesting to look at, "*how* relations are in fact reproduced, whether reproduction is complete or partial and which factors or elements play a part in this process" (Wolf in Verrips, 1985, p. 9). Macro-level models do not explain how this reproduction of inequality actually occurs – in the classroom, where structure (policies and results of economic forces) meets individual agency. The processes inside this black box of reproduction are important to consider if the disappointing outcomes of education are to be better understood and transformative potentials are to be discovered.

The following questions arising from the previous review of reproduction and agency theoretical discourses (Part One) have been identified as relevant to the present study. These questions, along with those that arise from the theory and practice discourse (Part Two) will frame the discussion of the present study's research findings (Chapter Five).

### **Theme 1. Teachers Negotiate Opposing Philosophies of Education**

There are two broad educational orientations that run throughout the last century of educational reform history. One, pedagogical progressivism, is student-centered, based on students' emerging interests, talents, and potentials, involves investigation, and integrates concepts and learning from multiple disciplines. This orientation is also transformative in that it establishes a direct connection between its pedagogical approach and the extension of active participation in democratic society to students from diverse social and economic backgrounds. The other orientation, administrative progressivism, otherwise known as the social efficiency movement, favors educational forms that mirror the organizational structure of the world of work. Furthermore:

a) These two orientations are not always in agreement with each other – in terms of goals, methods, what is learning and knowledge, how pedagogy is structured by time, what the roles of the students and the teacher should be in planning content and conducting class, how learning is evaluated, and what the societal function of education should be.



b) Discussion shows that the form instruction takes has major implications for not only what is learned but also to how education ultimately functions in society (reproduction or transformative; participation in democratic society or not). In other words, the medium (pedagogy) is the message.

c) One orientation (pedagogical progressivism) is typically taught in university teacher education programs and the other (administrative progressivism) is promoted by school management, business leaders, and state policy-makers.

Questions: How do teachers negotiate these two orientations? What type of implications do they consider when making these choices? How do they think students are affected by the pedagogical choices they make?

## **Theme 2. Teachers Respond to Gaps and Cultural Zones of Access**

An important factor in the disparity in benefit from the educational process is related to cultural access (connecting students to learning):

a) Bourdieu shows how the interplay of a student's *habitus* (cultural background) with the school's curriculum and pedagogy (based on the dominant *habitus*) results in differential access to learning – which could be characterized as a “cultural zone of access.” But, whereas in the case of Vygotsky's Zone of Proximal Development the initial gap (between what students *actually* can achieve alone and what they *potentially* can learn with assistance) decreases through interaction with adults or teachers, in Bourdieu's model the gap increases because students cannot benefit from or access dominant knowledge and they eventually check themselves out of the educational system.

b) Similarly, Bourgois discussed the conflict in loyalty that some students experience between home and school, particularly in the context of a clash of unequal cultures or classes. When students feel they must take sides, choosing to support their families' or cultural identities may imply rejecting school (dominant) culture.

c) Bourdieu shows how important it is to look at situations relationally, for example, look at the multiple relations a student is engaged in, the power differentials, and how they contribute to the student's experience.

Questions: How do teachers view the gap in learning, if there is one, between students' prior knowledge and the school's expected knowledge and what do they do about it? Do they consider cultural explanations (e.g. *habitus*) or cultural solutions (acculturation or code translation)? Do they notice a conflict in loyalty that students experience between different or unequal parts of their lives (such as between school and home, or between new higher-income school and previous lower-income school)? How do teachers understand students' responses to these situations?

### **Theme 3. Teachers Consider Cultural, Learning, and Opportunity Gaps**

Bourdieu's concept of symbolic violence focuses attention on situations where the ideology promises that education will provide equal opportunity and access to better futures, but education provides only some students with these opportunities. Others receive the knowledge and skills appropriate to their parents' lower income job levels. In other words, students' trajectories are flatlined. Bowles and Gintis

and others discuss similar outcomes that result from tracking – by curriculum and vocation, by behavior, language, and culture, and by neighborhood school segregation.

Questions: What instances do teachers observe of differentiated instruction by socioeconomic class? Do teachers adjust expectations for students according to their visions of the students' probably job destinies? How important do they think it is for their students to understand? How do teachers negotiate making content relative to students' lives and futures, but not limiting students' aspirations?

#### **Theme 4. Teachers and Students Optimize, Modify, or Challenge Structures**

Willis, Bourgois, and others reintroduced the concept of agency into social and structural discussions of education and equality. They suggest the value in looking at students and teachers, not as over-determined individuals without options or choices, but as people making choices and employing cultural forms at hand to adjust or modify the structures that frame their experiences. It has also been suggested that students who resist the process of schooling are: most in need of the opportunities it would bring; often see more clearly the contradiction between promises and fact (or are less likely to see themselves as the successful exception); can be drawn to the illegal economy for rewards they cannot hope to achieve through legal means (but at a tremendous cost); often become a form of oppressor themselves as Freire suggests or, through their resistance, ensure their place at the bottom of the workforce; but sometimes organize actions that lead to beneficial changes. Finally, teachers also seek to optimize the positive impact they make on

their students within the constraints of their work, but the logic of their choices, innovations, and accommodations are inadequately understood and is the subject of the current research.

Questions: In what ways do teachers take initiative to change or alter outcomes for students? How do they use cultural or other resources to engage and transform? In what way can some student behavior be related to resistance to issues of unequal status or a sense of false promises?

The second part of this chapter (Part Two) will look more closely at the tools and guidelines that teachers have available to them, in particular pedagogical paradigms represented by school administrators, by university curriculum departments, and by professional organizations. It will also consider some of the complexities of teaching in high-poverty contexts.

## **Part Two: Theory and Practice – Mathematics Teachers Working to Modify Their Students’ Predicted Life Chances**

Because teaching is about making changes on a day-to-day basis in the abilities and opportunities of individuals, it is transformative in nature. Its immediate focus is on engineering a change in academic knowledge and skills in order to transform today’s youth into tomorrow’s professionals. A second focus that guides the first is preparation of students to become citizens and leaders in a democratic society. It would seem, therefore, that teaching, by definition, must be considered transformative. Yet, the above review of literature on education’s role in

social reproduction and evidence of reproduction from the classroom have shown that schooling does have a differential impact on students: initial differences in advantage among students become major differences in future opportunities by the time they leave school, thus reproducing social inequality.

If a major dilemma for teachers is how to transform student disadvantage into opportunity, what are the consequences of the alternative pedagogical strategies available to them? And equally important, what do they believe is the import of the strategies they choose? The following questions are addressed in Part Two:

1. What are the basic pedagogical orientations taught in mathematics teacher education programs that have transformative implications? This section will first consider two major paradigms or models available to teachers: a) some form of objectivism as instanced by the impact of Taylor's social efficiency movement and post-World War II systems model, and b) constructivism as instanced by the pedagogical progressives and more recently as promoted by the National Council for Teachers of Mathematics.

2. What complexities do teachers of high-poverty or low-income students encounter that influence their pedagogical choices and practice? Examples from the literature include: students are inadequately prepared; students prefer direct instructional styles; poverty, racism, and trauma negatively impact the learning environment; behavior management problems affect the type of instruction that can take place; the school culture undermines the climate the teacher hopes to create in

the classroom; and high-stakes testing in a high-poverty context undermines higher-order learning and intensifies under achievement.

Finally, it will be noted that little is known about the *logic and thinking* (*choice-making*) of teachers' instructional strategies – that is, the dialectic between structure and agency and between theory and practice – when teaching low-income or high-poverty students.

## **Theory to Practice: Two Opposing Educational Models**

In an earlier part of this chapter (Part One) two broad educational orientations were referenced that have influenced if not defined educational discourse over the past century: pedagogical progressivism that focuses on engaging with students to construct understanding and develop the underlying learning processes necessary to participate in democratic society and to make their living as befits their talents and interests; and administrative progressivism whose starting point has been the social and content needs of industry and business and who have focused on efficiently sorting and appropriately preparing students to take their likely positions in the workforce through a climate that mirrors the organization of work. The latter approach came to dominate the United States educational system with the most extreme forms of direct instruction (“pedagogy of poverty”) characterizing lower income schools. It should be noted that these two “types” of educational orientation are to some degree constructs but have heuristic

value in identifying tendencies within complex educational contexts that have different learning and social consequences.

The two orientation “types” differ in the type of knowledge and skills that are transmitted and in the utility or transferability of what is learned. The descendants of pedagogical progressivism are predominantly constructivist in their view of knowledge and knowledge construction. In so far as the banking or business model focuses on transmission (passive absorption) of facts, it is objectivist. The constructivist orientation deserves additional explanation because: a) it is commonly believed it provides the deepest and most transferable understanding, which relates to the issue of equality in access to high quality learning and developing to one’s potential, and b) it poses a challenge to the dominant top-down objectivist banking model that has traditionally characterized low-income education.

As early as ancient times, thinkers noticed a discrepancy between reality (real things, being) and appearances (or how we represent phenomena). The sun, for example, appears larger when it is on the horizon than at high noon. They reasoned that it was not the sun that was changing size; rather, it was their perception. Reason, therefore, had to be trusted more than sense perception. Thus emerged a debate that has endured two millennia about what guarantees that our ideas correspond to the real object or to ‘truth.’

In Medieval and early modern times, thinkers like René Descartes (1596-1650) looked to God to guarantee their representations of and reasoning about the

world corresponded to reality. However, it became logically necessary to first prove that God existed and then that he was good and would not deceive them.<sup>23</sup> Such theories of knowledge that placed more weight on reason than on sense experience came to be called ‘rationalist’ approaches.

David Hume (1711-1776), on the other hand, reduced knowledge to experience. Humans are born “empty” (without mental structures that would guide or organize experience). All knowledge comes from experience. For example, if an individual touches a flame and is burned, then he or she will come to expect it will burn the next time a finger is brought near it. The assumption here is that nature or reality is coherent and consistent. Repeated experiences lead people to beliefs about the future. In other words, ideas are formulated by abstraction from direct experience. Continued experiences with nature help individuals correct and improve their knowledge. In this sense, knowledge is adaptive. Theories that attribute knowledge to sense experience are termed empiricist.<sup>24</sup>

Immanuel Kant (1724-1804) intended to synthesize rationalism and empiricism. Like the empiricists, he believed there is something real ‘out there’

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<sup>23</sup> This meant that atheists could never be certain that what was proved once has not changed. They were, therefore, doomed to eternally repeat their proofs, never achieving certitude: “The fact that an atheist can be ‘clearly aware that the three angles of a triangle are equal to two right angles’ is something I do not dispute. But I maintain that this awareness of his is not true knowledge, since no act of awareness that can be rendered doubtful seems fit to be called knowledge. Now since we are supposing that this individual is an atheist, he cannot be certain that he is not being deceived on matters which seem to him to be very evident... And although this doubt may not occur to him, it can still crop up if someone else raises the point or if he looks into the matter himself. So he will never be free of this doubt until he acknowledges that God exists” (Descartes, 1641/1984, p. 101).

<sup>24</sup> Objectivism is like empiricism in that it holds that all knowledge comes from and is verified by perception. Perception does not deceive us. However, objectivism believes reason does help shape knowledge (Klein, 2002).



(external to the human mind) and most knowledge comes from experience.<sup>25</sup>

However, he believed experience is formed by mental categories, a rationalist idea. Humans are not born ‘empty’ but come ‘hard-wired’ with innate rules or categories that allow them to make distinctions and organize reality both spatially and temporally. Since these categories are constitutive a part of human nature and are not socially determined, according to Kant they are universal. Knowledge is constructed through the operation of these categories upon the natural world.

Most non-empiricist (or non-objectivist) theories current in the social sciences today are fundamentally neo-Kantian. That is, they believe there is “something out there,” but believe that culture, society, or the individual selects, organizes, defines, and categorizes reality. According to Eric Wolf:

Given what we now know about the workings of human neuro-cognitive systems, knowledge can no longer be visualized as a simple ‘reflection’ in the mind of what goes on in the external world. Whether one believes that ‘minds’ (or, rather, human neurological systems that include brains) merely edit what enters from outside or themselves construct cognitive and emotional schemata that can address the world but are not isomorphic with it, we must work with some variant of the neo-Kantian postulate that minds interpose a selective sieve or screen between the organism and the environment through which it moves. This, of course, is rendered even more evident by the work of anthropologists whose studies have taught them that

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<sup>25</sup> Kant did think there were some types of knowledge that come to us prior to experience – such as mathematics, geometry, physics, theoretical science, and the arts (i.e., mental categories do not always need to be applied to something physical in order to generate certain types of knowledge).

panhuman ‘minding’ is further inflected and conjugated from culture to culture. (1999, p. 3)

How one interprets phenomena has a direct connection to action and function. Indeed, representations and constructed knowledge (“mental constructions”) based in material or practical experience, “have functions: they do something for people. Striving to lay out the features of the world, they seek to render it amenable to some human use” (Wolf, 1999, pp. 3-4). In education, these differing orientations – objectivist and constructivist – result in different types of teaching and learning, one focused on transmitting “truth” and assembling “facts,” and the other more focused on process, knowledge construction, and viability of theories and models.

### **Objectivist (Managerial) Educational Perspectives**

The following discussion of objectivist educational perspectives will first consider the 20<sup>th</sup> century scientific efficiency foundations, then look at the post-World War II systems model that gave new life to rationalized approaches to mathematics and science education, and finally consider how objectivist approaches to mathematics education are expressed in modern-day schools and classrooms.

#### **20<sup>th</sup> Century Scientific Efficiency Foundations**

Early 20<sup>th</sup> century educational objectivism was identified less with a concern for epistemology (although it would be objectivist) and more with a commitment to the world of business and industry – whose goals of efficiency and productivity for greater profit yields were paired with a confidence in the application of science,

technology, and military organization to education or order to produce a well-prepared workforce.<sup>26</sup>

Frederick Winslow Taylor, who developed a “scientific method” for management based on research conducted at Bethlehem Steel Company, PA in 1899, is often regarded as the father of the modern efficiency movement that came to dominate not only business and industry but also education in the 20<sup>th</sup> century. In actuality, Taylor was not the originator of this movement,<sup>27</sup> and the research results he used as the basis of his theory were largely fictionalized (Wrege & Perroni, 1974). Nevertheless, his writings are important to consider because: they bring into sharp relief the ideological underpinnings of this scientific efficiency method, they illustrate some of the beliefs and assumptions that transferred to education along with the efficiency methodology, and many of these principles are still operative today.

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<sup>26</sup> According to Berman (1983), the administrative efficiency movement began much earlier in the 19<sup>th</sup> century with rapidly expanding urban populations, laws making schooling mandatory, and public pressure to control increasing costs. Berman also traces two orientations: (1) The normal school orientation, which “was first concretely developed by city superintendents and then expanded into full-blown pedagogic philosophy by mid-century normal schoolmen... [They] were attracted to systemic efficiency wherever found, whether within business, machine shop, or army” (1983, p. 308); and (2) The common school orientation (including Horace Mann) who had more humanist and pedagogical views. The split between these two orientations was later evidenced in university programs that trained (male) administrators in management and efficiency matters, and teacher education programs that trained teachers (females) in pedagogical and curricular matters (1983). According to Berman, “...the most outstanding feature of the pro-efficiency group is their virtual lack of training or interest in teacher education. The most outstanding feature of those opposing an excessive emphasis upon efficiency is their overwhelming contact with either normal schools or teacher-training departments within other institutions” (1983, p. 308). The rise of the superintendent (businessman, lawyer, merchant, accountant, doctor, etc.) who managed all things largely outside of the classroom, paired with the concentration of the pedagogical orientation upon what goes on inside the classroom, has resulted in somewhat of a disconnect between these two sectors and may go far in explaining the unrealized goals of many pedagogical initiatives.

<sup>27</sup> According to Berman (1983), the efficiency movement actually began early in the 19<sup>th</sup> century with rapidly expanding urban populations, laws making schooling mandatory, and public pressure to control increasing costs.

Unlike the pedagogical progressives whose starting point was the student's experience and understandings (education to develop individual talents, interests, and potentials), Taylor's starting point was the labor force needs of business and industry. Taylor agreed with traditional management of his time that the goal was greater worker productivity – “to yield the largest possible return to [the worker's] employer;” however, he went on to propose a new scientific approach to worker efficiency (1911, p. 32). Although his example was first related to industry (Bethlehem Steel Company), his principles “can be applied absolutely to all classes of work, from the most elementary to the most intricate” and “when they are applied, the results must of necessity be overwhelmingly greater” (1911, p. 40).

According to Taylor, the problem with traditional management methods is that business is dependent upon skilled labor to plan and organize labor and to set the level of productivity. This was a time when, in many industries, skilled labor itself was largely responsible for educating and training its own members. As a consequence, “foremen and superintendents know, better than anyone else, that their own knowledge and personal skill falls far short of the combined knowledge and dexterity of the workmen under them” (1911, p. 32). Managers lacked the knowledge and skills to improve the labor process and, at the same time, believed “the average workman falls short of giving his employer his full initiative” (1911, p. 33).<sup>28</sup>

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<sup>28</sup> In fact, Taylor states “in nineteen out of twenty industrial establishments the workmen believe it to be directly against their interests to give their employers their best initiative, and that instead of working hard to do the largest possible amount of work and the best quality of work for their employers, they deliberately work as slowly as they dare” (1911, p. 33). Simha and Lemark (2010)

Taylor's solution was to transfer the skill and knowledge base from the workforce to a new redefined management class:

. . . all of the planning which under the old system was done by the workman, as a result of his personal experience, must of necessity under the new system be done by the management in accordance with the laws of the science (1911, p. 38).

The new managers were to be intelligent, educated, and could divide up the skills and knowledge needed for production into small parts. They would then train workers and plan when and how labor was deployed. Laborers themselves then did not need to be intelligent or skilled but should be recruited for their ability to do exactly what their managers tell them to do, i.e., work according to the scientific method.

At the same time that Taylor referred to the problem of the labor force controlling much of the knowledge and skills needed for industry, he somewhat contradictorily a) characterized the laborer as unintelligent with a fixed potential and b) described most work as requiring no intelligence (perhaps especially after it had undergone scientific efficiency's redefinition). He described one type of work at the Bethlehem Steel Company as:

. . . so crude and elementary in its nature that...it would be possible to train an intelligent gorilla so as to become a more efficient pig-iron handler than

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explain: One of the bad management practices that Taylor witnessed was "cutting the rate". This was done using the piece-rate system (which meant that workers would be paid on the basis of their output), and then cutting the rate when employees became too productive and management determined that the workers were earning 'too much'. Taylor himself confessed to doing this as a 'gang boss' at Midvale..." (2010, p. 235).

any man can be....it is impossible for the man who is best suited to this type of work to understand the principles of this science, or even to work in accordance with these principles without the aid of a man better educated than he is....the workman who is best suited actually to do the work is incapable...of understanding this science. (1911, pp. 40-41)

In an experiment with a group of workers, Taylor noticed that they each loaded a total of 12½ tons of pig iron each day. After further investigation he became convinced the workers could each load 47 tons per day. His goal was to convince the workers to meet this new requirement “without bringing on a strike...and to see that the men were happier and better contented when loading at the new rate of 47 tons than they were when loading at the old rate of 12½ tons” (1911, p. 43). Taylor picked several men of exceptional physical ability and of good character and habits. Since he described one (Schmidt, “a little Pennsylvania Dutchman”) as “of the mentally sluggish type,” “intelligence” (or his perception thereof) was probably not one of his criteria (1911, p. 46).<sup>29</sup> In accordance with his scientific method, Taylor

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<sup>29</sup> Wrege and Perroni (1974) have investigated Taylor’s research and found much to be fictionalized: a) Taylor stressed the magnitude of the job to be done (moving 80,000 tons of pig-iron) in order to demonstrate the cost-cutting value of his methods – actually only 10,000 tons needed to be moved; b) the study originally began with a random sample of workers, but they had to opt for only the most fit because most could not lift the greater amounts for an extended time; c) they also lost some of the fittest men who belonged to a Hungarian worker gang because they refused to convert from day-work (best for the worker) to piece-work (best for the employer); d) Taylor indicated he recruited workers to lift the heavier amounts without threat of strike or opposition, but the Hungarian workers did begin talking about striking; they were dismissed ostensibly because they refused to convert to piece-work; e) Taylor speaks of “Schmidt” (actually Noll) as mentally sluggish and only able to accomplish lifting at a constant rate of 45 tons per day due to the step-by-step direction of a manager, but this was added later to his story; earlier reports by those who conducted the research attribute the accomplishment to Noll himself who successfully managed his effort and rest. His motivation was the extra pay as he was in need of additional money to build a house.

determined every step of the work the laborer was to do and gave the worker explicit direction:

‘Well, if you are a high-priced man, you will do exactly as this man tells you tomorrow, from morning till night. When he tells you to pick up a pig and walk, you pick it up and you walk, and when he tells you to sit down and rest, you sit down. You do that right straight through the day. And what’s more, no back talk.’ (1911, pp. 45-46)

The worker was paid \$1.85 per day (as opposed to \$1.15). The worker accomplished the higher rate of lifting due to “...having a man...who understood this [scientific] law, stand over him and direct his work, day after day, until he acquired the habit of resting at proper intervals...” (1911, p. 59).

The manager is a completely different type of person from the worker:

The man who is mentally alert and intelligent is for this very reason entirely unsuited to what would, for him, be the grinding monotony of work of this character. Therefore the workman who is best suited to handling pig iron is unable to understand the real science of doing this class of work. He is so stupid that the word ‘percentage’ has no meaning to him, and he must consequently be trained by a man more intelligent than himself into the habit of working in accordance with the laws of this science before he can be successful. (1911, p. 59)

While Taylor's new manager was entreated to "heartily cooperate" with the workers, and while he stressed the "equal" division of labor between worker and manager, equality presumably did not refer to pay or power.

Taylor's approach to management was soon applied to education.<sup>30</sup> It is worth pointing out that his ideas probably became popular, not so much because of the brilliance of his insights, but largely because they were found useful to influential business and educational policy makers of the time. The enduring importance of his point of view is attested to by the fact that, despite a long sequence of educational reforms during the 20<sup>th</sup> century, many educational characteristics of scientific efficiency and management are current today. It is these business-oriented rather than constructivist pedagogical characteristics that the authors in the preceding section of this chapter associated with the reproduction of inequality. These characteristics include:

1. Taylor's view of the differential innate potential of workers – and "types" of humans – transferred in education to sorting and determining the differential potential of students. The following is an example of Taylor's biases:

. . . one of the first requirements for a man who is fit to handle pig iron as a regular occupation is that he shall be so stupid and so phlegmatic that he

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<sup>30</sup> According to Besag (1981), "Taylor's system, over a very short period of time, was moved into the schools. The ease of this move can be more easily understood when we realize that American schools are far more susceptible to social pressure than schools of other countries because of the peculiar organization of our schools. The United States is the only major country in the Western world that has almost total local control by local school boards. For this reason, when a new construct enters the business community, it very often influences the schools through local school boards which are made up of representatives of the local community" (p. 62).



more nearly resembles in his mental make-up the ox than any other type.

(Taylor, 1911, p. 59)

Taylor's words reflect the biases in any society where differences in such factors as class, race, ethnicity, and gender are used to undergird systems of unequal power and exploitation. When related to education, judgments on potential (low-income children do not need to know more) become policy. According to Frank Besag, one argument for the application of social efficiency methods to education was:

. . . that certain children were not getting anything out of school and that they were costing the school a great deal of money. Ayers (1909, *Laggards In Our Schools*) was the prime mover in this group of critics. His statement was, "for every child who is making more than normally rapid progress there are from eight to ten children making abnormally slow progress." (1981, p. 3) Ayers, however, did not stop here. Rather than determining methods whereby these children could be helped to improve their education, he pointed out how much money these children were costing the school. He applied the factory model to the schools. He pointed out that there was a certain amount of work which should be done by each student (called piece work in the factory system), and he pointed out that our educational system was inefficient and impractical. (1981, p. 63)

These Social Darwinist and social efficiency views were shared and extended by the administrative progressives. The influential educational psychologist Edward Thorndike argued that learning was essentially a matter of stimulus and

measurable behavioral response. By engineering the correct stimulus adjusted to students' level of innate potential, various social and vocational goals could be achieved. Thorndike:

. . . came to believe that most of the variability between school pupils was based on heredity and that there was little that could be done to improve the academic abilities of the lower 'I.Q.' students. For this reason, Thorndike proposed two basic themes: First, children should be separated on the basis of academic ability into what we now call tracks or streams. Up to that point, most education had been carried on in heterogeneous groupings of students with one teacher dealing with both the bright and the dull students in a single class. Thorndike proposed the homogeneous grouping of students on the basis of their academic ability. This would make teaching more efficient because those students who were not capable of learning at the standard rate could be grouped into special classes where they would not hold up the rest of the students. Second, Thorndike was a major proponent of vocational education. It should not be assumed that vocational education was for all of the students. Rather it was reserved for those students who did not have the ability to perform academically. The purpose was to train nonacademic students so that they would be able to make a living in modern American society even though they were not very bright. (Besag, 1981, p. 66)

These theories continue to influence education today in the form of tracking and differential education by race and class. Bowles and Gintis, Bourdieu, and others

would say that the policies, practices, and attitudes that follow from these views undergird education's role in reproducing inequality.

2. Teacher-as-manager takes on a more active and centrally directive role (relative to the student's passive role), involving planning, subdividing knowledge into component parts, task-setting, giving explicit directions, and providing direct instruction. This approach is described well by Freire in his discussion of the banking method of teaching (depositing unrelated and unmeaningful pieces of information in passive students) and by Dewey when providing a critique of traditional education.

3. The beginning point of Taylor's model is the profit of the company, which in his view is linked to the success and progress of civilization and to the happiness and well-being of the workers. In education this is equivalent to saving money on public education by rationalizing its access. Its starting point is not with each child's unique talents, interests, or prior knowledge, and not with developing each child's potential, constructing meaning and understanding, and enabling him or her to make a unique contribution to democratic society. Rather, the starting point is with externally determined objectives stemming from the labor force needs of business reflecting a collaboration between business and educational policies.

4. When knowledge is divided into bytes, it can be tested and measured. Standardized testing received new emphasis following the publication of *A Nation at Risk* (Hursh, 2006). Testing assumes uniformity of learning goals, promotes a fact-based objectivist view of knowledge, and makes integrated and constructivist

methods difficult. This renewed efficiency push in the form of achievement testing was accompanied by a focus on “economic efficiency, employability, privatization, and markets” (Hursh, 2006, p. 53). Although the original arguments for testing were to ensure that all students achieved despite race, ethnicity, class, or gender, recent research has shown testing is not reducing inequality, but is “creating a more unequal system with a stratified curriculum in which some students are presented with a challenging curriculum and others are not” (Hursh, 2006, p. 55).<sup>31</sup>

While appearing to be egalitarian, in reality the schools, as Snedden desired almost a century before, are preparing students for their ‘probable destinies’ – preparing economically privileged students to be leaders as professionals and managers and economically underprivileged students to be followers as military recruits and service and retail workers. The same principles are evident in the policies proposed by the federal and state governments.

(Hursh, 2006, pp. 53-54)

5. Bowles and Gintis and others have previously noted that, although the United States has a political democracy, democratic forms do not extend to the economic sector. This is clearly seen in the industrial work environment that Taylor describes. When non-democratic market forms are transferred to education (sorting, differential education, unequal access to opportunity, etc.), they inevitably

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<sup>31</sup> Hursh provides an example from Texas (McNeill, 2000): “...rather than teaching students to write well, teachers taught students to write the five-paragraph essay with five sentences in each paragraph that would receive passing grades on the standardized tests. Because culturally advantaged middle- and upper-class students are likely to rely on their cultural capital to pass the exams, it is disadvantaged students who receive the additional drilling. Unfortunately, learning to write five-sentence five-paragraph essays does not transfer well to literacy required beyond the test and outside of the school. Because less is expected of disadvantaged students, they fall further behind” (Hursh, 2006, p. 55).

collide with curriculum that has students study and celebrate the U. S. democratic way of life.

6. Although the efficiency movement greatly impacted school administration, other more humanist influences dominated teacher preparation and pedagogy. Barbara Berman also points to a bifurcation in public schooling based on the following two orientations:

a) The normal school orientation, “first concretely developed by city superintendents and then expanded into full-blown pedagogic philosophy by mid-[19<sup>th</sup>] century normal schoolmen....[They] were attracted to systemic efficiency wherever found, whether within business, machine shop, or army” (1983, p. 308).

b) The common school orientation, including Horace Mann who had more humanist and pedagogical views.

The split between these two orientations was later evidenced in university programs that trained (male) administrators in management and efficiency matters and teacher education programs that trained teachers (females) in pedagogical matters.

### **Post-World War II Systems Model**

Although the social efficiency and scientific management movement had a lasting impact on the nature of schooling in the United States, it was given new focus and momentum in the post-World War II period when contingents of scientists with labs that had been heavily funded by the federal government during the war period began working with policy-makers to transfer their successful “systems

model” to domestic applications, such as “the problem of education.” According to John Rudolph, “the most significant influence on American educational policy can be traced...to the wartime laboratories of Berkeley, Los Alamos, and MIT” (Rudolph, 2002, p. 213). The transition of military-based science and technology to education may at first seem perplexing but becomes intelligible when considering the context of the Cold War that made education a matter of national security. For example, in 1953 the CIA reported the USSR could surpass the United States in numbers of trained scientists.

Whereas in the Soviet Union where curriculum was centralized and the government could require schools to produce more scientists, in the United States schools were more decentralized and federal interference was discouraged. The National Science Foundation (NSF) determined that the greatest problem was the poor quality of high school science and mathematics teaching, due in part to the profession’s low pay and low status. Instead of increasing the level of training for teacher-professionals, the NSF chose to provide a new curriculum with extensive use of media technology. They “saw film as a powerful means of addressing the shortage of qualified science teachers...” and could do a better job of producing students with a quality science background than most science teachers (Rudolph, 2002, p. 226). But “they worried about what would happen in the classroom when the projectors were turned off” (Rudolph, 2002, p. 226). The solution was “operations manuals” that told teachers what to do minute-by-minute. This

approach is akin to the scientific efficiency movement's earlier move to deskill the teaching profession.

Later, these reforms moved in a more cognitive direction, but the "turn toward technique and performance in educational policy" remained as evidenced by the centrality of testing and of curriculum centered around standardized objectives (Rudolph, 2002, p. 226). This dominant orientation in education has had important implications for the type of knowledge and thinking fostered by schools. According to Rudolph:

By their very design, such approaches to teaching children have precluded ways of thinking about education that embrace uncertainty, that encourage creative inner direction and growth that enable critical self-examination. All is geared to performance, to external goals and direction, to efficiency within the system. It is this that appears to comprise the most important legacy of postwar education reform in the United States. (Rudolph, 2002, p. 214)

Some also suggest these technique-based reforms, justified originally on the basis of national security by the war-time cum peace-time science community, also inspired an antagonistic stance toward the humanities and a move to less democratic educational structures (Rudolph, 2002, p. 233).<sup>32</sup> They also are said to have

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<sup>32</sup> Certainly this was true of the objectivist behaviorist movement of the 1970s. In 1971 B. F. Skinner (influenced by Edward Thorndike, Ivan Pavlov, and others) wrote, "In trying to solve the terrifying problems that face us in the world today, we naturally turn to the things we do best...our strength is science and technology....But things grow steadily worse and it is disheartening to find that technology itself is increasingly at fault....The application of the physical and biological sciences alone will not solve our problems....we need to make vast changes in human behavior....What we need is a technology of behavior..." (1971, pp. 1-3). Behaviorist psychology, that traces its roots to Thorndike, dominated the educational scene in the United States for nearly forty years. Educators spoke of human behavior, not human minds, and looked to controlling the environment in order to

contributed to the “math wars” of the 1980s and 1990s that set objectivist and constructivist instructional models at odds.

### **Objectivist (Traditional) Mathematics Education in Practice**

Objectivist mathematics pedagogy has often been called “traditional” instruction. According to studies by the National Science Foundation (NSF), the National Advisory Committee on Mathematical Education (NACOME), and the Third International Mathematics and Science Study (TIMSS), a typical lesson in the United States begins with the teacher reviewing the homework assigned at the end of the last class, the teacher presenting the new material – usually procedures – while students listen and take notes, and then the students work independently at their desks on assigned problems from the text or a worksheet for the last half of class (Hiebert, 2003, p. 10).<sup>33</sup> Concepts and procedures are introduced but not generally explained in depth:

The teacher, for example, might simply state that the area of a triangle is found by multiplying one half times the base times the height rather than discuss why this formula might work or show how it could be developed from finding the areas of parallelograms. (Hiebert, 2003, p. 11)

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change behavior: “the fact remains that it is the environment which acts upon the perceiving person, not the perceiving person who acts upon the environment” (Skinner, 1971, p. 179). The human then was not free and certainly not creative.

<sup>33</sup> It is reasonable to pair these findings on typical traditional instruction with objectivist instruction practice since, “These findings...were collected shortly after an intensive effort to change mathematics education in the United States, an effort commonly called the ‘new math’”(Hiebert, 2003, p. 11fn).



The same sources show that the typical United States curriculum, when compared with those of other countries, offers less depth, relies on greater repetition, and is less challenging.

When students learn procedures without understanding context or how the procedures are linked to other concepts, their knowledge is “fragile” and not very helpful when problem-solving in new or multi-step situations.<sup>34</sup> What students learn – what they are most able to do – reflects the focus of the curriculum and pedagogy:

. . . students have more opportunities to learn simple calculation procedures, terms, and definitions than either to learn more complex procedures and why they work or to engage in mathematical processes other than calculation and memorization. (Hiebert, 2003, p. 12)

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<sup>34</sup> Dewey’s critical description of traditional education is still relevant today: “...how many lost the impetus to learn because of the way in which learning was experienced by them? How many acquired special skills by means of automatic drill so that their power of judgment and capacity to act intelligently in new situations was limited? How many came to associate the learning process with ennui and boredom? How many found what they did learn so foreign to the situations of life outside the school as to give them no power of control over the latter? How many came to associate books with dull drudgery, so that they were ‘conditioned’ to all but flashy reading matter?” (1938, pp. 26-27)

## **Constructivist (Pedagogical) Educational Perspectives**

The following discussion of constructivist educational perspectives will first consider constructivist foundations, then look at professional applications in mathematics, and finally consider reform mathematics education in practice.

### **Constructivist Foundations**

Constructivists attribute their early formation to the thought of Jean Piaget,<sup>35</sup> Lev Vygotsky,<sup>36</sup> and John Dewey<sup>37</sup> in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. More recent constructivist views are many and varied. At one extreme is constructivism that is individual, rather than social, and is best represented by “radical constructivism” as advocated by Ernst von Glasersfeld. He maintains that an individual constructs (builds up) knowledge, constrained, however, by prior

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<sup>35</sup> For example Piaget titled one of his books, *The Construction of Reality in the Child* (1954).

<sup>36</sup> According to Stetsenko (2004): “Vygotsky’s ideas and scholarly texts emerged directly out of his practical, passionate, and distinctly collaborative engagements with these real-life problems. His writings are not simply expressions of abstract thinking and insights that emerged and existed separately from his life and practice; they are the very embodiments and vehicles of his practical engagements with his society and the challenges of his time. In this sense, Vygotsky’s texts represent the stepping stones – simultaneously products and tools – of his overall pursuit to devise a new psychology for a society built on the ideals of social equality and equal opportunity for all, even for the most disadvantaged ones, such as homeless and disabled children. Thus, Vygotsky’s texts are also deeply imbued with clear moral values and commitments, which cannot be ignored in any interpretation of his cultural-historical theory. Of course, Vygotsky and many others who, like him, had enthusiastically welcomed, and contributed to, the new Soviet society later became bitterly disappointed by the tragic failings of this gigantic social experiment, as it gradually turned into a repressive and stifling regime. However, these subsequent failings and related disappointments do not change the initial moral thrust that motivated Vygotsky and his colleagues and formed the basis of their work” (pp. 503-504).

<sup>37</sup> According to Phillips (2000): Dewey was constructivist in that he: “stressed that learners must be active, he advocated the use of projects and inquiry methods, he attacked the acquisition by students of ‘cold storage knowledge’ (knowledge that was acquired passively or by rote and that students did not know how to use), he regarded learning as best proceeding in social contexts, and he wanted the classroom to be seen as an interactive community...” and he was critical of the type of education provided to students in the early twentieth century: “Just as the biologist can take a bone or two and reconstruct the whole animal, so, if we put before the mind’s eye the ordinary schoolroom, with its rows of ugly desks placed in geometrical order, crowded together so that there shall be as little moving room as possible...and add a table, some chairs, the bare walls, and a few pictures, we can reconstruct the only educational activity that can possibly go on in such a place. It is all made “for listening”” (Phillips, 2000, pp. 14-15; Dewey, 1899/1956, p. 31).

constructions. The cognizing individual organizes his or her experiential world by organizing him- or herself. The function of this organizing is adaptive – it organizes experience, rather than discovering some truth or ontological reality. This organizing activity is goal-oriented and is therefore instrumentalist. It seeks viability, not absolute truth. The term “radical” differentiates von Glasersfeld’s constructivism from others such as Jean Piaget in that von Glasersfeld believes any external reality is unknowable. It should be noted that, although von Glasersfeld said he was led to his constructivist views through his experiences with various languages and living in different cultures, he persisted in using a universal *individual*, rather than a social cultural unit of analysis.<sup>38</sup>

Other constructivists see knowledge as more socially than individually constructed. Many social constructivists concerned with education trace their thinking back to Lev Vygotsky who emphasized the social role in knowledge construction:<sup>39</sup>

It is hardly possible to express better the idea that the need for logical thinking and the search for truth in general come from the communication between the consciousness of a child and the consciousness of others. By its philosophical nature this idea is very close to the doctrine of Emile Durkheim

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<sup>38</sup> Von Glasersfeld (1995) noted, “In many ways this liberation from a single mother tongue facilitates an immediate understanding of certain aspects of constructivism that take hard work and reasoning in all whose world view is constrained by a single language” (p. 19).

<sup>39</sup> Lerman (2000) writes: “The problem on which Vygotsky was working was that posed by Marx, Durkheim, and others: how the social nature of people comes to be different in different economic and social situations, which in psychological terms amounts to the question of how culture and social life shape the individual’s consciousness” (p. 223). It is interesting that Leslie White (1949/1969), an anthropologist, was looking at some similar issues and drawing on some of the same sources at the same time in the United States.

and those sociologists who derive time, space, and reality from the social organization of human life. (Vygotsky, 1934/1986, p. 50)<sup>40</sup>

Vygotsky argued that individuals' conceptual "frameworks for thinking are internalized through social practice" – that the tools and knowledge acquired are related to the learner's social context or social destination, and that individuals are both formed by but also affect their social environments (Souto-Manning & Smagorinsky, 2010, p. 25).

According to Vygotsky, language is an auxiliary tool in the social internalization process, which enables children to solve complex tasks. In order to expose the advantage language provides to human problem-solving and activity, he makes the following comparison to the ape: "Unlike the ape [who is a] 'slave to its own visual field' [Köhler, as cited by Vygotsky], children acquire an independence with respect to their concrete surroundings...Once children learn how to use the planning function of their language effectively" they have "a view of the future [which] is now an integral part of their approaches to their surroundings" (Vygotsky, 1930/1978, p. 28). Possibilities of self-control are also introduced. "The cognitive and communicative functions of language then become the basis of a new and superior form of activity in children, distinguishing them from animals" (Vygotsky, 1930/1978, pp. 28-29). That is, language permits higher order problem-

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<sup>40</sup> Durkheim wrote on both the sociology of education and on educational systems through history. According to him, "...it is not we as individuals who have created the customs and ideas that determine this. These are the product of the life of the community, and they express its needs. They are, moreover, in large part the work of preceding generations. The entire human past has contributed to the formation of the set of principles that guide education today; our entire history has left its impact upon it, and even the history of the peoples who went before" (Durkheim, as cited in Durkheim & Giddens, 1972, p. 205).

solving and thinking. Vygotsky noted that, if speech is not permitted, a child may not be able to accomplish a task (Vygotsky, 1930/1978, p. 26). Thus, in terms of education and social constructivism, social constructivists emphasize the crucial role of language (verbalization and discussion) in students' construction of meaning (Jones & Brader-Araje, 2002, p. 6).

One common omission in constructivist literature – whether individual or social – is a consideration of how inequality and unequal power relations affect what and how knowledge is constructed. An exception is found in the work of Bourdieu, whose thoughts related to education and reproduction of inequality were discussed earlier in this chapter. Bourdieu, like Kant, wanted to synthesize empiricism or objectivism with rationalism (which he later narrowed to subjectivism). He agreed with Kant that knowledge is constructed and that this construction involves mental categories that guide perception, categorization (i.e., making distinctions), and understanding. But, he did not agree that these categories are universal.<sup>41</sup> Rather, categories are socially and historically produced, are highly adaptive, and are practice-oriented. That is, although all knowledge is an act of construction:

. . . the principle of this structuring activity is not, as an intellectualist and anti-genetic idealism would have it, a system of universal forms and categories but a system of internalized, embodied schemes which, having been constituted in the course of collective history, are acquired in the course

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<sup>41</sup> Here, Bourdieu was arguing with French anthropologist Lévi-Strauss and the French structuralists who searched for underlying universal structures (Lévi-Strauss, 1958/1976).

of individual history and function in their *practical state, for practice* (and not for the sake of pure knowledge). (1984, p. 467)

Bourdieu developed the concept of *habitus*, in part, in response to the Kantian universal categories of the French structuralists. As previously noted, *habitus* includes the socially and historically formed dispositions that structure knowledge construction and practice. *Habitus* are not individual but shared structures that differ according to class or group. Bourdieu's book *Distinction* further explores how these "structuring structures" differ according to socioeconomic class (1984). One of his primary concerns was in exposing that, what is taken to be natural is not only constructed, but is also accepted as natural and legitimate because it corresponds to beliefs of the dominant classes. Bourdieu was also interested in showing that values, customs, language, and taste not only correspond to socioeconomic class, but also serve to distinguish classes from each other:

Taste is an acquired disposition to "differentiate" and "appreciate", as Kant says – in other words, to establish and mark differences by a process of distinction....The schemes of the *habitus*, the primary forms of classification, owe their specific efficacy to the fact that they function below the level of consciousness and language, beyond the reach of introspective scrutiny or control of the will. (1984, p. 466)

In fact, one of Bourdieu's missions was to debunk what he called the "ideology of charisma," an ideology that attributes an individual's lifestyle, situation in life –

in fact, one's social destiny – entirely to a person's natural taste, choices, gifts, and merits (1984, p. 1). He went about exposing this ideology through scientific observation, e.g., showing that taste and cultural needs are “the product of upbringing and education” (1984, p. 2). Education is central to the inculcation of dominant beliefs about knowledge and culture. He believed an education system awards “titles of nobility,” that is, it credentials those representing the culture that is considered legitimate and dominant. Groups have been struggling since the 1600s, he wrote, over how to define this cultural nobility.

According to Bourdieu, classroom teachers teach the dominant definition of legitimate culture to students, but not all students benefit equally. Those who “had early access to legitimate culture, in a cultured household” are given a great advantage (1984, p. 2). For example, “a work of art has meaning and interest only for someone who possesses the cultural competence...the code, into which it is encoded” (1984, 2). Without this code a person “feels lost in a chaos of sounds and rhythms, colours and lines, without rhyme or reason” (1984, p. 2).

All constructivist-based theories must deal with the problem of relativism. If knowledge is constructed, what makes one constructed view more valid than another? Is knowledge a matter of opinion? If all knowledge is equal, just different, then is a student's view as valid as a teacher's? Do we even need schools? The responses to the problem of relativism are varied.

Thomas Kuhn's (1996) theory of the evolution of scientific ideas through paradigm shifts established the constructed basis of *scientific knowledge*. Although

he opposed teleological views of scientific knowledge, he still believed in scientific progress.<sup>42</sup> A combination of a “high value accorded to puzzle-solving ability” and “the selection by conflict within the scientific community of the fittest way to practice future science” result in “the wonderfully adapted set of instruments we call modern scientific knowledge. Successive stages in that developmental process are marked by an increase in articulation and specialization...[occurring] without the benefit of a set goal, a permanent fixed scientific truth...” (Kuhn, 1996, pp. 172-173, 205). Kuhn likens the progress of scientific ideas to the growth of a tree – beginning with primitive origins. If one chose any two different points on the tree, one would be able to determine which theory was earlier and which was more recent by looking for “accuracy of prediction, particularly of quantitative prediction; the balance between esoteric and everyday subject matter; and the number of different problems solved...” (Kuhn, 1996, pp. 205-206).

Some *social science* treatments of relativism are similar, although often take an applied form. Von Glasersfeld (1984), for example, recommended providing students with contexts in which contradictions or problems (perturbations) of their

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<sup>42</sup> By teleological views of scientific knowledge, Kuhn is referring to the Aristotelian view that there is an ultimate end or goal of any type of development. This argument was more broadly applied by evolutionists in the 19<sup>th</sup> century to help explain variation in natural and social phenomena. Teleological views reason that physical or social and historical forms found today were the aim (telos) toward which earlier forms were evolving (Aristotle’s final cause). Just as the acorn’s goal is to become an oak tree, so some early life forms set out to become humans and so early social forms set out to become modern capitalist or imperialist societies. 19<sup>th</sup> century social evolutionists arranged the variety of social forms found by British colonialists throughout the world in a continuum from primitive social forms advancing to modern British colonial society. Variations in natural and social forms were evaluated in terms of their relative progress toward the end form. Teleological beliefs are prevalent in many popular discussions of social, cultural, and economic differences. Marxism (society inevitably evolving toward communism), some forms of politico-economic theory such as neo-liberalism (inevitability of United States-style capitalism), and many religious beliefs are also teleological.



existing preconceived ideas became apparent. Once contradictions became visible, then students worked to refine and improve their models. Thus, some knowledge constructions must be superior to others, not because they more closely replicate an external reality, but because they contain fewer contradictions.<sup>43</sup>

The position of other constructivists – particularly social constructivists – on relativism is more related to social, political, or economic power and the preservation of inequality. Bourdieu, for instance, asked not which social group's construction was more valid, but how these constructions related to and served power. As previously related, the notion of class was important to him in distinguishing dominating from dominated constructions. Education was integral to his notion of social constructionism because it was where dominant constructions were taught thereby reproducing the existing social class order.

Constructivist-based reforms and professional standards taught in university teacher education programs have had considerable influence on teachers and school curriculum. In the next section the constructivist-based mathematics standards promoted by the National Council of Teachers of Mathematics will be discussed as they have been one of the most influential constructivist influences on mathematics teachers' pedagogical beliefs.

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<sup>43</sup> This view resembles coherence theory in which truth is judged by the consistency of a theory's logic, rather than its correspondence to some external reality as in the case of the empiricists. Mathematics is typically given as an example of coherence theory. An argument could also be made that most theories, such as those currently accepted in educational and social science theories and history, are coherence theories to the degree that a theory's validity is judged on the basis of its consistency with and correspondence to prevailing theories and models.

## The NCTM Standards

In 1980 the National Council of Teachers of Mathematics (NCTM) published *An Agenda For Action: Recommendations for School Mathematics of the 1980s*, which was the first of several editions of what is now referred to as its *Standards*.<sup>44</sup> The intent of these documents was to boost deeper mathematics understanding among United States students by providing educators with a guide for curriculum reform and more effective instructional approaches. Inspired by successful mathematics programs in countries that had a national curriculum,<sup>45</sup> some NCTM members had argued for a United States national mathematics curriculum, but instead settled on a set of Standards that could “guide the development of such detailed curricula...” (Howe, 1998, pp. 270-271). The 1989 Standards established five broad goals for student mathematics learning:

. . . (1) that they learn to value mathematics, (2) that they become confident in their ability to do mathematics, (3) that they become mathematical problem solvers, (4) that they learn to communicate mathematically, and (5) that they learn to reason mathematically. These goals imply that students

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<sup>44</sup> These include: *Curriculum and Evaluation Standards for School Mathematics* (1989), *Professional Standards for Teaching Mathematics* (1991), *Assessment Standards for School Mathematics* (1995), and *Principles and Standards for School Mathematics* (2000a).

<sup>45</sup> “...While there was consensus that the Standards should be made more specific, there was enormous disagreement as to how thoroughly they should delineate the curriculum. This was the subject of the most heated discussion in the group. On the one hand, a number of members argued persuasively for the advantages of a national curriculum... The idea was brought forward that a national curriculum gives a basis for national discussion, so that the entire teaching profession can receive the benefit of a research by small groups of teachers into specific classroom techniques... On the other hand, other members argued against a national curriculum. Examples were given where specific curriculum items led to a mechanical or rote mastery of the topics and encouraged assessment procedures which searched only for surface-level understanding of what mathematics looks like... We did agree that a call in the Standards for the development of detailed curricula at appropriate levels – whether school, district, state, or national – would be very helpful...” (Howe, 1998, pp. 271-272; Ferrini-Mundy, 2000, p. 8).

should be exposed to numerous and varied interrelated experiences that encourage them to value the mathematical enterprise, to develop mathematical habits of mind, and to understand and appreciate the role of mathematics in human affairs; that they should be encouraged to explore, to guess, and even to make and correct errors so that they gain confidence in their ability to solve complex problems; that they should read, write, and discuss mathematics; and that they should conjecture, test, and build arguments about a conjecture's validity. (NCTM, *Curriculum and Evaluation Standards for School Mathematics*, Commission on Standards for School Mathematics, 1989)

The new focus was on conceptually-oriented instruction, active involvement of students with mathematics (explore, justify, construct, modify, investigate, etc.), providing students with experiences in applying mathematics, and exposing students to a broad range of content. Lee Stiff (2001) provides a description of the approach:

Reform-minded teachers pose problems and encourage students to think deeply about possible solutions. They promote making connections to other ideas within mathematics and other disciplines. They ask students to furnish proof or explanations for their work. They use different representations of mathematical ideas to foster students' greater understanding. These teachers ask students to explain the mathematics.

Their students are expected to solve problems, apply mathematics to real-world situations, and expand on what they already know. Sometimes they work with other students. Sometimes they work alone. Sometimes they use calculators. Sometimes they use only paper and pencil. (para. 3, 4)

The following example for grades 9-12 illustrates the types of changes proposed for mathematics instruction:

**Table 1**  
**Summary of Changes in Instructional Practices**  
**In 9-12 Mathematics**

<b>INCREASED ATTENTION to:</b>	<b>DECREASED ATTENTION to:</b>
* The active involvement of students in constructing and applying mathematical idea	* Teacher and text as exclusive sources of knowledge
* Problem solving as a means as well as a goal of instruction	* Rote memorization of facts and procedures
* Effective questioning techniques that promote interaction	* Extended periods of individual seatwork practicing routine student tasks
* The use of a variety of instructional formats (small groups, individual explorations, peer instruction, whole-class discussions, project work)	* Instruction by teacher exposition
* The use of calculators and computers as tools for learning and doing mathematics	* Paper-and-pencil manipulative skill work
* Student communication of mathematical ideas orally and in writing	* The relegation of testing to an adjunct role with the sole purpose of assigning grades
* The establishment and application of the interrelatedness of mathematical topics	
* The systematic maintenance of student learnings and embedding review in the context of new topics and problem situations	
* The assessment of learning as an integral part of instruction	
Source: NCTM, <i>Curriculum and Evaluation Standards for School Mathematics</i> , Commission on Standards for School Mathematics, 1989	

Individual states began crafting their own standards based on the NCTM model and then requiring schools to implement them. Because the *Standards* were

initially guidelines and not already-developed curriculum, teachers needed to invest time in analyzing and revising their curriculum and in developing new methods of instruction. This represents a contrast with objectivist pedagogies that have tended to deskill the teaching profession.

With regard to equity, NCTM states that disadvantaged students have had less exposure to higher quality mathematics instruction:

. . . Too many students – especially students who are poor, not native speakers of English, disabled, female, or members of minority groups – are victims of low expectations in mathematics. For example, tracking has consistently consigned disadvantaged groups of students to mathematics classes that concentrate on remediation or do not offer significant mathematical substance. The Equity Principle demands that high expectations for mathematics learning be communicated in words and deeds to all students. (2000b)

### **Reform Mathematics Education in Practice**

Constructivist-influenced classrooms differ from traditional classrooms in learning goals, the preparation and role of the teacher, the expectations of the student, the depth and focus of the engagement with mathematical concepts, the relationship between students, and the use of time. Understanding requires meaning. Meaning involves linking concepts to other knowledge. It also involves viewing concepts as constructions that can do something for the learner and can be applied to learn something new.

According to Germain-McCarthy (2001), exemplary teachers whose practice is based on current mathematics professional standards such as those offered by the NCTM:

- ♦ Engage students in challenging, mathematically appropriate tasks that make sense to students.
- ♦ Create a classroom atmosphere conducive to discourse that encourages students' alternative conjectures, approaches, and explanations.
- ♦ Use appropriate tools, cooperative group work, and individual instruction to accommodate students with different learning styles.
- ♦ Use alternative assessment methods to assess students and guide their instruction.
- ♦ Collaborate with colleagues and pursue other professional development activities to support or improve their practice. (2001, p. 22)

### **Practice Modified: Complexities of High-Poverty Teaching, According to the Research Literature**

It is certainly a fiction that in an earlier time teachers were entirely in charge of how and what they taught. But it is undeniable that teachers today work in a complex field of competing requirements, conflicting frameworks of rewards and sanctions, alternate epistemological realities, and ambiguity about who is served by varying measures of success. The first part of this chapter reviewed selected works that established the close connection between socioeconomic inequality and educational outcomes. In this section literature will be reviewed that identifies

specific factors that influence teacher practice in low-income or high-poverty contexts. These factors do not determine what teachers do; teachers negotiate, innovate, and resist. But they are elements that give teachers' practice its uniquely honed, strategic, and personal character. Because much of the interest in teacher practice concerns their pivotal role in implementing reforms, research is frequently concerned with reasons why reforms are not fully implemented or are not completely successful.

Commonly-listed complexities for why reform practices are not always applied in high-poverty contexts as they were originally intended include: students are inadequately prepared; students prefer direct instructional styles; poverty, racism, and trauma negatively impact the learning environment; behavior management problems affect the type of instruction that can take place; the school culture undermines the climate the teacher hopes to create in the classroom; and high-stakes testing in a high-poverty context undermines higher-order learning and intensifies under achievement. The examples below shed light on the discourse surrounding these complexities and provide insight into how some teachers respond.

### **Students Are Inadequately Prepared: Meaning, Remediation, Acceleration**

What do teachers do when students come to high school with third grade math skills but the lowest level of math the high school is allowed to offer is pre-Algebra? ...or when their classes are more than the average mixed-ability?

According to a study by Kevin Welner (1999), when teachers became frustrated with

mixed learning abilities and discipline, they “felt they had insufficient time, resources, skills, support, and voice....[They] wanted to do well by their students...and feeling unable to challenge the diverse group of students, most of these frustrated teachers simply targeted their instruction to the perceived middle or lower end of the class” (pp. 202-203). Others modified the ideal reform practices by reducing the complexity and challenge of student activities, setting students up so that they quickly discover the “right” idea or answer, rely less on collaborative mixed-ability groups because of behavior management issues, and plan their lessons backwards from assessments (Ross, McDougall, Hogaboam-Gray, & LeSage, 2003, p. 358). On the other hand, Michael Knapp and Patrick Shields (1995) show evidence that “meaning-oriented practices work at least as well for low-performing students as for high-performing students” challenging the “myth that, because of their presumed or apparent deficiencies in relevant skills, children in high-poverty classrooms should not engage in academically challenging work until they are ‘ready’” (pp. 6-7).

One of the most common strategies schools and teachers use to deal with inadequately prepared students has been remediation, i.e. a focus on the sequential attainment of basic skills the student is missing. Remediation is problematic for teachers as well as students because students are usually aware of the social stigma and social sorting that it represents, it usually increases rather than decreases student differences, and the focus on rote memorization of procedures and repetitive drills can create a toxic environment. Alternatively, accelerated approaches,



instead of maintaining the achievement gap, attempt to close it. Students are moved through curriculum at a quicker rate and basic skills are embedded in a more challenging and enriched curriculum. According to Henry Levin (2007), “the best accelerated classrooms...look no different than the best gifted and talented classrooms in traditional schools” (p. 1414).

### **Students Prefer “Direct Instructional” Styles: Culture and Code-Switching**

How do teachers respond when students are frustrated with the move from direct to reform teaching? If low-income students are more likely than higher income students to have had traditional direct mathematics instruction (e.g., following procedures without conceptual framing, de-emphasis on communication and problem-solving), how can a teacher expect to change the culture? Lubienski (2000) implemented a reform-oriented problem-solving approach in a mathematics class that included students from diverse socioeconomic backgrounds. She found that:

. . . in contrast with the reformers’ rhetoric of ‘mathematical empowerment,’ some of my students reacted to the more open, challenging mathematics problems by becoming overly frustrated and feeling increasingly mathematically disempowered. The lower SES [socioeconomic status] students, particularly the females, seemed to internalize their struggles and ‘shut down,’ preferring a more traditional, directive role from the teacher and text. These students longed to return to the days in which they could see

more direct results for their efforts (e.g., 48 out of 50 correct on the day's worksheet). (p. 476)

Some students who had performed at the top of the class when traditional methods were used were now struggling with the reform curriculum. Are reform methods not appropriate for working class or lower achieving students?<sup>46</sup> The problem with this type of conclusion is that it could lead to an endorsement of a “poverty pedagogy.” (See also Berry (2003), Lee (2003), and Knapp and Shields (1995).) Lubienski believes lower-achieving students have the most to gain from reform pedagogy, but concludes that there needs to be further guidance in how to modify the curriculum or strategies to accommodate students' learning needs. She recommends: providing the students with cross-cultural training into the new classroom culture; closely monitoring whether students have derived the intended mathematics from a problem exploration; making problems either relevant to students' lives or abstract enough so they are not based on cultural knowledge to which the students do not have access; and providing supplementary, between-class support for students who need it (Lubienski, 2004).

Lisa Delpit (1995) introduces concepts of unequal power, explicitly- and implicitly-expressed authority models, and code switching into the discussion of differing instructional styles preferred by students. She presents the problem by

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<sup>46</sup> According to Haberman, beneath the façade of the urban authoritarian teacher in control: “...is another, more powerful level on which students actually control, manage, and shape the behavior of their teachers. Students reward teachers by complying. They punish by resisting. In this way students mislead teachers into believing that some things ‘work’ while other things do not. By this dynamic, urban children and youth effectively negate the values promoted in their teachers' teacher education and undermine the nonauthoritarian predispositions that led their teachers to enter the field” (1991, p. 292).

sharing her experience teaching reading to young students in Philadelphia. She noted a few of the other teachers, black and mostly older, were traditional in their teaching (i.e., did not employ reform teaching strategies). Delpit, however, employed reform-type methods:

. . . I was doing what I had learned, and it worked. Well at least it worked for some of the children....My white students zoomed ahead. They worked hard at the learning stations. They did amazing things with books and writing. My black students played the games; they learned how to weave; and they threw the books around the learning stations. They practiced karate moves on the new carpets. Some of them even learned how to read, but none of them as quickly as my white students. I was doing the same thing for all my kids – what was the problem? (Delpit, 1995, p. 13)

Over the six years she taught in Philadelphia, her teaching moved from a reform-like writing process approach to practice that looked more like that of the traditional (direct instruction) black teachers.

My students practiced handwriting; I wrote on the board; I got some tables to replace some of the thrown-out desks. Each year my teaching moved farther away from what I had learned, even though in many ways I still identified myself as an open-classroom teacher. As my classroom became more ‘traditional,’ however, it seemed that my black students steadily improved in their reading and writing. But they still lagged behind. It hurt that I was moving away from what I had learned... (Delpit, 1995, p. 14)

Delpit notes that there is a difference in student and teacher cultures in how authority is expressed. In a middle-class liberal teacher's culture direct expressions of authority and power are believed to disempower students (p. 32). (These teachers are also less likely to recognize their power.) Yet, for many black students who are accustomed to explicitly-expressed authority in the home, such understated implicit directives such as, "Would you like to sit down now?" are not understood as orders.<sup>47</sup> Delpit argues that teaching students without giving them the tools to interpret the underlying codes prevents students from learning at the same rate that students from the dominant classes are able to do. In this regard she would agree with Bourdieu that a student's non-dominant cultural *habitus* can deny the student access to the dominant culture school knowledge. However, she would disagree with Bourdieu's pessimism that students cannot overcome the limitations of their *habitus* and offers examples of people who, "given the proper support, can 'make it' in culturally alien environments...[and that] teachers *can* make a difference if they are willing to make that commitment" (Delpit, 1995, p. 159).

Delpit also relates the discussion of access to the dominant education to what the purpose and function of education should be – the tension between constructivist and objectivist orientations:

Many liberal educators hold that the primary goal for education is for children to become autonomous, to develop fully who they are in the

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<sup>47</sup> According to Delpit (1995): "Black children expect an authority figure to act with authority. When the teacher instead acts as a 'chum,' the message sent is that this adult has no authority, and the children react accordingly....Many people of color expect authority to be earned by personal efforts and exhibited by personal characteristics....'the authoritative person gets to be a teacher because she is authoritative'" (p. 35).

classroom setting without having arbitrary, outside standards forced upon them. This is very reasonable goal for people whose children are already participants in the culture of power and who have already internalized its codes....But parents who don't function within that culture often want something...more. They want to ensure that the school provides their children with discourse patterns, interactional styles, and spoken and written language codes that will allow them success in the larger society. (1995, pp. 28-29)

Students need training in code-switching, something akin to learning a second language – they “must be *taught* codes needed to participate fully in the mainstream of American life” in a way that builds on their “ability to discern and identify different codes in different settings” (1995, p. 48).

Germain-McCarthy and Owens (2005) also consider the problem of whether reform teaching, also known as standards based strategies (SBS), is as effective for low-income and disadvantaged students as it is for middle-class students. They review the research and conclude that sensitivity to the experiences and cultural understandings of students is essential to assuring students equity in access to these higher order learning opportunities. When some students benefit more from a curriculum or a pedagogical practice than others it may be related to cultural and class-based assumptions embedded in the practice. This accelerates the learning of some students while others fall behind. The authors suggest that students be taught the social and discourse skills that are assumed by middle-class school

culture but that differ from many students' cultural experiences. Skills useful for standards based teaching include: to explain and justify, collaborate in groups, take notes during discussions, make and test conjectures by designing a test and collecting data, and apply multiple strategies to open-ended problems (p. 26). They also recommend motivating and engaging students by relating curricula to students' interests and experiences (p. 25). Finally, when students already lack basic skills, Germain-McCarthy and Owens recommend accelerating the students, not through low-level remedial instruction, but "within the context of critical and creative thinking" (pp. 25, 47).

Like Delpit, Germain-McCarthy, and Owens, Gloria Ladson-Billings considers culture an important component of effective teaching for all students. Not only does she disagree with cultural deficit views that assume some students have (dominant) culture and others lack it, she believes such pedagogy of poverty views are powerful enough to undermine educational reforms. She argues that all students need to develop cultural competence in at least two cultures. For some students becoming familiar with another culture could involve learning Spanish and becoming comfortable in cultural settings other than their own. For others cultural competence may mean learning when and how to use formal English (code-switch) and how to negotiate dominant cultural contexts (1995; 2013). But cultural competency alone will not transform the educational experience. She also argues for: a) an emphasis on student learning that challenges minds and promotes transferable understanding (which is not the same as the type of instruction that

produces higher test scores but is actually “anti-intellectual”); and b) developing critical thinking abilities and social political consciousness in students that connect what students are learning to problems in their communities and the larger society (1995; 2013).

### **Poverty, Racism, and Trauma Negatively Impact the Learning Environment**

Richard Kitchen believes that high-poverty schools have unique problems and little research has looked at the barriers teachers encounter in trying to implement change (2002, p. 1). He criticizes reform documents: “Seldom do these documents acknowledge the sociopolitical contexts in which teachers labor nor are specific approaches offered to teachers to support *all* students, particularly diverse students from high-poverty communities, learn challenging mathematical content” (2002, p. 1). Kitchen interviewed teachers of low-income students in New Mexico (which, along with Louisiana and Mississippi, are the states with highest poverty rates) and found their major problems lay in an “overwhelming workload,” inconsistency in work conditions, and student persistence (2002, pp. 3, 4).

Leah McCoy (2006) investigated the teaching methods of teachers of minority and low-income students in rural Mississippi and Louisiana public schools.<sup>48</sup> She concluded that major changes will only occur when the economic issues that the communities are suffering from are addressed. In these small rural communities the teachers attributed school problems to the communities’ problems: non-living wages, rundown homes, closed businesses, youth who are bored and listless,

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<sup>48</sup> McCoy’s study included one town that was listed as the “poorest place in America” in the 1990 census (2006, p. 752).

churches that are functioning, nearby prisons, thriving illegal economy (crime and drugs providing one of few means of making money), and frustration and hopelessness expressed in criminal behavior (2006, p. 752). According to McCoy, “Community culture has a profound effect on the culture and the success of schools” – the environment produces children who come to school uninterested, without focus, and seeing little value in succeeding in school (2006, p. 753).

Race plays an important part in the situation. When the 1964 Civil Rights Act attempted to force integration by cutting off money to schools that refused to comply, private academies were created for white students leaving black students to attend very poor tax-funded public schools (2006, p. 753). Race influenced relations between teachers: white teachers reported they didn’t collaborate with black teachers because they felt they were the “wrong color;” black teachers reported that white teachers “just don’t understand these children like....[they] do” (2006, p. 754).

Teachers agreed that students had no morals, were apathetic, their parents were uninvolved, and were not well-behaved or cooperative. When asked about qualities they liked to see in students, teachers listed well-behaved and compliant but did not mention academically engaged and achieving (2006, p. 755). They did not attribute low achievement to inherent lack of ability but to personal and social factors: unstable home lives, children as parents, absent parents (incarcerated), grandparents raising children but unable to supervise them, parents uninvolved with students’ studies, or parents with low expectations of success for their children or themselves. Some teachers felt the solution was to raise students’ self-esteem,



but one group felt esteem should be connected to raised expectations and helping students meet them, while other teachers felt it should be built by discussions of dignity, modeling respect, showing warmth, and giving hugs (2006, p. 755).

Concerning teacher practices, some of the teachers “reported that they knew current teaching methods, such as cooperative learning and constructivist teaching, but most chose not to implement these techniques. Their classes were traditional, and they often used lecture because it was ‘easier’ than preparing more innovative hands-on lessons” (2006, p. 759). McCoy found many teachers felt unappreciated and were apathetic. Their poverty-level wages forced most to hold several jobs, which further decreased their energy left for teaching. McCoy concludes that the United States cannot hope to address problems in the schools without tackling the root of the problem: poverty and an economically inequitable society. She also contributes to discourse on improving teacher education and practices that promote mathematics learning.

Other studies connect the experience of racism and the effects of poverty, violence, and trauma with students’ underachievement in schools. Michael Greene (1993) looked at the exposure to violence of urban youth and found that, “...growing up poor in urban America exposes children and adolescents, as well as their parents and guardians, to a tremendous degree of violence” (1993, p. 108). In some urban areas as many as a quarter of the youth have seen someone killed (often someone they knew), a third of second and third graders have seen a person shot, over a third of the same group had seen someone stabbed, and over 80% have seen

someone beaten up. Homicide has been a major cause of death of youth from 10 to 19. This same age range has also experienced a disproportionate number of rapes and assaults.

Greene also provides anecdotal evidence of the impact of violence: day care centers in housing projects unable to get milk supplies or other services because delivery people have been held up, children observed “playing the game of ‘funeral,’ imitating the most common public ceremony they know,”<sup>49</sup> high incidence of on the job injuries of caseworkers, and suicide attempts by youth deliberately walking through gunfire (Greene, 1993, p. 108). He notes that “teams of psychologists are brought into communities in response to cases of single, obviously traumatic, mass murders,” but that there needs to be more ongoing support of youth for whom violence is a daily reality (Greene, 1993, p. 109).

Student’s responses to the experiences of violence and trauma include:

a) Rage:

Young people growing up in poverty and around violence are very angry about what feels like everyone’s inattention to their plight. Even though most habituate to their surroundings, they remain aware that violence can erupt around them at any time. It leaves them with a constant edginess. They know that they can be shot or stabbed if they inadvertently ‘look at a guy’s girl in the wrong way’....They use drugs or become involved in gangs or crews. Some turn their anger inward and become depressed. Some are able to survive into productive and fulfilling lives... (Greene, 1993, p. 109)

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<sup>49</sup> Here, Greene is referencing the work by Garbarino, Kostelny, and Dubrow, (1991).

b) Distrust:

. . . trust derives from supportive, intimate relationships with parents, peers, and other adults. And...chronic, cumulative trauma – either within the family or in the neighborhood – impairs the establishment of interpersonal trust....the most common characteristic of youth exposed to poverty and violence is the near-absence of any ongoing supportive intimate relationships....Not infrequently, youth lose a parent or friend to the violence of the streets or the rampage of AIDS. Consequently, the youth often become what I have termed *crusted over*. They do not let people inside nor do they give expression to their childhood... (Greene, 1993, pp. 109-110)

c) Hopelessness:

Teenagers growing up in poverty and around violence frequently question whether they will survive into adulthood....When young people do express their hopes about future careers, they are typically...unaware of the process of achieving professional status....parents and teachers always focused on their failures....[Few adults have supported their efforts towards goals]....There are few if any positive role models....Parents...often lose their sway when their children enter adolescence. Adolescents see that their mothers are stuck in the mire of poverty. (Greene, 1993, pp. 110-111)

Trauma associated with poverty, racism, and violence impacts students in schools, but the sources of these behaviors associated with such experiences are often not recognized or acknowledged. Such an understanding might move

administrative and teacher responses more toward intervention than “demonization” and eventual criminalization.

### **Behavior Management Problems Affect the Type of Instruction That Can Take Place**

Behavior issues are frequently cited by teachers as reasons for choosing direct rather than reform-type instructional practices. According to David Harris and Joseph Amprey (1982), “Black students, particularly black males, are often considered unreachable and generally incompetent,” hyperactive, uncooperative, and lazy (p. 216).<sup>50</sup> Others report that many “teachers are afraid of the African American students,” which frequently led to teachers being unable to teach (Welner, 1999, pp. 202-203). Relevant here are Delpit’s insights, mentioned above, concerning the issue of teachers and students operating from different cultural codes and how this mismatch impacts teachers’ ability to effectively communicate behavioral expectations. Students who do not understand teachers’ directives as orders can be labeled as troublemakers at an early age, thus beginning students on a less successful school trajectory.

Delpit (2012) argues that students tend to internalize incompetent views of themselves and their behavioral responses are misinterpreted by teachers:

When students doubt their own competence, they typically respond with two behaviors: they either hide (hoods over faces, heads on desks) and try to become invisible, or they act out to prevent a scenario unfolding in which they will not be able to perform and will once again be proved ‘less than.’

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<sup>50</sup> Harris and Amprey are referring to Lightfoot’s 1976 study that also showed white males “as ‘aggressive, and dominant, less likely to conform’” (1982, p. 216).

Teachers frequently misinterpret both of these behaviors, usually inferring that the student is unmotivated, uninterested, or behavior disordered. In one classroom I visited, a young third-grade boy was sitting in the back of the class in a corner while the rest of the class worked on a worksheet. The teacher said it was because of misbehavior, but when I asked the boy why he was sitting in the back by himself, he said, 'Because I'm dumb.' Although the teacher had interpreted the boy's behavior as merely 'bad,' for the child, his misbehavior was in some way linked to his internalized belief in his 'dumbness.' (Delpit, 2012, p. 14)

Eventually, this type of relation intensifies and leads to students checking themselves out of the educational system:

In a society that has, in general, stigmatized black males, many of our young men have internalized all of the negative stereotypes. Thus, they are involved in a perfect catch-22. Because of societal stereotypes affecting African American boys, teachers frequently negatively react to normal young black boy behavior. Constant reprimands instill a sense of being 'less than' men from a very early age. This perception causes many black males to hide or to act out to protect their sense of self. Their behaviors then reinforce the view of their teachers and others, causing the adults around them to further criticize and marginalize them within the school. This in turn causes the young men to exhibit even more disidentification with school, leading to even more negative attitudes from teachers, more suspensions and expulsions, and

so on. Many black males tend to be so alienated from school that they do not feel that the teachers or the setting mean them any good. (Delpit, 2012, pp. 15-16)

Early decisions about students' futures based on behavior and culture can have a long-term impact in schools (most United States schools) where academic and career tracking (recommended by the administrative progressives) is in place. Stiff (2009)<sup>51</sup> conducted research in North Carolina 5<sup>th</sup> grade mathematics classrooms where the teacher's recommendation at the end of the school year determines which middle school track the student will follow (remediation or pre-Algebra track). Teacher recommendations are based only in part on student's score on the End of Grade test (EOG). Other criteria are subjective, based on assumptions about culture, race and ethnicity, socioeconomic class, and behavior.

Stiff identified 103 rising 6<sup>th</sup> graders whose scores indicated they could be in the pre-Algebra track but who had been placed by their 5<sup>th</sup> grade teachers into the remedial middle school track. As part of Stiff's research, these students were moved into the pre-Algebra track instead. He found that 50% of this group went on to make As, 28% had Bs, and the behavior problems decreased significantly. As a consequence, Stiff recommends: offer rigorous math courses, examine school placement policies, eliminate those policies that hold students back, give students the best you have to offer (not remediation over and over), and create objective

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<sup>51</sup> See also a later article: Faulkner, Stiff, Marshall, Nietfeld, & Crossland (2014) that looks at Black and White student placement at the end of 5<sup>th</sup> grade and follows the students longitudinally to their mathematics level in 8<sup>th</sup> grade.

achievement criteria (as opposed to subjective cultural and behavioral criteria) for placement decisions (2009).

### **The School Culture Undermines the Climate the Teacher Hopes to Create in the Classroom**

School culture is an important player in educational outcomes and the success of reforms.<sup>52</sup> It can either perpetuate the “status quo” and maintain inequalities or promote change (Cornbleth, 2010, p. 296). Catherine Cornbleth (2010) researched the culture of a school that had had a recent influx of students from diverse economic backgrounds. She found that the school culture was dichotomous (“the nuance valued in academe was scarce”) and was divided into a negative teacher view and a positive teacher view:

[They] have given up on their poor and working class students as hopeless and unteachable and on the school and district administration as unsupportive, even antiteacher. They blame their students (and parents) for lack of academic achievement or behavioral problems, along with ‘the system,’ apparently referring both to the school system and society at large...are weary and feel unappreciated while seeing themselves as deserving of support and recognition for their efforts to maintain behavioral and academic standards. Their resentment, pessimism, and low expectations

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<sup>52</sup> According to Smyth & Hattam (2002): “School cultures are produced through a complex interweaving of sociocultural, political, economic and organizational factors, together with a constellation of class/race/gender factors. School cultures are not the prerogative or domain of any one group – teachers, students, parents, politicians, the business community or policy-makers. Rather, school cultures emerge out of and are continually constructed and reconstructed through the ongoing struggles between and among each of these groups as they vie to have their particular view of schooling represented. School culture, therefore, looks quite different depending upon whose vantage point is taken. (p. 377)

for students, which may be self-fulfilling, sustain on institutional *habitus* of self-righteous negativism... (p. 288)

They say it's a good school, teachers care about their students (like a family), and that there is only a small group of students whose behavior is challenging....These teachers connect with their students, their lessons are engaging, their behavior problems are manageable, students are achieving, and they are hopeful (pp. 292-293).

Cornbleth observed that the school culture was communicated to prospective teachers through: posters on achievement that were ignored; types of stories told in the teachers' lounge; the rules and regulations and current norms; advice on how things are done here; stress on test preparation; lack of texts that would help students with homework or study for tests; and outside reports on violence, low test scores, and dropout rates (p. 286).

Robert Hattam (1998) describes school culture as an "interpretive community" that encourages or constrains teachers in how they interpret what they see and experience, what they do and how seriously they take reform initiatives (p. 6). Hattam observes that a school culture, often described as "the way we do things around here," "is often sustained in schools by a group of teachers who operate as commissars of ideology" (p. 4).

Levin (2007) identifies key areas of some school cultures that are problematic: a) School expectations differ by income-level of the school's population, e.g., in low-income schools the school culture stresses following directions,



discipline, and the belief that the experiences children are exposed to must be “circumscribed because of concerns that they will not behave appropriately if given challenging or enriching experiences or provided with too much independence” (p. 1403); b) Some suggest that a student oppositional culture develops, “that minority students, usually high school students, believe that the notion of achieving economic success is a cruel hoax....[they] see in their community the results of years of inequity, and they develop an opposition to all avenues to mainstream success” (pp. 1403-1404); c) Low expectation schools also have low expectations of the parents; d) Teachers are “reluctant to try new ideas because they are afraid that the ideas will not work with ‘our children’” (p. 1404); and e) School cultures share a common view on what types of practices are appropriate, e.g., in low expectation schools, it is rote memorization and basic skills (p. 1405).

It was previously noted that teachers often enter the teaching profession believing they will be change agents and make a difference in their students' lives. What can move them from heroes and heroines to suffering victims? Hattam suggests that the devolution of the profession from teachers participating in reform strategizing and planning, to teachers being excluded from the formulation and decision-making process is one factor: “Educational policy development is now conducted in spaces in which most of us are not welcome....For teachers, school reform is about dealing with chronic work overload, increased surveillance and handling the ‘emotional labour’” (1998, p. 8). The “significant division between the school and central education bureaucracies” parallels a sharp contrast between

educational rationality and the rationality of market-driven educational policy (p. 9). Hattam calls for extensive teacher involvement in the initial developmental stages of reform planning, not just in carrying out already-scripted reform procedures. Finally, Hattam agrees with Kenneth Zeichner in hoping policy-makers will realize “the futility of attempting to improve school primarily through greater external prescription of school processes and outcomes” (Zeichner, 1993, p. 5).

### **Segregation by Socioeconomic Class and Achievement**

Segregation (and resegregation) of schools by socioeconomic class, like tracking, can boost and accelerate achievement for some students and under-challenge and concentrate the effects of high poverty for others. There has been a great deal of interest in data on student achievement resulting from the desegregating effects of the “natural experiment” of Katrina student migrations out of Orleans Parish’s high-poverty and low performing schools.

Many observers expected evacuees to do poorly in schools because of the traumatic impact of dislocation, loss in family and community, interrupted schooling, and temporary living conditions. Although evacuee students were all affected, research shows their experiences differed. Thousands of students did not attend school at all. Others, particularly middle-income suburban evacuees who later returned to their prior schools, were negatively affected as reflected in their lower achievement scores. For still others, negative effects of Katrina dislocation were paired with accelerated learning in new higher income schools. A RAND study using Louisiana Department of Education data reported:

Analyses of achievement results for students who enrolled in Louisiana public schools pre- and post-hurricanes [Katrina and Rita] suggest that negative effects of displacement on achievement were small overall, but most pronounced among students who changed schools as a result of the hurricanes and did not return to their original school for at least the duration of the 2005-2006 academic year. These negative achievement effects appear to have been mitigated by students' tendency to enroll in schools with higher student performance than their original schools. (Pane, McCaffrey, Kalra, & Zhou, 2008, p. 55)<sup>53</sup>

A study by the Texas Education Agency (2010) confirmed that, for many Orleans students who enrolled in higher income and higher achieving schools, the disruptive effects of dislocation and relocation seem to have been offset by other factors. Their four-year study focused on Katrina students who evacuated to Texas and then stayed.<sup>54</sup> They found that, "Katrina students were more likely to be African American and economically disadvantaged" (p. 3). When the Katrina student sample was matched with a sample of non-evacuees with similar demographic characteristics, the Katrina students made much greater gains on the Texas Assessment of Knowledge and Skills (TAKS) over the course of the four-year

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<sup>53</sup> See also Pane, McCaffrey, Tharp-Taylor, Asmus, and Stokes (2006a) and pane, Tharp-Taylor, Asmus, and Stokes, 2006b).

<sup>54</sup> The Texas Education Agency (2010) study reported that they looked at Katrina students as a group but not at a school level: "The study did not evaluate students in their individual schools given there were too few students at each school to draw legitimate conclusions at the school level." Imberman, et al, (2009) similarly reported that evacuees were not assigned to all-evacuee classes: "...when we looked at the distribution of the number of evacuees by class in Houston, where we have classroom level data, virtually all classrooms with evacuees also had native students and the vast majority of classrooms with evacuees had between one and four evacuees" (p. 35).

study period. They also compared the sample of Katrina students to all Texas test takers and found that, although the beginning achievement levels of the evacuees in 2006 (as measured by percent passing) were lower than the Texas total percent of students passing, their annual achievement gains were much greater (see Table 9).

**Table 9**  
**Katrina Student Gains (Percent Passing), TAKS Annual Assessment, 2006-2009**

	<b>Year</b>	<b>Grade</b>	<b>Katrina Evacuees</b>	<b>Matched Sample</b>	<b>All Texas Students</b>
<b>Mathematics</b>	2006	Third	67%	67%	82%
	2007	Fourth	79%	75%	86%
	2008	Fifth	80%	76%	83%
	2009	Sixth	75%	68%	80%
<b>Reading</b>	2006	Third	80%	80%	89%
	2007	Fourth	76%	73%	84%
	2008	Fifth	82%	77%	83%
	2009	Sixth	93%	86%	91%

Source: Texas Education Agency. (2010). *An Analysis of Academic Performance of Students Affected by Hurricane Katrina*.

Gains in mathematics were particularly evident between the first and second years of the study (Texas Education Agency, 2010, p. 4).

Bruce Sacerdote (2008) compared low-income Orleans students' academic recovery in Texas and other parts of Louisiana with that of suburban evacuees who evacuated from Hurricanes Katrina and Rita but later returned to their schools. He found a difference in their later school performance:

Conversely Rita evacuees from Lake Charles and Katrina evacuees from Jefferson experience test score drops that persist into 2007 and show signs of recovery by 2008. For example, looking at fourth graders from 2005, Katrina

evacuees not from Orleans scored .11 standard deviations worse in math in 2006 relative to baseline. They scored .17 standard deviations worse in 2007, and .07 standard deviations worse in 2008. (Sacerdote, 2008, p. 33)

Sacerdote speculates this could be a result of the fact that the suburban evacuees did not enroll in higher performing schools as did the Orleans Parish students, or that there is an ongoing “peer effect” (peer influence) resulting from a greater number of Orleans Parish students now attending the suburban schools.<sup>55</sup>

Although economic studies of peer effects demonstrate the positive impact on achievement when Orleans’ disproportionately lower income students enrolled in higher performing schools,<sup>56</sup> the mechanism of this increased achievement – inside the black box of the classroom – is unclear. Jane Cooley (2010) suggests the peer effect explanation of higher achievement (that lower achieving students will achieve at higher levels when attending schools with higher achieving students) may not take into account student behavior that can counter the effect. This may include students choosing to associate with like-achieving students at their school, leading

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<sup>55</sup> Although integration of students from different economic and preparation levels greatly benefited lower-income students, it made it difficult for teachers to accelerate the better-prepared students. The value of acceleration would be in the elimination of vast achievement gaps that have been produced through remediation or high-poverty type educational practices. Once initial achievement gaps have been narrowed and learning gains are maintained, it would be expected that teachers would not experience such wide problematic gaps as were reported by the teachers in this study.

<sup>56</sup> Although the focus in the current study has been on the increased achievement of low socioeconomic Katrina students, Imberman, Kugler, and Sacerdote (2009) have also looked at the impact of the evacuees on native (non-evacuee) students in Louisiana and in Texas. They found that both high-performing and low-performing native students benefited from having higher performing evacuees in their classes. High achieving natives were negatively impacted by low performing evacuees and low achieving natives were “hurt by low achieving evacuees in terms of their own test scores, though this effect is muted in Louisiana” (p. 36). They conclude that, “evacuees of various achievement and behavior levels affect natives differently,” which supports their thesis that peer effects drive their results (Imberman, et al, 2009, pp. 36-37). See also Imberman, Kugler, and Sacerdote, 2012).

to results similar to those produced by school tracking practices (homogeneous grouping within a heterogeneous school context). Thus, simply having high-poverty and middle-income students in the same school cannot fully explain the increases in achievement. How are students engaged with the curriculum and with each other in the classroom? How do teachers help construct these transformative results?

### **High-Stakes Testing in a High-poverty Context Undermines Higher-Order Learning and Intensifies Under Achievement**

If high-stakes testing has greatly altered the United States school environments in which teachers work in many ways, it has had an even more profound effect on high-poverty schools. It impacts who teachers teach, what type of learning they promote, and what curriculum points they cover or deemphasized. Finally, high-stakes testing in combination with growing resegregation of students by income and race has created a “perfect storm,” already well in progress.

### **Who Teachers Teach – The “Bubble Group”**

How high-stakes testing is structured incentivizes certain types of responses. Where the focus is on the number of students who pass the test, teachers spend more time with the “bubble group” – the students who are on the borderline of passing a targeted score level and are likely to pass if additional teacher time is focused on them. For example, if a teacher previously spent twenty minutes with each of three ability groups, with high-stakes testing he or she may spend thirty minutes with the bubble group and fifteen minutes with the higher and lower groups (Holmes, 2001). Classroom instruction is also usually aimed at the bubble

group level as well. The higher and lower groups are therefore neglected and their progress flat lines.

Schools also learn how to “game” the test by getting rid of students likely to lower school pass rates. In the first weeks of school counselors are instructed to find grounds for transferring certain students to other schools before the date upon which the names of students who the school will be evaluated upon is fixed. Some schools expel low-performing students or refuse to enroll them (Ravitch, 2010). Similarly, when teachers’ jobs are on the line based on the percent of their students who pass the tests, they will attempt to move students to other classes in the first week of school so that students who are not likely to pass are not counted against them. Thus, low-achieving students can be seen as a threat by teachers because they represent possible job loss. When opportunities exist, teachers tend to move to higher achieving schools.

Another practice has been the reclassification of students as special education. In Texas, “the numbers of students taking the grade 10 tests who were classified as ‘in special education’ and hence not counted in schools’ accountability ratings nearly doubled between 1994 and 1998” (Haney, 2000, p. 1). This problem is corroborated elsewhere in the country by others, including Ken Jones and Paul Ongtooguk (2002). A related use of test scores has been to make decisions about student tracking.

Low-performing students who are retained, lower-tracked, or expelled do not complete high school. During the 1990s in Texas there was a large increase in

students taking the General Education Development (GED) route rather than attempting to pass the state test. In fact, during this period, “slightly less than 70% of students in Texas actually graduated from high school” (Haney, 2000, p. 1). This allowed Texas test results to show a 20% increase in the percentage passing exit exams.

### **Type of Knowledge and Learning Teachers Teach**

The relationship between knowledge and time is apparent when high-stakes testing is introduced. Previously objectivist and constructivist (reform) forms of knowledge were compared and it was noted that the former was more compatible with a testing environment (Hursh, 2006). Eisenhart and others have documented the tension mathematics teachers often feel between covering content and teaching for conceptual understanding (Eisenhart et al., 1993). Faced with the “need to prepare students for skills-oriented tests, cover the designated skills-oriented curriculum, and provide time for students to practice procedures...[these] commitments of time and energy...came first,” leaving little time to teach for conceptual understanding (Eisenhart et al., 1993, pp. 35-36).

Angela Krebs found that acquisition of reform-based learning occurs over a longer period of time (2003). When learning was measured after three years of use, she found it did result in increased learning of some important NCTM strands (Krebs, 2003). One criticism has been that students will not learn basic skills that are the focus of many tests. Robert Reys, Barbara Reys, Richard Lapan, Gregory Holliday, and Deanna Wasman (2003) found use of a reformed curriculum for at



least two years of middle school did result in equal or higher achievement scores on state-mandated basic skills tests. Finally, researchers, who developed and field-tested NCTM-aligned curricula found that professional development for teachers prior to implementing reform curricula greatly enhanced student learning as measured on the Iowa test (Schoen, Cebulla, Finn, & Fi, 2003). Harold Schoen, Kristin Cebulla, Kelly Finn, and Cos Fi (2003) confirmed this, showing that, without adequate training and support, teachers may espouse Standards-language and think they are teaching in a reformed style but are actually still using traditional methods with a few added small-group and manipulative activities. Similar results were also found by William Firestone, Jan Winter, and John Fitz (2000) when comparing teacher responses to high-stakes testing in England, Wales, Maryland, and Maine. Without investigating teacher logic, however, it is not clear whether teachers do not understand the reform teaching, or whether they are attempting to accommodate the two, sometimes opposing, guidelines for teacher practice: school and state pressures to focus on basic skills and procedures measured on tests on the one hand, and professional mathematics guidelines on the other.

### **Teaching Backwards: Using the Test as Curriculum**

Observers have also noted the tendency for tests to become the curriculum. Teachers will begin with the test and plan instruction backwards. According to the National Council of Teachers of Mathematics, “Just as disturbing as the serious misuse of these tests is the manner in which the content and format of these high-

stakes tests tends to narrow the curriculum and limit instructional approaches. Test results may also be invalidated by teaching so narrowly to the objectives of a particular test that scores are raised without actually improving the broader, often more important, set of academic skills that the test is intended to measure” (NCTM, 2000c).

If the tests greatly influence the direction of the curriculum, the new evidence-based reforms may represent a shift from curriculum being directed by a professional organization (NCTM) to curricular directions being determined by political and profit-based entities. According to Jim Ridgway, Judith Zawojewski, and Mark Hoover (2000), “Examination of commercially available standardized tests showed that none included items appropriate to the measurement of the higher-order thinking goals outlined in the NCTM *Curriculum and Evaluation Standards for School Mathematics* (1989).

### **Negotiating a “Perfect Storm”: Testing and Resegregation**

According to John Boger (2003), public schools in the South are in the midst of what he calls a “perfect storm”: the rapid increase in resegregation<sup>57</sup> and the implementation of accountability systems. Rapid resegregation public schools is occurring due to:

. . . the termination of court-ordered desegregation decrees in many southern school districts; the Fourth Circuit's prohibition on the use of race-conscious student assignment plans; the consequent drift toward assignment policies

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<sup>57</sup> See also: Clotfelter, Ladd, & Vigdor (2002) and Vigdor (2007) on resegregation; Jargowsky (2013) on increases in the concentration of high poverty in neighborhoods; and Rothstein (2013) on the impossibility of narrowing the achievement gap “without integrating...student populations” (p. 40).

that permit greater racial segregation; the certainty that as schools become more segregated, the poverty levels in predominately nonwhite schools will grow steadily; and the evidence that “high-poverty” conditions place children at substantially greater risk of poor academic performance – whatever their personal academic potential – simply because of their attendance at these schools. (Boger, 2003, p. 1375)

The accountability systems intend to evaluate the performance of schools in providing students with a high quality education. However,

. . . when “high-stakes” accountability measures are imposed upon, and interact with, school systems hampered by growing racial segregation, they threaten instead to worsen the plight of schools that are disproportionately filled with nonwhite children from low-income families – as middle-class and white parents, along with better trained, more highly qualified teachers, abandon those schools. In short, the convergence of racial resegregation and statewide, high-stakes accountability measures is likely to increase the racial segregation and economic isolation of some public schools – whose students will disproportionately fail state accountability tests, thereby entrenching broad patterns of grade retention, student demoralization, and teacher flight. (Boger, 2003, pp. 1375-1376)

Douglas Ready and Megan Silander (2009) researched the impact of economic and racial segregation on student learning. They found that resegregated schools had fewer institutional resources to provide to the students, meaning fewer

advanced classes, more courses that focused on rote learning of basic skills, less exposure to higher order learning opportunities, and larger class sizes. There was also a peer effect on learning: White and higher income students had more advantages that prepared them to learn and be motivated to achieve in school; “the impact of peer achievement on student performance is stronger for low-ability compared to high-ability students” (2009, Social & Academic Peer Effects section, para. 2). Neighborhood and family factors were also important:

. . . Schools that serve large proportions of minority and low-income children are more often located in neighborhoods that exhibit increased levels of social disorganization, crime, gang activity, unemployment, and family instability. . . Social problems related to health, substance abuse and teen pregnancy also tend to cluster geographically. . . Children raised in such communities often have reduced access to out-of-school resources and social networks, and are more likely to drop out of school and be unemployed. . . Conversely, proximity to middle-class neighbors is associated with improved student outcomes, even after accounting for the student’s own family background. . . racially isolated neighborhoods with high concentrations of poverty often lack other resources—such as playgrounds, health and child care facilities, and after-school programs—that positively influence child development. In sum, neighborhood characteristics have serious implications for children’s out-of-school experiences and their opportunities for social and cognitive

development. (Ready & Silander, 2009, Methodological Challenges section, para. 1)

Susan Mayer (2002) warns, “If economic segregation improves the well-being of affluent children, the rich are likely to segregate as they get richer. If they do and the increase in segregation exacerbates the gap in educational attainment between rich and poor children, economic segregation in one generation will contribute to economic inequality in the next generation.” (p. 167).

Resegregated high-poverty “failing schools” place a great deal of pressure on teachers to increase student scores. According to Boger:

. . . to spur teachers to improve the academic performance of their students, the accountability system relies on direct financial incentives, more indirect professional rewards, and the fear of professional failure. The logic, drawn from the world of business, is that teachers can be induced to maximize their professional activity if suitably motivated. The crucial assumption is that most teachers lack the will to excel, rather than the capacity or the means. Very few studies of teacher motivation and competence, however, confirm that key assumption. On the contrary, most teachers appear to be relatively idealistic and highly motivated, even if some lack professional competence in dealing with low-performing children or those from minority or low-income backgrounds. (Boger, 2003, p. 1445)

At the same time that accountability systems place pressure on teachers to turn student scores around, there is little help on how that should happen inside the

classroom. At a time when there is greater need for teacher professionalism to solve these problems, accountability systems have tended to deskill teacher work by almost scripted curriculum, increased monitoring, and extensive external control of teacher practice, especially in high-poverty schools.

### **Summary of Themes Arising from the Theory and Practice Discourses, and Questions They Raise for the Present Study**

Part Two was concerned with the theoretical and practical tools teachers have available to guide their teaching, and some of the complexities of teaching in low-income and high-poverty contexts that may influence teachers' practice. The following themes and unanswered questions have emerged from the review. These questions would benefit from a greater understanding of teachers' thinking, considerations, and logic when solving the problems they encounter.

#### **Theme 1. Teachers Negotiate School Efficiency and Constructivist Pedagogy**

It is not necessarily true that the social efficiency movement has had enduring influence on education. More likely, it is the case that the conditions that made Taylor's views popular in the United States' industrial age have corollaries in today's political and market environment. Thus, many of the features of the social efficiency period have had enduring value to some stakeholders. Enduring characteristics of this management orientation include: a) the central role of the teacher in directing instruction and learning; b) the type and form of content that is being transmitted (bytes) and the nature of its delivery (banking); c) the student's

learning is largely an individual rather than collaborative process; d) the impact of high-stakes testing on curriculum and pedagogy; e) differentiation of students and learning according to students' backgrounds and society's expectations for them; and f) the importance of matching the curriculum and pedagogy to the types of knowledge and socialization needed by employers.

Constructivist-based pedagogy has been promoted in university teacher education programs and through professional reform movements such as the NCTM-supported reforms in mathematics education. Constructivist-based characteristics include: a) a less visible but more strategic role of the teacher who structures a sequence of experiences, explorations, discussions, or investigations that are within students' "range," guides construction of new knowledge, and helps students integrate new and old understandings; b) the knowledge that is constructed is conceptual, relational, and can be meaningfully applied to help solve new problems; c) since knowledge is constructed socially and in community with other thinkers, students collaborate in investigations and drawing conclusions; and d) the starting point of constructivist-based pedagogy is the student and the end point, if there is one, is his or her potential and interests, not pure and simple labor force needs.

While these short synopses of the differences between the two orientations are no doubt exaggerated, it is hoped they will assist in distinguishing differences in teachers' beliefs and practices.

Questions: What role does the teacher assume in the classroom (direct and formal or less visible but strategically structuring)? What type of knowledge is being transmitted (“itemized” or conceptual)? How do teachers believe students learn (individually or collaboratively)? How do teachers feel testing impacts the curriculum? What experiences do teachers have with students being sorted, differentiated, and receiving different types of instruction? How do teachers’ efforts to prepare students for future careers possibly impact differentiation of instruction?

## **Theme 2. Teachers Respond to Complexities of High-Poverty Teaching**

The literature on problems of reform implementation, as well as the literature concerned with solving problems of achievement gaps, identify many complexities teachers encounter in high-poverty contexts. Several that were discussed include: a) school- and teacher-based practices of remediation rather than acceleration; b) student preferences for specific teaching styles, leadership styles, or types of classroom practices; c) understanding student behavior symptomatic of trauma, poverty, or racism; d) behavior management and high-poverty school structure; e) school climate, teacher responsibility, and aspirations; f) homogeneous and heterogeneous segregation of students by track or by school, and g) the toxic mix of high-stakes testing with high-poverty underachievement (who receives priority, shift to test preparation memorization strategies, testing and resegregation).

Questions: Do teachers accelerate or remediate when attempting to resolve gaps in learning? Do students express preferences for particular teaching or



classroom learning styles? How do teachers understand behavior that may be associated with various forms of trauma? What behavior issues do teachers encounter, how do they understand them, and what do they do about them? Do they describe their school climate as supporting achievement, high aspirations, and teacher efficacy? How does high-stakes testing impact their teaching strategies when working with students significantly below grade level?

## **Chapter Conclusion**

At the outset of this chapter it was noted that in the U. S. education is given the primary role of ensuring equal opportunity for its citizens. In Part One the question was asked: to what extent does the dominant educational model play a transformative role in increasing students' life chances or a social reproductive role in preparing students for futures according to the class of their parents? This part looked at structure: broad social-level structures and forces that have resulted in the current system of inequality in education. It also raised the issue agency: that students and teachers should not be seen as over-determined actors but as individuals with creative and culturally transformative potentials. This part also brought to light some of the ways the larger socioeconomic structural forces frame the "field," borrowing a term from Bourdieu, in which students and teachers operate. Several themes and unanswered questions were identified that can best be answered by gaining a better understanding of teachers' logic as they go about negotiating broader demands and their low-income student needs.

While Part One considered issues of structure and agency, Part Two was concerned with theory and practice. It looked more closely at the two opposing educational models – objectivist and constructivist – that were already apparent in Dewey’s time but continue to guide and constrain teaching today. Some of the early underlying values and assumptions of these educational models about knowledge and socioeconomic class were included because they influence how the problem is formulated that theory is intended to solve. These models influence teachers as they interpret, define, and negotiate school policies, testing requirements, time, and resources. They also contribute to the pedagogical “wisdom” teachers construct as they relate educational ideals to the complexities of teaching in low-income and high-poverty situations. Some of these complexities were considered in the final section of Part Two. Several themes and unanswered questions were identified that could be better understood by gaining insight into how teachers decide to modify and adapt their practice.

In sum, this chapter has generated several important questions that can best be answered through gaining greater insight the logic and thinking teachers use as they adapt and modify their practice when teaching low-income and high-poverty students. The unfortunate circumstances of Hurricane Katrina produced a situation where teachers from upper-middle and lower-middle-class schools abruptly absorbed evacuee students, many coming from Orleans Parish’s high-poverty schools and neighborhoods. This study is based on interviews with a number of these teachers. It uses their experiences, thoughts, and reflections to

shed light on the questions generated in this chapter. The next chapter (Chapter Three) outlines the methodology of the study, Chapter Four presents the findings, and Chapter Five discusses the findings in light of the important questions this chapter has raised.

## CHAPTER THREE: METHODOLOGY

### Introduction and Purpose

In the United States, education has been given the role of equalizing opportunity in a democratic society. However challenging or unrealistic this may be, a long sequence of reforms have sought to transform teaching, particularly for low-income students who are most in need of opportunities.

Mathematics teachers of low-income students are often cited for using traditional or direct instructional approaches (also known as “pedagogies of poverty”) (Haberman, 1991; Ladson-Billings, 1997; Welner, 1999; Ross, et al., 2003; for an older opposing view, see Good, 1979). Teachers and their approaches are held by reformers to be in great part responsible for low-income students’ lower achievement levels. Accordingly, much effort and money has been devoted to enlightening teachers and introducing them to alternative pedagogical choices. However, more recent research has shown practices of teachers in low-income contexts to be particularly resistant to change, and some have questioned the appropriateness of reform teaching (e.g., constructivist-based problem-solving and higher order learning) to non-middle-class students (Haberman, 1991; Lubienski, 2000, 2002). As a result, questions have emerged about the real, as opposed to ideal, relationships between pedagogy and class.

This study examines the connection between socioeconomic class and teachers’ mathematics pedagogy. More specifically, it asks what is the dialectic

between teachers' real-world experiences with low-income students and the pedagogical wisdom they construct. A diachronic study of the impact of low socioeconomic class on pedagogy is needed to answer this question. An operative rather than static model of teacher knowledge construction is also implied.

The post-Hurricane Katrina evacuation of New Orleans' low-income public school children and their absorption into lower- and middle-income schools during the 2005-2006 school year provides an excellent opportunity to study the impact of socioeconomic class (teaching low-income students) on existing pedagogy used by middle-class teachers.<sup>58</sup> The study should help us understand how teachers alter their teaching strategies through the problem-solving and dialectical nature of teacher practice when teaching higher poverty students. Do middle-class teachers continue to deliver middle-class pedagogy and curriculum to their low-income students? Or do they move toward remediation rather than acceleration or toward traditional and direct instructional approaches? Although there are many dimensions to the issue of low-income pedagogy, e.g., student dispositions and learning preferences, school and administrative structures, communities of teacher peers, and parental factors, the beginning point of the present study is teachers – their interpretations and assessments of class-related problems and their resulting pedagogical decisions. Ultimately, no program for reform can be implemented

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<sup>58</sup> Prior to Katrina, three out of four public school students in Orleans Parish received free or reduced lunch (a standard though not perfect measure of poverty), 93.5% were Black or African American, and most middle school students attended schools that were eligible for state takeover. Orleans Parish contained Louisiana's worst-performing schools (LA Department of Education). Four out of ten adults in one section of Orleans Parish (the Lower Ninth Ward) had neither a high school diploma nor a GED (U.S. Census Bureau).

without first having a sound basis in teachers' experience or relating to what teachers believe to be true or real.

## **Context**

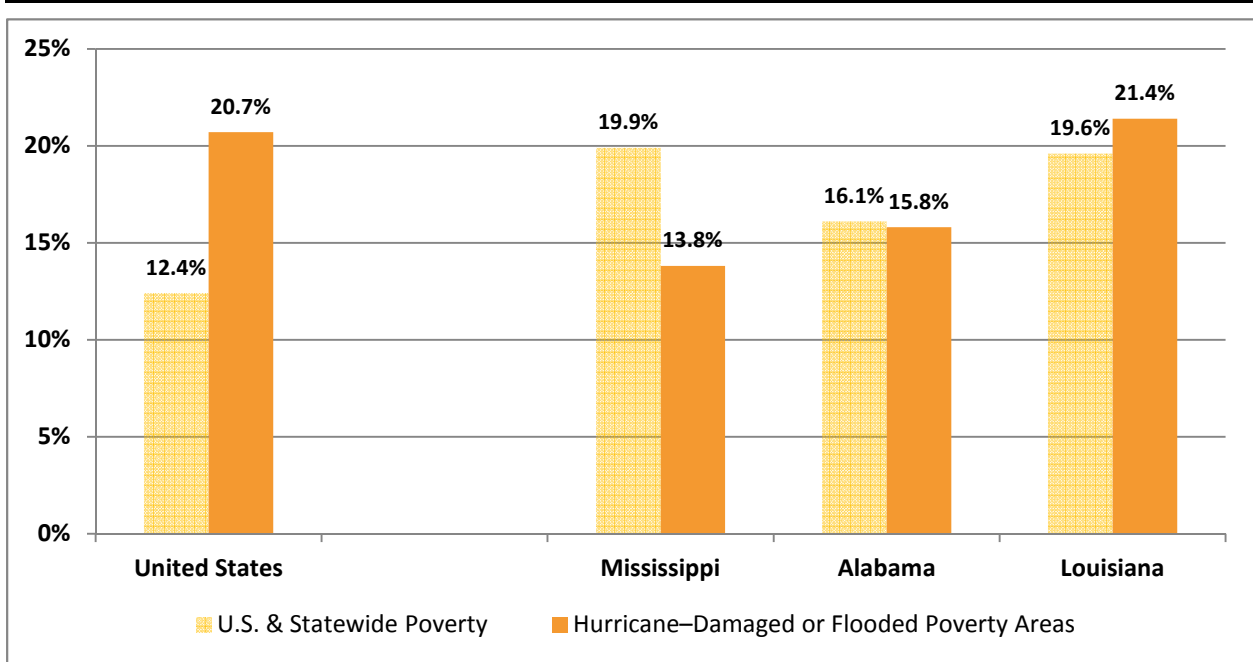
In 2005 Hurricane Katrina struck three of the United States' poorest states: Louisiana, Mississippi, and Alabama. In the 2000 census Mississippi's and Louisiana's poverty rates were second only to Washington, D. C. and Alabama placed sixth. However, the regions of the three states affected by Katrina had still higher concentrations of people living in poverty: 21.4% (over one-fifth) of the people in Louisiana's storm-damaged parishes (see Figure 1) (Gabe, Falk, McCarty, & Mason, 2005, pp. 14-15).<sup>59</sup>

The storm also disproportionately affected minorities. Of the 310,000 African Americans affected by Katrina in all three states (44% of all storm victims), African Americans accounted for 73% of the people in Orleans parish affected by the storm (Gabe, et al., 2005, p. 16). Over one-third (34.0%) of African Americans in Orleans Parish who were displaced were classified as below poverty level in the 2000 census (Gabe, et al., 2005, p. 17).

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<sup>59</sup> The U. S. Census in 2004 defined poverty as family incomes below: \$9,645 (one person), \$12,334 (two people), \$19,307 (four people) (Gabe, et al., 2005, p 15).

**Figure 1**  
**Poverty Rates for Hurricane Katrina Flood/Storm-Damaged Areas**  
**The U.S., Louisiana, Mississippi, and Alabama**  
**(Based on 2000 Census Data)**

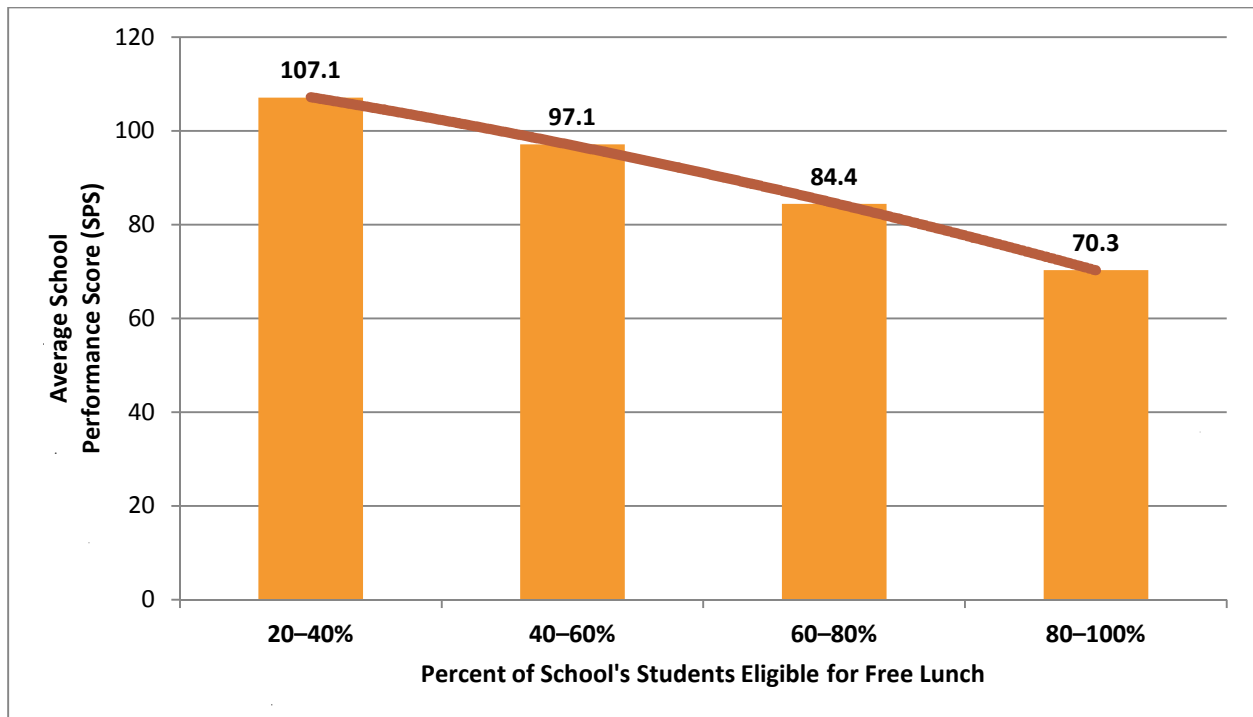


Source: Gabe, T., Falk, G., McCarty, M., & Mason, V. W. (2005). *Hurricane Katrina: Social-Demographic Characteristics of Impacted Areas*. Congressional Research Report Service Report for Congress, RL 33141. Congressional Research Service and The Library of Congress. Based on analysis of FEMA flood and damage assessments and U. S. Census 2000 Summary File F (SF4) data files.

Orleans Parish schools have long struggled with failing achievement levels. Of Louisiana’s sixty-eight school districts, Orleans was ranked sixty-seventh by Louisiana’s Department of Education in the 2004-2005 school year (Cowen Institute for Public Education Initiatives, 2009, p. 14). The 2009 Cowen Report Supplement points to the close connection between achievement (as measured by test scores) and class (parents’ income and education level): “The percent of students who are eligible for free lunch is a strong predictor of school performance scores in Louisiana, as it is across the country” (2009, p. 14). The connection between the

average level of poverty of the students attending a school and the school's performance (measured in School Performance Scores (SPS)) is shown in Figure 2.

**Figure 2**  
**2005 Poverty Levels and School Performance in Louisiana**  
**The Relationship Between Free Lunch Eligibility and School**  
**Performance Scores in Louisiana's K-8 Schools**



Source: Cowen Institute for Public Initiatives, Supplement to the 2008 *State of Public Education in New Orleans Report* (January 2009), <http://www.coweninstitute.com/our-work/applied-research/education-archive/education-transformation-archive/public-school-performance-in-new-orleans/>

All school children from Orleans Parish schools were immediately displaced by the effects of Hurricane Katrina. During the fall of 2005 and even through the entire 2005-2006 school year, schools in other parts of Louisiana and in other states were enrolling evacuee students. Of those who did not or were not able to return to their homes after the initial evacuation, 39.4% enrolled in schools in other locations in Louisiana and 31.4% enrolled in adjacent states (e.g., Texas, Tennessee, Georgia,



or Florida) (Groen & Polivka, 2008, p. 41).<sup>60</sup> By September and October 2005 many schools in less affected parts of Louisiana and in other states were enrolling large numbers of displaced students.

Since Orleans Parish schools ranked near the lowest in Louisiana, most evacuees were enrolled in higher-performing schools. They were also usually attending a school with a higher socioeconomic student population. This context in which teachers in higher income schools absorb lower-income and high-poverty students provides an opportunity to explore issues of class and pedagogical practice. Do teachers' beliefs about their low-income students' needs, backgrounds, etc. lead teachers to adopt pedagogies of poverty? Are there structural factors (from economic resources to testing requirements) that undermine constructivist-based practices and foster objectivist-type instruction? How do teachers alter their practice to accommodate their lower income students who may be academically less prepared?

## **Research Questions**

The research questions that guide this study are as follows:

1. How do teachers describe their pedagogical practices prior to the 2005-2006 school year when they absorbed Hurricane Katrina evacuee students?
2. How did teachers view their evacuee students' learning needs?

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<sup>60</sup> According to the Southern Education Foundation (2007), between 20,000 and 30,000 "K-12 students did not attend school at all in the 2005-2006 school year" (p.3).

3. How do teachers describe their pedagogical practices after they absorbed Hurricane Katrina evacuee students?
4. In responding to the changed circumstances and needs of the students, how do the teachers explain their reasoning and logic behind the decisions they made in modifying their pedagogical practices?

## **Research Design**

Because this study is interested in questions about teachers' perspectives, logic, how they make sense of their students' needs and problems, and how they explain choices they made, this study uses a qualitative research design.

Qualitative methods allowed the researcher to gain insights into, for example, the *context* (what the school and neighborhood climates were like, what teacher relationships were like, and what their experiences were with the interruption of school due to Hurricane Katrina and then the somewhat tumultuous resumption of classes many weeks later) and *perspective* (what teachers thought and felt, what they struggled with, how they came up with strategies, how successful they felt, and how they changed the way they see things).

The type of information needed to answer the study's research questions was best obtained by using in-depth interviews. This results in a smaller number of participants than a quantitative study that, for example, uses a broadly disseminated questionnaire. Both approaches have limitations in generalizability of findings. In this case, where all possible responses are not known in advance to

the researcher and where the interest is in an evolution in teacher thinking and practice, a qualitative study, even though small, is more appropriate.

Individual interviews were conducted with five teachers who were teaching middle school mathematics in areas an hour or more outside of New Orleans August 2005 and who, after classes resumed following Katrina, absorbed low-income evacuees from areas including Orleans Parish. Interviews were conducted in the month after classes ended at the end of the 2005-2006 school year. Table 2 shows the demographics and SPS characteristics of the participants' schools.

Participation in the study was entirely voluntary. Interviews took place during June and July 2006 in conjunction with the afore-mentioned professional development project at the convenience of the participants. Interviews lasted approximately one to one and a half hours.

All measures were taken to protect the confidentiality of the participants. Information from the survey and interviews were coded by the principal investigator to protect anonymity. All reports and potential publications will report information in a format that will not permit the identification of any participant.

All potential subjects were adults. Each was given a consent form (Appendix C) before the study began. The primary investigator's name, phone number, email address, and mailing address were listed on the consent form. The subjects were encouraged to discuss any concern or question with the primary investigator before they signed the consent form.

**Table 2**  
**Demographic and SPS Characteristics of Participants' Schools**

	Percent Free or Reduced Lunch 2004–2005*	Percent White 2004–2005*	Percent Black 2004–2005*	Percent Hispanic, Asian, Amer. Indian 2004–2005*	LA DOE Baseline SPS 2004*	LA DOE Baseline SPS 2005*
Megan	50.0%	78.0%	19.0%	3.0%	99.0	102.0
Colette	31.0%	79.0%	17.0%	4.0%	112.0	113.0
Monica	59.0%	57.0%	41.0%	2.0%	85.0	86.0
Kendra	58.0%	58.0%	40.0%	2.0%	84.0	85.0
Molly	79.0%	27.0%	70.0%	3.0%	65.0	63.0
Orleans Parish	77.1%	3.5%	93.4%	3.1%	51.2	56.9
Louisiana	61.5%	48.3%	47.6%	4.1%	82.6	87.4

Sources: Louisiana Department of Education, 2004-2005, Accountability, District and School Level reports, <http://www.louisianabelieves.com/accountability>; Annie E. Casey Foundation's National Kids Count Project Data Center. <http://datacenter.kidscount.org/>

*\*Individual school percentages and SPS scores have been approximated to protect teacher and school identities.*

No direct personal benefits to the interviewees were expected. However, it was suggested teachers might feel positive about contributing to professional knowledge about instruction for low-income mathematics students. No potential risks or discomforts were anticipated, unless participants were uncomfortable sharing their thinking process in how and why they adjusted their instructional practice.

In addition to interviews, other sources of data were collected to fill out the picture of the schools' socioeconomic populations prior to Hurricane Katrina, e.g., state and local public data – such as percent of students receiving free or reduced lunch and income distribution of residents – that describe the school's population socioeconomically prior to September 2005 (see Table 2).

## The Participants

The five participants ranged in teaching experience from one to sixteen years. Two schools had middle to upper middle-class students, two schools had working class and lower income students, and one school had low-income and high-poverty students (similar to the evacuees). (See Table 3.)

**Table 3**  
**The Participants and Their Schools**

	<b>Gender &amp; Ethnicity -Race</b>	<b>Years Teaching</b>	<b>Socioeconomic background of students (pre-Katrina)</b>	<b>Grade Level</b>	<b>LA 2004 Accountability Report Baseline SPS</b>	<b>LA 2008 Accountability Report Baseline SPS</b>
<b>1. Megan</b>	Female, Caucasian	16 years	Middle-income professional families; homogenous classes	7 <sup>th</sup> grade mathematics	99.0	106.0
<b>2. Colette</b>	Female, Caucasian	10 years	Mostly upper-middle-income; community-related school	8 <sup>th</sup> grade (pre-Algebra)	112.0	109.0
<b>3. Monica</b>	Female, Caucasian	4 years	Low-income and working class; suburban	4 <sup>th</sup> grade mathematics	85.0	86.0
<b>4. Kendra</b>	Female, Hispanic	3 years	Low-income and working class; suburban	6 <sup>th</sup> grade mathematics	84.0	85.0
<b>5. Molly</b>	Female, Caucasian	1 year	High-poverty, low-income, high student and teacher turnover	6 <sup>th</sup> grade mathematics	65.0	60.0

*Source: 2003-2004 Accountability Reports; 2008-2009 Growth School Performance Scores, Louisiana Department of Education. [SPS scores have been approximated to protect teacher / school identities.]*

## Participant Selection

An Initial Survey (Appendix A) was administered on a voluntary basis to participants in the summer 2006 *Meaningful Mathematics through Models*

professional development project offered by the University of New Orleans' Curriculum and Instruction and Mathematics Departments to middle school mathematics teachers. From these initial surveys, five middle school teachers were asked to participate in the study (Appendix B). Teachers were selected if they had absorbed low-income evacuees and indicated on the initial survey they would be willing to be interviewed. A range in teaching experience and in income base of schools was also preferred.

### **Justification for Using this Particular Population**

Most studies relating teachers' pedagogy to low socioeconomic status students have used *synchronic* models that correlate methods with achievement level in low-income schools at a single point in time. This study, however, is concerned with change and therefore uses a *diachronic* approach. It investigates the impact of change in one variable (student socioeconomic status) on the methods of a single population of middle school teachers.

Although the study could have interviewed mathematics teachers in low-income schools asking them to recall reasons for making pedagogical changes they made perhaps a decade ago, the massive evacuation in the wake of Hurricane Katrina of Orleans Parish's low-income students and their absorption into often more higher income schools taught by middle-income teachers provided a more immediate instance where one could investigate the impact of change in

socioeconomic class of a student population on teachers' pedagogical methods occurring over the past school year.

The particular collection of teachers interviewed was a population of convenience in that they had been brought together for another purpose (to take a summer course needed, in most cases, to maintain certification). The five teachers interviewed were selected from a group of approximately thirty-three course participants according to the criteria and procedures previously discussed.

## **Procedures**

Interviews were conducted at locations chosen by the participants (in participants' homes or in a convenient location). The researcher: a) explained the teacher had been selected to participate in the research study based on his or her teaching experiences; b) read over the Consent Form with the participant (discussing purpose, procedures, the amount of time the interview was expected to take, potential risks or discomforts, alternative procedures, protection of confidentiality, and where they could obtain more information); c) answered any questions; d) asked if participants would like to request a brief summary of findings when the study was completed; e) explained that participants may take a break or stop the interview if they experienced fatigue or wished to discontinue participation; and f) explained that a follow-up conversation, possibly by phone or e-mail, might be needed to clarify some points.

## Interview Questions

The following is a summary of the types of questions covered in the interviews:

### *Background Information*

School where teacher is teaching; subjects and grade levels taught; years of experience; educational and mathematics background; impact of Katrina evacuation in practical terms.

### *Teaching Approach Pre-Katrina*

Teacher's view of students' cultural and economic background, students' preparation to learn mathematics, and how important they believe mathematics will be to their students' futures; methods used to introduce a new lesson and engage students in learning; when students did not understand, what do they think was usually the reason; approaches used when students did not understand; was the teacher able to challenge students or did they focus primarily on remediation; what was the interest level and engagement of students; did students learn conceptually and relationally or in segments; importance of test preparation.

### *Teaching Approach Post-Katrina*

*(The same questions as Pre-Katrina were used to enable comparisons)*

Teacher's view of students' cultural and economic background, students' preparation to learn mathematics, and how important they believe mathematics will be to their students' futures; methods used to introduce a



new lesson and engage students in learning; when students did not understand, what do they think was usually the reason; approaches used when students did not understand; was the teacher able to challenge students or did they focus primarily on remediation; what was the interest level and engagement of students; did students learn conceptually and relationally or in segments; importance of test preparation.

### *Analysis of Changes*

Teacher expectations; initial methods; problems encountered using initial methods; types of student feedback about teaching methods and its impact on teacher practice; reflection on causes of problems or needs for pedagogical adjustments; nature of adjustments to practice, curriculum, acculturation, or support; extent of sense of success.

### *Reflection*

Description of teacher's acquired wisdom about student learning, student individual and cultural learning needs, successful methods of engagement and acceleration; teacher's perception of students' prior learning experiences; teacher's knowledge of mathematics reform methods; ways in which a comparison of previous practice with post-Katrina practice might not be a fair comparison (impact of dislocation).

## **Data Analysis Procedures**

All five interviews were transcribed in full, then responses were organized individually by question. This permitted a cross-comparison of participant responses and demographics descriptions. Next, interviews were read and coded in order to identify common meta-codes or themes in how teachers adapted or modified their practice. Meta-codes that emerged included:

Acceleration or Remediation

Communicating Concepts and Procedures

Motivating, Engaging

Students Learn (Individually or in Groups)

Acculturation and Behavior

Homework

Testing

Finally, teachers' responses were compared to findings in the research literature (presented in Chapter Two) to determine how they articulated with prior research. Beliefs and perspectives that had emerged from the literature review were used to compare teacher responses. These beliefs were related to:

Poverty, New Orleans Schools, Families

Best Learning Approach for High-poverty Students

Empathy and Insights

Trauma and Its Relationship to Behavior

Influence of School Climate

Testing Means I Must or I Can't . . .

In the final discussion of findings (Chapter Five), these beliefs were used to consider questions that arose from the literature review.

## **Limitations**

The study is limited in a number of ways.

a) In the context of an interview, the interviewer always has some influence on the person being interviewed. Teachers may have selected experiences and views they thought would be in agreement with or of interest to a university-based researcher.

b) Although the participant teachers' experiences coping with large learning gaps and cultural and class differences may have broad relevance, their specific experiences cannot be representative for all types of teachers at all types of schools.

c) The teacher participants were enrolled in a summer professional development course taught by University of New Orleans (UNO) faculty. Although the present researcher was not involved or connected with the course in any other way, the fact that the teachers were taking a course to maintain certification that was reform-based could be a limitation. The course, however, was one of the few places (June 2006) where middle school mathematics teachers could be found who had just completed a year teaching students including Orleans evacuees.

Nevertheless, since the researcher was from UNO, teachers may have wanted to appear more knowledgeable of best practices.

d) There are many factors associated with being uprooted from homes, schools, and communities that may influence evacuee students' responses to a new classroom environment. For example, they may feel temporary and not wish to be engaged with the curriculum, with non-evacuee students, or with the school in general. They may be absent a great deal due to an unstable living situation or due to a desire to stay close to the family in a time of uncertainty and stress (a mindset sometimes referred to as "circle-the-wagon"). Finally, they may suffer from depression or Post-Traumatic Stress Disorder. On the other hand, many of these confounding factors also may be typically present for high-poverty students even without the experience of Katrina dislocation.

## **Autobiographical Disclosure**

What is defined as a problem, how a question is posed, what type of information is believed will produce meaningful insights, and how results are interpreted all involve perspective. The following experiences – as an evacuee and as an observer-participant in high-poverty Orleans Parish schools – have contributed to the researcher's perspective in the study.

### *Evacuee Experience*

Hurricane Katrina and its aftermath, sometimes experienced as random effects of fate, altered the destinies of many people. The story goes that the storm sorted people and their destinies into four different trajectories: people who lost home and job, people who lost home but kept job, people who kept home but lost job,

and people who lost both home and job. Our family was in the latter category. We spent a year living with family in another state while returning to salvage what we could, gut what could not be repaired, and sell the shell of our former home. During the year of evacuation our son had his first experience with a public school education in a mid-western state. On the Friday before Katrina he had said goodbye to his friends whom he had known since he was two, “see you Monday,” and brought his book bag and homework home. A week later he was enrolled in a public junior high school half-way across the country. He did not want to be there. He did not like the school or the other students. He was sick or absent so much that we received a letter of warning at the end of the year. One night in January he brought his New Orleans book bag in to me saying he had to do his homework or his (New Orleans) teachers would be upset with him. He was shaking and I explained something he had already intuited, that we were not returning. Comforting him for hours while he cried was probably the roughest moment of the entire experience. He did not regularly turn in homework, especially when his parents were preoccupied with basic survival issues of job-hunting, healthcare, affording food and clothing, and selling a gutted house. His behavior was not unlike that of the evacuees described in this study. He had the advantage, however, of having had a privileged education so, while he may not have learned very much during that year, he was not behind his peers.

This experience informs my perspective on evacuee children’s behavior and led me to connect trauma that is associated with dislocation to trauma that results

from living in poverty, negotiating racism, or experiencing structural violence (Galtung, 1969, p. 171). This view was further supported by later work in high-poverty middle and high schools in North Carolina.<sup>61</sup>

### *High-poverty New Orleans School Experience*

While in graduate school I had the opportunity to spend time in several high-poverty middle schools in Orleans Parish.<sup>62</sup> I observed first-hand a number of the complexities of high-poverty contexts considered in Chapter Two, including good teaching in a science class and an out-of-control situation in several others where a teacher was attempting to teach yelling over the voices of thirty-some students actively engaged with each other but not with the teacher. I observed assemblies where fights broke out every five minutes and “whoosh” all students were immediately on their toes careening to see what was going on before I had any idea something was happening. I saw good teaching in a mathematics class with most students engaged and working on individual problems in groups. And I saw a teacher lining students up against a wall and one by one lecturing them on how they were “nothing” and shaming them – I have since realized that this was probably done out of a profound sense of caring for the students, but to my

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<sup>61</sup> In the high-poverty schools of North Carolina I also observed the following phenomena related to the current study: a) the disconnect between constructivist-based university teacher education instruction and high-stakes high-poverty school management (the latter borrows practices from the business world and attempts to lever higher achievement by threatening teacher’s careers, but results in teachers focusing on their own vulnerabilities, rather than on the students’ needs and feeling unwilling to try new approaches); b) the impact of high-stakes testing in a high poverty high school (leading teachers to rationalize their curriculum so that it matches the test, shifting a major focus of teaching to test-taking strategies, and reducing concepts to memorized facts and procedures).

<sup>62</sup> For example, one Orleans Parish middle school had a 2003 SPS of approximately 39 and a 2004 SPS of less than 42 (Louisiana Department of Education).

uninitiated middle-class ears it was disturbing. I observed a teacher punishing her students for showing up on an optional day before Christmas by requiring them to sit in silence without books or stimulation for one or two class periods while she stuffed candy into cups to give as gifts to her colleagues. I saw a language teacher send one student after another to the principal's office over the course of a single class period until a quarter of her class was gone. I saw a fourteen-year old girl pregnant but attempting to hide it under her uniform. And I noted that when a murder happened in the city, there would often be several students who knew someone involved. I heard many teachers tell me, "Forget what you learned in the university. This is the real world; things work differently here than they do in the university's ivory tower." And I recall a veteran inner city New Orleans trainer of student teachers hostilely point her finger at those of us planning to teach mathematics, saying our "high standards" were out of touch with the realities of high-poverty schools in New Orleans. I puzzled long over why she felt such hostility for us, people she did not know except that we planned to teach mathematics. I became convinced that this moment held some important truth to be understood – it was a nucleus of contradiction (Freire, 1973) and a rich problem or experience that could lead to growth in understanding (Dewey, 1938). I wondered how a teacher who had been trained at a university in instructional methods that promoted higher order learning and enabled students to understand and apply what they know, would later give up these methods when teaching at a high-poverty school. It seemed to me that in her effort to protect children from the discriminatory effects of

standards applied without beginning with children's experience, she was in fact ensuring that existing inequalities in education would be reproduced – a situation with many similarities to Willis' study of resistance and reproduction of inequality in England.

## **Chapter Summary**

This study examines the connection between teachers' pedagogy and the socioeconomic class of their students. It uses the context of dislocation of low-income students from Orleans Parish and their absorption into often higher income schools taught by middle-income teachers to understand teachers' perspectives on their new students' learning needs and how they adjusted their practice. This chapter has described the research design and research questions, the participants and the process of their selection, and the justification for using this particular population of teachers. It has also outlined procedures, presented a summary of interview questions, and reviewed the procedures used to analyze the data. Limitations were discussed and an autobiographical disclosure described areas where the researcher has had related involvement. The next chapter (Chapter Four) presents the findings of the study.



## **CHAPTER FOUR: FINDINGS**

### **Introduction**

#### **Purpose of the Study**

This study examines the connection between socioeconomic class and teachers' mathematics pedagogy. More specifically, it asks what is the relationship between teachers' real-world experiences with low-income students and the pedagogical wisdom and practice they construct. The post-Hurricane Katrina evacuation of New Orleans' low-income public school children and their absorption into middle-income or working class schools during the 2005-2006 school year provided an opportunity to study the impact of socioeconomic class (teaching low-income students) on existing pedagogy used by teachers in higher income schools. The interest of the study is in understanding how teachers alter their teaching strategies through the problem-solving and dialectical nature of teacher practice. Do middle-class teachers continue to deliver middle-class pedagogy and curriculum to their low-income students, or do they move toward traditional and direct instructional approaches?

There are many dimensions to the issue of low-income pedagogy, including the larger socioeconomic structures that produce and maintain poverty, the economics and politics of residence and school assignment, student dispositions and learning preferences, school and administrative structures, communities of teacher peers, and parental factors. The present study is concerned with how teachers

interpret and assess class-related problems and modify or reconstruct their pedagogical practices.

In this chapter the following research questions will be used to consider each of five teacher participants' interview responses. Then teachers' responses will be compared to each other in order to bring key findings to the fore. Finally, a chapter summary will conclude the findings and introduce discussion in the final chapter.

The names of the five teachers have been changed as have the names of schools, places, and students.

### **Research Questions**

The research questions that guide this study are as follows:

1. How do teachers describe their pedagogical practices prior to the 2005-2006 school year when they absorbed Hurricane Katrina evacuee students?
2. How did teachers view their evacuee students' learning needs?
3. How do teachers describe their pedagogical practices after they absorbed Hurricane Katrina evacuee students?
4. In responding to the changed circumstances and needs of the students, how do the teachers explain their reasoning and logic behind the decisions they made in modifying their pedagogical practices?

## Description of Findings by Teacher Participant

### Teacher 1: Megan

#### Background

Megan earned an undergraduate degree in mathematics education at a southern public university and had taught mathematics for sixteen years at a school three-quarters of an hour outside of New Orleans. Her university mathematics education program was grounded in NCTM constructivist practice and focused on hands-on activities, differentiated groups, and relating content to the students' world.

Her students were mostly middle-income with both parents working professionals. Many were employed by the large chemical plants and a military base in the area which support middle-income wages. Megan felt the school has a well-deserved reputation:

We did have a lot of kids that come from the base and come to our school because their parents feel that we offer a better education than what they offer on the base. So we have a very good reputation....we are a small community. We all know each other. I, as a teacher, know all of my students' parents. Their parents know me. We're neighbors. We see each other at the local grocery store. It's a small community. Everybody knows everybody. [L. 15]

Most of the students tended to be at the same skill level, which Megan attributed to the teachers' extensive cross-grade collaboration to ensure that students acquired prerequisite skills needed for each successive grade level – “I really think that's why we have students that have good grades” [L. 15]. According to Megan, the school is very structured and “strict as far as discipline....The kids know you are not

disrespectful to a teacher or anyone because you are going to get into a lot of trouble” [L. 15]. Class sizes were small – Megan usually has twenty-two to twenty-five students in a class. During the 2005-2006 school year she taught seventh grade mathematics.

### *Katrina Impact*

In anticipation of Hurricane Katrina the school was evacuated:

We evacuated and I don’t think anybody really knew how bad everything was when we left that Friday. So I sent my kids home...with an assignment.

They were to cut out coupons of the newspaper because we were getting ready on that following Monday to go over discount, percentages [laughter].

[L. 13]

When school reopened in October they had lost students, but by the end of the first quarter most were back. The school also experienced a large influx of students from urban New Orleans, as well as students from six other schools in the area that had been destroyed: “We were very, very, very filled as far as classes. I taught thirty-seven kids in a class” who were all at different levels of mathematical understanding [L. 13].

## Research Question Responses

### Practice: Before and After

#### 1. How does the teacher describe her pedagogical practices prior to the 2005-2006 school year when she absorbed Hurricane Katrina evacuee students?

The instructional approach Megan had developed over the years relied heavily on relating mathematics concepts to her students' real life experiences and engaging them in meaningful and interesting applications. For example:

A local grocery store [is] Bassetti's...and I used that as an example all the time when we studied unit rates...if I go to Bassetti's and I buy ground meat and I want to know how much I'm paying per pound. So they can relate to what they all [do] – go to Bassetti's....And then I'll have them give...examples of like...you pay this much money for this hamburger meal at McDonalds. If you...break it down, could you...estimate for me how much you think it was for the hamburger, fries, and the coke – even though it's all one price? [L. 11]

Her typical class began with a set of problems that reviewed and reinforced prior learning, evened out some differences in background knowledge, and contributed to an atmosphere of mutual support:

I start class off....I have the kids get used to it and get into the groove....They all helped each other....They answer the same questions every day, but different numbers....So on Monday there's a number: they have to write the number out in words...identify the number three is in which place

value...round it off...write that number in scientific notation...round it to the nearest tenth, and then to the hundredths, and then to the thousandths.

There's one that they evaluate...[or] identify the property. There's geometry.

There's a little algebra. So, it's even if the kids never had it before, if they see it enough....that's my opener....And, even if they don't know it, they learn it.

[L. 16]

Next, she posed a real-life example that students could relate to and asked them questions about it. Then she would say, "That's what the lesson is about." She then modeled working with the concepts using a smart board while the students did the same thing along with her. Then came group work followed by independent practice. Finally, they would go over their work together. The homework assignment (usually no more than ten problems) was on the board. The answers to the problems were in the back of the book so that they could check if they were getting it right.

Prior to Katrina, if a student was having trouble understanding, she reported, it was usually because the student was a special education student who had been mainstreamed. She generally would sit and work with the student individually or pair him or her up with an empathetic student.

Although Megan had to reteach during the first two weeks of each school year because students had forgotten some past learning over the summer, she found that she could establish expectations early in the year:

. . . if they see, well, you're not going to baby them, and you have high expectations for them, they basically do still want to please you, even in seventh grade. I know a lot of people think, oh, seventh grade is hard. They're really just kids. And they really do want structure and they want somebody to respect them and they want somebody that they can look up to. You just have to have that boundary. And I've not really had very much trouble with that. But, like I said, I've been teaching a very long time now. And I have the reputation, she's nice, but don't let her get mad at you [laughter]. So, I have that as a backup! [L. 27]

Megan said she almost never had a problem with student apathy. "They wanted to learn because we had the backing of the parents, also. Our parents were very involved – still are very involved. These children knew they had to make the grade. It's a good group of kids. A nice place to teach" [L. 29].

Generally students did all right on tests. They would sometimes have problems with computation and word problems. Some knew the material but weren't good test-takers. In this case, she would ask them the questions verbally (ask them to explain), which revealed their knowledge. Sometimes she would have to pull it out of them. Often they knew what they were doing but couldn't put it down on paper.

## **2. How did the teacher view her evacuee students' learning needs?**

After Katrina, Megan found her students had a myriad of different skill levels. Evacuee students from schools similar to Megan's were on the same level

and students could keep up. But other evacuee students, especially those from low socioeconomic schools or families, were missing many of the prerequisite academic skills. Information on where the students came from, their grade levels, and their skills was often unavailable. In the past when a student would say, “Well, I never had that,” she could respond “Oh, don’t even go there!” Because, you know what? I know the sixth grade teacher and I know she taught him. He’s like, “Man!” [laughter]” [L. 15]. But after Katrina she did not know what students had or had not covered.

In addition to missing math skills, many students were apparently unaccustomed to the school’s norms. An important part of working with her evacuee students was to acculturate them, especially to the school structure (what you can or cannot do, behavior and learning expectations, respect for teachers, etc.):

I had one little boy from New Orleans, a nice little child, poor thing, I really – my heart went out to him. He was very talkative and...you know we don’t do that in this school, we pay attention. And after a little while he starts talking again. I said, “Excuse me!” He said, “What, you can’t talk in this school?” I’m like, “Nooo!” So, then he put his head down. I said, “Oh, I’m sorry. You can’t go to sleep here, either.” He said, “Well, what do you want me to do?!” I said, “I want you to pay attention! I actually want you to learn!” [laughter] He was like, “Oh...”

. . . he was from New Orleans. So, I mean I don’t know what they did in their classrooms. I don’t know how their discipline was. I just know in our



school we're very strict as far as discipline. We're very structured. The kids know you are not disrespectful to a teacher or anyone because you are going to get into a lot of trouble. Children from other parishes didn't seem to have that response. That made it difficult to teach. [L. 15]

### **3. How does the teacher describe her pedagogical practices after she absorbed Hurricane Katrina evacuee students?**

Megan describes a number of modifications she made to her practice in order to accommodate the change in students' needs:

#### *Acceleration or Remediation*

Megan's approach was acceleration rather than remediation in the sense that she worked to bring students with deficient backgrounds up to speed with her other students. She followed the regular seventh grade curriculum. However, "After we got back from the evacuation and we saw the huge gaps between the levels of skills of our students, every teacher at that school was working SO HARD to try to pull those levels up" [L. 79]. As with an accelerated curriculum that might combine two years of mathematics in one, she followed the regular seventh grade curriculum but kept pulling in necessary background concepts and skills so that students could keep up:

I had to keep backing up. I had to keep reinforcing prerequisite skills that the evacuees didn't have....they'd be like, "Well we don't know how to do that." I'm like, "Ohhh" [laughter]. "Ok, all right, well, we're going to learn this then." [laughter]. Oh, God. You can only do so much in fifty-two

minutes. And then, you don't want your other kids that are way up there to get bored. So, I'm telling you, it was a very challenging year... [L. 81]

Megan also adopted a more flexible approach to grading. She gradually raised expectations while keeping students interested:

I still had high expectations for my students, but I knew, if I did not give some of those slower learners a little bit of lee way, I would have lost them completely....I kept their interest and I just kept kinda reeling them in. And I would get a little more strict and say, well last week I let you all get away with that, but now you know better. So I had to do it gradually with them. [L. 85]

#### *Communicating Concepts and Procedures*

In her post-Katrina classroom, Megan did much more modeling and more hands-on activities. Whereas before she could model a problem and then students would practice it in groups, with her new students she "had to basically sit, especially with the kids from New Orleans....I had to sit in the group with them, because they wouldn't do it if I wasn't there. So I had to sit there and I had to do it with them" [L. 57].

#### *Motivating, Engaging*

Megan intentionally learned what her students were interested in. She then created activities, applications, and extensions that she thought would engage them. She also attempted to ensure all lessons met the students' different learning styles.

### *Students Learn (Individually or in Groups)*

Students working together in groups remained a frequent part of Megan's classes. When asked if she considered doing fewer group activities, she responded: "Oh, no. My students loved the hands on. Oh, no....some days we don't do activities. That would drive me crazy. I can't do an activity every day without losing all my sanity. On some days they would do the drill and skill. I would be, "All right, this is what we are learning today. This is really easy. We're not going to do an activity. You're going to work individually today..." And they do fine. But I use both. The kids really do like the activities" [L. 97]. She felt that her evacuee students did not have a unique learning disposition or style: "No, they all learn differently. Some students learn by hearing it. Some students learn by seeing it. Some students learn by touching it. Some students learn by living it. They're all different. So I try to do it all. I try to make sure it's on the overhead and I'm stating it and they're doing it and they have the manipulatives..." [L. 99].

### *Expectations and Coverage*

Although Megan taught at a slower pace because she spent additional time bringing in prerequisite skills, she made sure she covered all the basic components of the curriculum: "It almost killed me, but I covered it [laughter]" [L. 103]. Her expectations were dynamic in the sense that she raised the bar each week for what she would expect or what mistakes she would excuse [L. 85].

### *Acculturation and Behavior*

Megan worked on acculturating her new students to her classroom and school norms. She set “boundaries” (as in the case of the student who talked and interrupted class or then wanted to sleep) and attempted to convey a high value to engaging and learning.

### *Homework*

Although she never gave a great deal of homework before Katrina, afterwards she gave even less since so many students did not have a quiet place or time to work on it.

### *Testing*

Despite the upcoming state tests, Megan continued to follow the curriculum, “because the curriculum comes from the state. And the state is supposed to be aligned with the state test” [L. 81].

### **Reflection, Reasoning, Logic about Modifications in Practice**

4. In responding to the changed circumstances and needs of the students, how does the teacher explain her reasoning and logic behind the decisions she made in modifying her pedagogical practices?

### *Beliefs: Poverty, New Orleans Schools, Families*

When asked about her beliefs regarding students’ income level and their preparedness for and interest in learning, she was disparaging of students’ parents and their aspirations (or lack of) for their children:

I find the lower the socioeconomic status of the family, the less interest the children have in learning. I don't know if it's because they don't have their parents' interest in what they're doing – I don't know. I would love to see the data. But, no matter whether it was evacuees or students from here, I find the lower the socioeconomic group or status of that household, the less likely that that student is to be interested in learning. They will go and they will do the bare minimum....But that doesn't hold true always. There are some exceptions. There are some children that want to get out of that. There are some children that want to get an education so that they can better themselves. [L. 73]

She felt that family economic level corresponded to students' level of preparation:

I think it does. I do think it does. Because I think that the higher level of education that the parents have and the better jobs the parents have, the more they demand that their children have a good education and that their children learn and that their children get out there and make the grade.

Lower economic parents, I find, don't care. They just want their kids to go to school. They don't care if they learn. They just want them in school. There's a difference. And when you meet some of the parents, you can tell. It's like, "I understand why little Johnny acts like that now." [L. 49]

When asked about the New Orleans evacuees, she expressed similar critical views of their lower-class appearance, their speech, and how they spoke to others including their children [L. 55]. She expressed support of the teachers in New

Orleans but attributed problems to the school administrators. She gave an example:

I know that they have good teachers in New Orleans. But I don't think the teachers can teach because the discipline is not there. I don't think the teachers have the backing from the administration. And it's a shame, because a lot of it's a lot of students that could be good students – they can't; they don't have a chance. So....One little boy from New Orleans, let me use him as an example – once he learned that neither could he talk nor could he speak in my class, he actually started trying. And I say, Now you know I told you, you could do this! Look at this! Go, boy! So, you know....He still ended up failing the class, but he really was trying. I would have loved to have passed him. But I mean I couldn't do that. His grades were way too low. It was too little too late. If he comes back to our school next year – now I have no idea, I don't know if he's going to relocate or what – he did tell me, he said, "My mama said she's buying a trailer down here. We're going to live down here." I'm like, oh...[laughter] But he did end up liking our school. He did end up liking my class. In the beginning he said he didn't like the school. He didn't want to live here, which is very understandable. I mean he lost his house, he lost you know his friends, but I think that if they – I don't know, if New Orleans could just enforce some kind of discipline with their children, maybe they could just make things so much better there. New Orleans

schools used to be good. I graduated from [a New Orleans] High School. I graduated. So it makes me sad to see how that school has gone down. [L. 55]

*Beliefs: Best Learning Approach*

Megan believes that the best way to motivate the students is through hands-on activities, keeping them actively involved, and tying lessons to real world applications the students can relate to. Also important is showing respect for them and maintaining boundaries (remaining a teacher, not a pal) [L. 113].

*Beliefs: Empathy and Insights*

Megan expressed empathy with her students: “Sometimes you may have some kids who are not paying attention. They might have been thinking about, gee, mom said she’s leaving last night. A lot of them have problems at home. So, a lot of times you have kids that are not paying complete attention. You may have some kids that don’t feel well. There are a lot of different factors in a classroom” [L. 65].

*Beliefs: Trauma and Behavior*

She was also aware of the trauma associated with the impact of Hurricane Katrina.

I did have one little girl who I really did like. She was from a school in our parish down the road. And they were completely wiped out... like wiped off the face of the earth. I mean, they didn’t just get flooded. It’s gone. So, she was in our school and in my class and she just seemed so angry. And one day I took her aside in the hall. “What’s going on? I mean, I didn’t really do anything to you. I didn’t fuss at you. Why are you so angry?” She said, “I

don't want to be here." I said, "Yeah, I can understand that. But, how about this? You're probably going to go back eventually. How about you kind of keep your grades up so that when you do go back you won't be behind your other friends?" So that kind of hit a note. So she started kind of working.... [she] came from a poor family.

But I don't think that the socioeconomic factor was playing as big a part in her lack of motivation as her feelings of anger....She lost her friends. She lost her house. She lost her school. She lost everything; everything that was familiar to her. And she was thrown into a whole new place. Living in a trailer, going to a school where she didn't know other people, different teachers, we all have different methods and different uniforms.

So, that did play a big factor in quite a few of the students' lives. And we just kind of had to keep an eye out and we had to listen to what the kids were saying. 'Cause if we thought that the kids were a little too emotional over it – there were a couple of times when I asked a kid, "Would you like to go talk to the counselor?" So we had to take that into consideration this year, whereas before Katrina we never did need to really deal with that too much. You still have that somewhat. But, after Katrina, I did see that more often." [L. 121]

*Beliefs: Influence of School Climate*

The teachers at Megan's school worked closely together and had a sense of pride in the high grades and learning that their students achieved.



*Beliefs: Testing Means I Must or I Can't...*

Megan and the other teachers did much more test preparation than before. They did this by working to pull up the weaker students to grade level: “We didn’t want them to do that poorly on the test. I dread....We have not gotten scores back yet. I dread getting scores back. I really....I don’t know....I have no idea how they did” [L. 79]. Mathematics teachers felt a great deal of stress as the date of the tests approached [L. 91].

**Teacher 2: Colette**

**Background**

Colette held a Master’s degree in mathematics education from a southern public university and had ten years of teaching experience. Because she felt the traditional instruction she herself experienced in middle and high school taught students to hate mathematics (“skill and drill, skill and drill”), in her teacher education program she especially paid attention to ways to make mathematics fun and engaging.

Colette was teaching 8<sup>th</sup>-grade pre-algebra at a junior high school approximately one hour from New Orleans. The school was a community school with high parental involvement. The students came from a series of feeder schools (an “alliance”), and they “all know each other” [L. 4]. The students later went to one of the two local high schools. Colette described the students as from predominately

upper-middle-income families with approximately 30% eligible for free or reduced lunch.

### *Katrina Impact*

Colette's school reopened October third. At first they had only lost one hundred students and gained fifty evacuees. But the number of evacuees steadily increased over the fall and spring terms [L. 10]. Her teaching assignment did not change.

### **Research Question Responses**

#### **Practice: Before and After**

#### **1. How does the teacher describe her pedagogical practices prior to the 2005-2006 school year when she absorbed Hurricane Katrina evacuee students?**

For Colette, a typical class began with a bell-ringer that connected prior learning to the new lesson through a problem related to something of interest to them (a holiday, the Olympics, or real world events). Next, she introduced and modeled the concept to be learned. Then students worked with partners or individually practicing the lesson. Finally, she would assign homework.

When students didn't understand: "Really, a lot of times they're not paying attention. I'm... looking at the back of their head when you're explaining the skill. And then they turn around and say, 'What?'" [L. 22.] Colette suggested it might also be a mathematics phobia:

They say they're not a math person. You know, "math's not my thing."

But...I've sat in on a thousand parent conferences where the parents will say, "I never was good at math." But they never say, "I never could read...." It's ok to be not good at math. So, I guess kids grow up thinking that's ok. Let's not admit that we can't read, though. [L. 24]

When students didn't understand Colette would "teach, re-teach," tutor in class, or give them a tutoring pass so they could work with her one-on-one.

"Because we have very large classes (usually thirty), it's hard to do one-on-one" [L. 28]. Students did not tend to be interested or engaged in the lesson: "We're talking eighth grade here. They're definitely focused on something else. Math is not a priority in their lives" [L. 32].

Some students would do well on daily lessons but "bomb the test" – in this case she allowed them to come in and retake the test [L. 36]. Students tended to have problems relating concepts from different lessons. As a result, Colette tried "not to cover too much material on one test....I mean, they just can't sort out...a bunch of different concepts" [L. 38].

Colette felt that what many of the students lacked was basic computational skills. She found that without a calculator students were failing all the state practice assessments. "Now, the minute I gave them a calculator they'd do much better. So I think basic skills is definitely a problem. But we don't teach multiplication in the eighth grade. What am I supposed to do?" [L. 40]

Test preparation was very important at Colette's school: "Our school historically has always had high test scores and takes a lot of pride in that. We want to keep that" [L. 42]. Therefore, Colette incorporated a great deal of test practice into her schedule:

. . . we did the LEAP practice sheets...every week....And before LEAP we actually took out time and we taught from the Elite Tutoring – the state's LEAP tutoring guide – we'd just pull skills from there that we thought maybe they weren't strong on. I guess you can say we're kind of teaching to the test at that point. [L. 42]

## **2. How did the teacher view her evacuee students' learning needs?**

Colette found that the new students had many gaps in their prerequisite skills when compared with students from her own school. Teachers often did not know students' backgrounds; students arrived over the course of several months and there was a lot of moving from school to school [L. 76]. She also had little communication with parents. She related that very few ever responded to notes, calls, or emails. Therefore, she did not know much about their backgrounds or what skills they were missing:

I really don't [know]. I really don't. I know that those kids from Orleans, except for the one little girl from Orleans, they were pretty quiet. They wouldn't ask questions. I'd always like walk over there and say, "What are you saying, what are you saying?" It seemed like if they did poorly on a test it didn't seem to faze them. You know, that worried me, that, you know, it's

like, you're failing math here. I know you're dealing with a lot, but, you know, you're going to need these skills for high school and college. [L. 54]

**3. How does the teacher describe her pedagogical practices after she absorbed Hurricane Katrina evacuee students?**

*Acceleration or Remediation*

Colette attempted to accommodate her new evacuee students' learning needs through her existing practices of remediation and tutoring. Classes were large, which prevented enough individual attention so she sometimes pulled them out of Physical Education (PE) classes for tutoring [L. 68]. Students' already weak prerequisite skills, compounded with the effects of dislocation, made remediation challenging.

In class she believed in checking for understanding: "I mean, you've got this kid that hasn't even learned this skill and you're going to move on?" [L. 108] But, some of the evacuees were "listless," quiet, "never said I don't get it," or missed a lot of classes [L. 68, 86].

Colette saw major obstacles that prevented students from succeeding. First, she believes math is cumulative. So, if prior skills are not learned, students find it increasingly difficult to understand new material:

That's the hard thing about math. It is comprehensive. And if you don't get a certain skill, if you don't learn how to divide in the sixth grade, how are you going to be able to do fractions in seventh grade, if you don't even understand the concept of division. [L. 120]

When asked about missing concepts, she focused on missing basic skills. Colette placed a high value on basic skills, such as multiplication and division. Students depend on calculators and cannot solve basic problems without them:

These children, their basic skills are very poor. Even the Honors kids. With our new curriculum we have these LEAP practice sheets that came along with each unit and so I would assign those for homework and at the beginning of the year I would like give a test on these – and it's almost identical to the ones they did but I wouldn't let them use a calculator and they were failing. Now, the minute I gave them a calculator they'd do much better. So, I think basic skills is definitely a problem. But we don't teach multiplication in the eighth grade. What am I supposed to do? [L. 40]

#### *Communicating Concepts and Procedures*

Colette used the same teaching methods she used prior to the storm, although she emphasized more group work [L. 110, 114] and cut out many activities and projects [L. 46]. She also did not post her lessons on line:

They don't have computers. They can't look stuff up on the internet. I used to have my lesson, I used to have a web page where the kids could go to; you know, I even stopped doing that because, because, you know, well heck, I didn't even have a computer at home, I didn't have internet 'till December twenty-eighth. So I even quit doing, you know, putting my lessons on line, which I'd have links for kids, like if they needed to know more about integers

they could go click on that and learn more. So, I had to give that up because I wasn't able to do it. [L. 56]

### *Motivating, Engaging*

Generally Colette tried to engage students by centering lessons or exercises on something that interested them, like music or whatever was current [L. 74].

. . . one activity that I'd gotten from the National Council of Teachers of Mathematics web site, it's a basketball simulation where I didn't have to take them outside and shoot free throws; they used a coin. And I put them with a partner. It's like a two-day activity. [L. 56]

### *Students Learn (Individually or in Groups)*

Although Colette cut out many activities and projects, she still had students work in groups that were mixed ability so that, if one student was missing a skill, another might be able to help [L. 86]. "I believe that these students learn from each other probably better than they learn from me" [L. 110]. She assigned students to groups ("you don't want your buddies stitting together"), assigned roles, made sure they understood the purpose of the assignment, and kept them on task [L. 114].

### *Expectations, Coverage*

While Colette's school has "high standards," she felt sorry for students and tried to be understanding:

One girl that was kind of real listless....I worried, she's kind of a gothic, you know, that kind of dark, quiet....She's so sweet, though. And I remember the second nine-weeks, I think she was there from the beginning after the storm,

and she failed. And I felt sorry for her and I told her, “Ok, [Lauren], I’m going to pass you this nine-weeks. I’m going to give you the benefit of the doubt. And then next nine-weeks you’re going to owe me.” I had given her like seven points; she was seven points away from passing. The next nine-weeks she was going to owe me, you know, a seventy-two or something. Well, she didn’t do it and then I even tried to encourage her some more the second nine-weeks....The third nine-weeks I did not give her any points. And when it came to the failure at the end of the year, because she had not only failed my class but had not satisfied the LEAP....I told them, I say, “You know, I can’t pass this child. Her skills are too low.” I said, “She failed my class, she failed the LEAP....she’s got to go to summer school or she needs to repeat...eighth grade math.”....I tried to be more understanding. I mean I did things for her. “Here, take this. Make-up work? Here, a take-home test.” I never did that before, you know. [L. 86]

Like other teachers, Colette was very concerned about covering the curriculum before the state test: “I lost a month of instruction. I mean, I felt like there were days when I was ramming stuff down their throats, you know. ‘The LEAP! We’ve got to get ready for the LEAP! This is on the LEAP!’ Yeah. Yeah. Definitely I felt rushed” [L. 94].



### *Acculturation and Behavior*

Colette did not bring up special efforts to norm or acculturate students in the classroom, but did discuss how initial “I’m from Orleans and I’m bad” behavior was handled by the school – by getting across the message “that doesn’t work here.”

### *Homework*

Although prior to Katrina Colette depended on homework to reinforce skills learned in class, after the storm she assigned no homework until near the end of the school year. The time she would have previously spent reviewing homework was spent on further in-class practice [L. 56]. “And you know, my grades were higher! [Previously] a lot of kids failed at homework... My averages overall were much better this year” [L. 56, 60].

### *Testing*

Colette spent fifty classroom hours on preparation for the state test, “because of the LEAP and because we lost a month because of the storm. I kind of had to cut out a lot” [L. 46]. A no homework policy shifted lost daily practice to increased test preparation [L. 100].

Testing also had an impact on grading:

Another young lady that was from Orleans – I know that both her parents worked and that they had pretty good jobs, so I’m thinking they were probably really middle-class. And she had a little attitude, you know. I had to deal with her attitude a lot. Towards the end of the year, tho’, I worked real hard with her. She was like borderline passing. In fact, you know how

we came up with a formula, where each parish could decide how we do the LEAP, she actually didn't pass the LEAP. And she didn't have an overall C. So I had to go back and manipulate her grades. Because, she could have passed. She was dealing with all that storm stuff and losing her house. And I tried to work hard with those kids and let them know I'm here to help you. I do the tutoring on Tuesday mornings. And I tell them you can come in any morning as long as you let me know. One little girl, she took advantage of it and I turned her around. But the little guy, he just didn't finish here. [L. 50]

### **Reflection, Reasoning, Logic about Modifications in Practice**

**4. In responding to the changed circumstances and needs of the students, how does the teacher explain her reasoning and logic behind the decisions she made in modifying her pedagogical practices?**

*Beliefs: Poverty, New Orleans Schools, Families*

Colette reflected on some of her stereotypes about students from New Orleans' poorer areas:

I honestly thought I was going to get a lot more of the Ninth Ward kids... I thought that there were going to be some discipline problems. You know, and I feel badly that I kind of had this stereotyped image about these kids because this summer I taught GEE [Graduation Exit Examination] and I have this kid. This kid was an eleventh grader and he was from the Ninth Ward and he was the sweetest little boy or young man that you can imagine.

And I remember driving home one day after summer school thinking, ooh, I was wrong...to think, you know....But, you know, you have this image... Still, she was disparaging of one New Orleans boy who was perhaps more active than “sweet”:

He just wanted to play....I never could get in touch with the family. He said something about he lived with an aunt or... He was in trouble all the time. I just think maybe that education wasn't a valuable thing in that family. I don't know. He's definitely a kid at risk. [L. 70]

*Beliefs: Empathy and Insights*

Colette found the relationship between sympathy and accommodation troubling:

I really was a lot more understanding of, you know, excuses, you know. If they said that well I couldn't study for this test, you know. We were working on the house until one o'clock in the morning and I'd say take the test, I'd let kids do take-home tests, I mean, I did things I'd never done before. I let them come in and retake the same exact test on Tuesday morning in tutoring. [L. 86]

She was moved by students' trauma, which led her to introduce some flexibility into her practice:

Oh, I forgot to tell you about this one little boy [Brandon], ok. He comes in and he's...he missed a lot of school....the secretary said I'm going to put him in your class because I know you have a lot of patience; this kid's been to five

schools. And then he misses three days and then he does make up his work and then he'll come, I'm in the middle of teaching, and he'll walk up and say, "Oh, I need to take that test." And I'll go, "Well [Brandon], I can't do that right now. You need to come in Tuesday morning and I'll give you the test." He expects me to just pull the make-up work right out of my pocket right then and there. And then I'd tell him I'd get it together and he never would follow back up to do that. But when he would come to school, he'd make noise, like, "I wanna do it, I wanna do it, I wanna do it." And then eventually I start getting aggravated with it. I remember one day I fussed at him, you know, "You need to just be responsible and come do your make-up work, blah, blah, blah, blah, blah."

Then I find that, we're talking about something...I was giving back receipts for yearbooks and I remember saying, "Be sure to put it somewhere safe. God forbid another hurricane comes and it gets lost. Keep it somewhere safe." And then we got into this little hurricane talk. And he tells me that he was on his roof for three days. And I'm like, I have tears rolling down my eyes and I'm thinking, "Oh, my God. I was so mean to him." You know. So after that, when [Brandon] said he wanted something, I'd stop and go, "Hold on class," I'd go... I accommodated him more than I would have... Poor thing. I felt so bad. He was on his roof for three days. And here I am yelling at him, "When are you going to make this up?" You know, that's the least of his worries, you know? [L. 70]

She occasionally allowed students to “vent”:

. . . you have to be understanding. Yeah. And you know I would let them when they needed to vent, I didn't do it too much 'cause we didn't want to spend class time on storm stories, but sometimes they needed that and we'd do it. Ok, let me hear it. You know, let's go ahead and get it over with so we can move on. And these kids are going to need to talk about this for a long time. You know, I mean some of these parents can't afford to take their kids to counseling. I mean, these kids, they need somebody to vent to. And if it's the teacher and they maybe don't learn a lesson, you know, well, you know, they're kids. [L. 118]

*Beliefs: Trauma and Behavior*

Teachers did receive training in identifying symptoms of post-traumatic stress. Teachers themselves, however were experiencing the same thing: “I mean everybody was stressed. I mean a third of our staff were living in FEMA [Federal Emergency Management Agency] trailers. And so were the kids, you know” [L. 120].

*Beliefs: Influence of School Climate*

The combination of a shortened year, the need for more remediation, and lost daily reinforcement (not assigning homework) led to a heightened push to prepare for the state test. Colette allocated fifty hours of classtime preparation. Test preparation was apparently the time when whatever skills students hadn't acquired through remediation, had to be quickly learned before the test. This occurred,

however, in an intensive test-taking strategy format, rather than embedded in a broader curriculum.

*Beliefs: Testing Means I Must or I Can't*

Because many students were further behind than was usual for the school and for Colette, activities in which constructivist type instruction is often embedded were cut. Test preparation, using state practice materials became the curriculum for a couple of months.

**Teacher 3: Monica**

**Background**

Monica held an undergraduate degree in education from a southern public university. She had taught mathematics and social studies for four years. Her middle school was located in a suburban area, approximately one hour from New Orleans. Students came from families who are part of the growing class of working poor. They had working class jobs (“Walmart, that type of thing”). Some lived in suburban-type homes, while others lived in trailers. Some had traditional families, while others lived with grandparents, uncles, or aunts. None of them came from an urban or inner city background.

*Katrina Impact*

Monica’s school reopened October third after having been closed since Hurricane Katrina. While her class sizes stayed the same, approximately one-third

of her former students were gone and were replaced by evacuees from New Orleans urban areas. Her evacuees were all boys.

## **Research Question Responses**

### **Practice: Before and After**

#### **1. How does the teacher describe her pedagogical practices prior to the 2005-2006 school year when she absorbed Hurricane Katrina evacuee students?**

Monica's parish used an almost scripted lesson plan for mathematics teachers. She would begin class by posing a question, then had students explore using manipulatives, and finally students summarized or explained how they found their answer or learned from others about their approaches. She did go over homework, although she didn't assign it regularly. "I find a lot of times when I do, it doesn't get done... this is pre-Katrina" [L. 18].

When students did not understand it was usually due to "lack of preparation," "academic apathy," or some were "placed in the wrong grade level" [L. 20]. Nevertheless, teachers needed to address the deficiencies. Monica would go back and re-teach. "It definitely took a lot more time" [L. 24]. There were a few students she could provide with extended or additional work to keep them challenged. But for the most part it was re-teaching before moving on. Students generally were not interested in mathematics and many were difficult to motivate.

Monica found that students had difficulty retaining what they learned or applying it:

That's something else that I wanted to work on with them. It's like you teach it and then they understand at that moment, but then like you said they go along in life and a few months down the road they see it again and they don't remember it. They don't remember how to apply that to that situation. They don't remember that, "Oh, I have to do this, like I did before." Or, given a real life problem...they can do the math, but...they like, "What do I do?" They're not making that connection for the most part. [L. 32]

When students did not do well on tests it was usually because they lacked a conceptual understanding, although deficiencies in prerequisite mathematics skills was also an issue.

Monica aimed at conceptual understanding over simple skill acquisition: "I tended to do a lot of trying just to get them to get the conceptual understanding and...we do a lot of exploring...We don't do too much of the drill" [L. 38]. She noted that the conceptual approach is the way she was taught mathematics.

Students took the LEAP at the end of the course but the teachers did not base their instruction on the test [L. 36]. However, she felt her constructivist-based approach took more time than a direct test-preparation approach did [L. 24].

## **2. How did the teacher view her evacuee students' learning needs?**

Monica found that many of the evacuees had lower mathematical skills than her prior students. According to the Star test that they use to test understanding three times a year, the evacuee students were two years behind grade level [L. 6].



Monica also felt that the students were accustomed to a different teaching approach:

It seemed like probably a lot of do this page in the book....we don't even really use a book in my class. You know the book's there, but we don't really ever open [it], I don't want to say ever, but it's not the core. We do a lot of exploring and it seemed that they were more used to having a page of problems to do and that was the way that it went. [L. 44]

While her pre-Katrina low-income students were not highly motivated to learn mathematics, her evacuees were even less interested. She felt its relevance to their futures seemed remote. All her evacuees were boys and they tended to "have hopes and dreams to become superstars [in] sports....A lot of them wanted to play basketball and be a superstar" [L. 78].

Evacuee students seemed accustomed to not taking homework seriously:

I felt like, if I gave them the homework, it was a joke. They weren't going to do it and whatever was going to happen was going to happen at school. The support at home wasn't there. And it might be because of the parents having to deal with the effects of the storm. [L. 56]

In addition to learning needs, the evacuees also expressed attention-seeking behavior:

I felt there was a lot of bullying, wanting to like fight for their ground, trying to find out who they were as far as where they stood in the school, kind of like maybe a cultural connection....like they wanted to feel like they belonged but

they couldn't....or they were fighting for that status. I think, I don't know, they kind of hung out together. They kind of befriended each other and found that they had that in common and kind of stuck together. [L. 50]

Monica worked with the mental health providers on campus to get the students support and counseling. The counselors “spent a lot of time with them because of the problems that were coming up” [L. 50].

**3. How does the teacher describe her pedagogical practices after she absorbed Hurricane Katrina evacuee students?**

*Acceleration or Remediation*

Monica was focused on catching the evacuee students up to grade level. This had to be accomplished within the framework of their parish-mandated curriculum. Since group work was a major component of the daily lesson, she frequently assigned students to homogeneous skill-level groups to allow her to give concentrated attention to students with the largest gaps. Monica had used this strategy before when she had smaller numbers of students who were significantly below grade level.

*Communicating Concepts and Procedures*

Since Monica's curriculum was problem- and activity-based, only a small part of the class involved direct instructional techniques, both before and after Katrina. She followed the Launch, Explore, Summarize organization of classtime and activities.

### *Motivating, Engaging*

Monica felt that the interest level of the new students was considerably less, due at least in part to the students' dislocation experience.

I'll say something about the interest level. Definitely with the students who came after the storm, they had very little interest in learning math... They had too much other things they had to deal with. They had to help Mom and Dad or whoever fix the house and so they weren't really interested in math.

[L. 52]

She tried to organize explorations around meaningful problems: "I tried to bring it to life and do things as realistically as I could and tie in....You know, if you had to tile your floor again, how much, you know with measurement...[laughter]" [L. 52].

### *Students Learn (Individually or in Groups)*

Monica did not change the way she structured the students' learning activities. Students collaborated in groups to solve problems. She struggled, however, with the wide gap between the students at grade level and the students two years behind:

I think that they [the evacuees] were confused a lot. I mean I tried to do the best I could with them and individualize their instruction as best as I could. But I also felt like my other kids were falling behind and it was a struggle, definitely a struggle in getting them all on the same pages. [L. 58]

So it was a big deficiency [two-year gap] as far as what we had to do and I was challenged to figure out how to bring them up to the level where they

had to be and challenged the rest of the students who are on [grade] level. [L. 60]

### *Expectations and Coverage*

Monica did not cover as much of the curriculum as she had in previous years: “We missed a lot of time in school and I felt, for example, by Mardi Gras we normally would have been through four units and we were through two, two and a half, or three. So I definitely feel like we didn’t get as much done” [L. 66].

### *Acculturation and Behavior*

Acculturation of students occurred in the classroom as they learned expectations and classroom etiquette. General behavioral issues were handled by professional counselors since the attention-seeking, bullying, and territorial fighting types of behavior were seen as related to the dislocation experience and to status, inclusion, and adjustment issues [L. 50].

### *Homework*

Monica attempted to make homework interesting and relevant to students’ immediate experiences. She did not feel very successful, however. She mentioned how the upheaval of home lives made homework a low priority.

### *Testing*

Monica felt some tension between test preparation and her explore instructional practices. The explore strategies:

. . . definitely took a lot more time. I probably didn’t get as much as I wanted accomplished. I don’t feel pressured, but I kind of do, having the LEAP test

in fourth grade. It puts a strain on you 'cause there's so much that you have to get done, that you want them to have done before they take the test and then you have to go back and re-teach things that they didn't learn, so it's kind of stressful. [L. 24]

Monica and the teachers following the same curriculum did not devote a great deal of time to state test preparation, however:

. . . the LEAP test is definitely a pressure that we feel... a lot of stress. Not a whole lot of class time devoted to that. I mean we don't base our instruction around the test. But, there's always that pressure that's in the back of your head that they've got to know this by the time the test is here. [L. 36]

### **Reflection, Reasoning, Logic about Modifications in Practice**

#### **4. In responding to the changed circumstances and needs of the students, how does the teacher explain her reasoning and logic behind the decisions she made in modifying her pedagogical practices?**

##### *Beliefs: Poverty, New Orleans Schools, Families*

Monica taught low-income students prior to Katrina, so many of the issues her evacuees had (parental preoccupation versus parental support, views on homework, etc.) were familiar to her. She spoke about her pre-conceptions about New Orleans high-poverty students:

. . . growing up in Orleans and knowing the education system, I kind of had a pre-conception of the students that I would be receiving. I kind of figured that they'd be... from student-teaching in Orleans Parish, a lot of field

studies, so I knew that, well I didn't know, but I kind of assumed the kids I would be getting would be more in need than the students that maybe weren't from over there. [L. 62]

*Beliefs: Best Learning Approach*

When asked how she felt the constructivist-based instructional strategies fared when teaching low-income or high-poverty students, Monica responded:

. . . I think they fare well. I think they work as well with them as with students who are not low-income. I don't think there's any difference...in teaching the low-income and the high-income students as far as the way that I taught them and the way that they learn, I think it works the same with them. [L. 80]

*Beliefs: Empathy and Insights*

Monica and the other teachers at her school received some training in understanding the impact of dislocation and trauma on students. She referred to this when attempting to understand why students (and parents) responded in certain ways. She did not, however, focus on feelings of pity or speak of adjusting grades. She was concerned with closing the two-year learning gap so that students would do well on the state test.

*Beliefs: Trauma and Behavior*

Monica reflected on the impact of the trauma and dislocation on her students' learning and offered these insights:

It definitely affected their learning....they were pretty occupied with survival mode and I guess learning math wasn't part of that survival mode. They were worried about where they were going to be sleeping and when they were going to get back to "real life" – you know, life as "normal" – and I think...they were given a lot of support through the school, but they still had the need to be comforted. They needed – a hierarchy of basic needs – and that's more of where their priorities were. [L. 82]

*Beliefs: Influence of School Climate*

Monica collaborated with other teachers at her school in order to solve problems she faced in the classroom. "I had to utilize some help. We collaborate a lot with other teachers and ask what they did and that's what I did" [L. 64]. Although she struggled with the two-year learning gap in her classroom, she felt she had the support of other teachers.

*Beliefs: Testing Means I Must or I Can't*

Testing "puts a strain on you," says Monica. But it did not cause her to alter her constructivist-based practices. She and the other teachers at her school believed going through the regular curriculum was the best preparation for the test. The greatest stress came from having to move student learning such a great distance, meaning students had to learn more than the regular curriculum. She called catching up "re-teaching" [L. 24].

## **Teacher 4: Kendra**

### **Background**

Kendra had taught mathematics (sixth grade) for three years at a middle school approximately one hour from New Orleans. The students were predominately from low-income working class backgrounds; 70% were eligible for free or reduced lunch. Parents often did not have more than a high school education and counted on teachers to help their children understand so that they could do their homework. Kendra related that, “if you can find some way for those kids to understand, and they can, they’re going to go home and teach their parents. And so you taught two people” [L. 10].

### *Katrina Impact*

Classes resumed October third after Hurricane Katrina. There was a long period of transitioning as both teachers and many students were gone and new students – evacuees – were absorbed. While Kendra taught two subjects before Hurricane Katrina, afterwards she taught six subjects. She related the story of one of the classes she eventually taught:

Before Katrina, they had a teacher. After Katrina they got in another teacher for a week; she was supposed to stay there for the rest of the year. Well, numbers and everything and then the school board said that they couldn’t hire her. So, they had to let her go. And then they pulled me and put me there, so it was kind of like their whole environment was, you know. Maybe some of them didn’t have damage [from the hurricane] or didn’t face



that. But that was very traumatic and when they found out their old teacher was coming back they thought they were losing me, “Are we getting another teacher?” But they just moved her to another area because they didn’t want to do that to the kids, and left things the way they were. It was pretty traumatic for them. [L. 48]

## **Research Question Responses**

### **Practice: Before and After**

#### **1. How does the teacher describe her pedagogical practices prior to the 2005-2006 school year when she absorbed Hurricane Katrina evacuee students?**

Prior to Katrina, Kendra opened lessons in a way that would “spark the kids’ attention” such as showing a video clip, posing a question or word, or having them dress up in costumes that related to the theme or context of the lesson [L. 14].

When students did not understand, it usually was because they had “a weak background”:

They didn’t understand the purpose of math and no one took the time to show them....so they stopped liking it and they stopped caring about it... “I’m not going to pay attention. I don’t understand what you just said, so I’m not even going to take the time to hear you again.” [L. 16]

Kendra believed that the problem of not understanding was primarily a function of unengaging and “un-fun” teaching practices:

. . . if you go in with a good approach, because I'm a big person on brain-based learning and all the styles in which you can go about teaching a lesson. And if you follow those, you're going to be surprised that maybe one out of your kids is not actually going to understand. Because if you can trick them into having fun, and they don't really know that they are doing [math], you know.

The big thing was, "I didn't know that math could be fun." [L. 18]

Kendra explained, "Of course, there's some things you have to reteach. There is always going to be some. Especially because they're going to come in and they're not going to remember things and that's the normal thing" [L. 24]. So she made sure students got "that base knowledge" and knew what was going on; and then "it's normal to take tests and do quizzes and things like that" [L. 24]. But what she felt made the most difference was engagement. She especially liked to bring in technology. She felt if students could learn things they're interested in (like creating a web page) it would move students from disinterest to excitement and engagement [L. 24].

Kendra felt she could get students interested both before and after Katrina: I'm lively and have a lot of energy and I believe life is too short. And so, you know, I have just a good attitude....I wear slippers sometimes you know, like I said, "I'll dance around if I have to." I told them, "I haven't done a cartwheel in I don't know how long but if I have to do a cartwheel to help you learn, by all means I'll do a cartwheel." And that was both before and after [Katrina]. [L. 26]

Kendra's own negative experiences learning math informed her positive and effusive approach to teaching. As a student she had "like a phobia of math....all I can remember in math is like...[the] textbook...[and] never any hands-on visual type approaches," questions were "blown off," "no one would take the time to help you," and teachers expected students to "remember everything two years prior and didn't want to refresh on things" [L. 4]. Thus, in her teaching she used hands-on, visual, and active strategies, she told students "everyone can learn math and it's ok to ask questions," and emphasized her availability to help ("I'll stay after school, I'll stay in at my break, whatever I need to [do to] help you") [L. 28].

Kendra used a daily bell-ringer that served as test preparation. It usually related to an application and was often pulled from test preparation books. As end-of-year testing approached she spent more time in class on test practice.

## **2. How did the teacher view her evacuee students' learning needs?**

Kendra found that her evacuee children did not have a strong background in mathematics. When teachers had students' prior grades to refer to, they did not reflect students' actual mathematical knowledge:

I had a child come in that had an A on her math, but when she came in she didn't even have the background, the skills, the multiplication, you know, that's needed. So, it took a little bit longer to get her or just to get down to where they needed to be and they needed a completely different structure than did the other kids. [L. 12]

Evacuee students had typically moved in and out of a number of schools. “Even the last week of school we had people enrolling....I had one student that enrolled after Katrina until three weeks before school ended. Then she went back to a school” closer to where she had come from [L. 32]. Kendra felt students needed structure and stability.

In talking with her students they told her Kendra’s school was a lot more structured than their school in New Orleans. “I don’t know if they had more problems at where [they] went to school, or behavior problems, but they didn’t learn as much, is kind of what [they] said on that” [L. 36].

**3. How does the teacher describe her pedagogical practices after she absorbed Hurricane Katrina evacuee students?**

*Acceleration or Remediation*

Kendra followed the regular mathematics curriculum, rather than following a more basic track. She related that, through encouraging students to ask questions and participate, she was able to determine when students were not understanding:

. . . fractions was a little bit harder at first – for the majority of the kids – because it’s fractions, you know, “What’s the point of fractions?” and all the stuff that fractions have to deal with, and area and perimeter and things like that. Geometry, things like that, are a little bit tougher to get, even if you do have a strong background because then you’ve got to remember everything and bring it back into play and then you might have, in that lesson, a

question that might be more difficult and you have to apply all these skills and it might take someone longer to get it. [L. 50]

When students did not understand, she would re-teach or present material in an alternate way:

. . . if there was a problem we would just back the truck up. Ok, this approach didn't work, let's find another approach, find another way. I mean, I wouldn't necessarily say it's completely their background...because some kids could remember things and some kids can't and some kids got that background, some kids didn't. [L. 50]

She also provided in-class and out-of-class support. In general, she felt her regular teaching practices could be relied upon to accommodate the students' needs.

#### *Communicating Concepts and Procedures*

Although Kendra used engaging ways of posing the lesson's central question, she frequently presented material to the whole class prior to moving students into activities, applications, and projects. She did not shift emphasis to greater time in direct instruction after Katrina; rather, she increased group work time.

#### *Motivating, Engaging*

Kendra's main strategies for motivating students continued to be through applying lessons to interesting and meaningful contexts, engaging their imagination, and allaying mathematics phobias by ensuring them they could learn no matter their starting point.

### *Students Learn (Individually or in Groups)*

Kendra wanted to make sure the students had “the basics” down first (often using some type of whole-class instruction) before she launched them on activities and group work. She matched students up when assigning them to groups, putting students who could “stick to the assignment” with those who needed more structure – this included some of the evacuees who were not already accustomed to her classroom procedures [L. 78]. She also worked individually with students. Kendra believed that when some caught on to a lesson more quickly than others, it was because the latter group of students had more fragile prerequisite knowledge; she therefore slowed the pace down [L. 34, 50]. Her instruction was not textbook-driven; she noted that evacuees seemed more accustomed to working exercises from a textbook.

### *Expectations, Coverage*

Even though the school year was shorter than usual, Kendra covered not only the regular curriculum but also added additional enrichment components [L. 60]. She attempted to convey to students the message that they could all do well and that she would help them be successful.

### *Acculturation and Behavior*

According to Kendra’s comments, students needed to be acculturated to group work, to taking academics seriously, and to feeling empowered in activities that asked them to have some input (e.g., design their own survey, select the content they wanted to apply a lesson to, etc.).

### *Homework*

Kendra found evacuee and low-income students had trouble with homework, in part because parents were unable to help [L. 16]. She attempted to make sure students understood well enough to do the homework independently and believed that students were sometimes able to explain the mathematics to their parents, thereby educating another person [L. 10].

### *Testing*

Kendra's class did not end with a high-stakes state test. But they did have an end of course test for which she and the other mathematics teachers pooled examples to review in their classes [L. 52].

### **Reflection, Reasoning, Logic about Modifications in Practice**

**4. In responding to the changed circumstances and needs of the students, how does the teacher explain her reasoning and logic behind the decisions she made in modifying her pedagogical practices?**

#### *Beliefs: Poverty, New Orleans Schools, Families*

Kendra reported she did not believe that learning styles had anything to do with their families' income. She felt that all students are alike; where they differed was in individual learning styles and interests. She grew up in a parish that had a majority of high-income Caucasian students and had come to a school that has a majority of African-American low-income students:

. . . it was a different atmosphere but you just have to go in with, "This is who I am. I'm this teacher. This is why I became a teacher, and I'm going to treat

every child exactly the same.” You know, it doesn’t matter what their race is or their background. If you have a learning style...it can work with any student....Find out what ways they learn, you know, how do you learn best. Find out what they like and incorporate all those skills in it and you know this child might learn by drawing, this kid may by lecture, this kid might learn by making up a motion. Pull every one of those aspects into it so that you’ve addressed each one of those children. It doesn’t matter if their parents make zero dollars or 200,000 dollars a year. They’re all kids and they all want to learn. [L. 62]

*Beliefs: Best Learning Approach*

Kendra did not differentiate her instruction according to socioeconomic background:

I don’t think that just because you are low level or low-income or high level or high-income or middle whatever means that you need to learn this way because your parents make a lot more money. You need to learn this way because your parents make a little bit of money. They’re kids and it doesn’t matter at what level they’re at or what income level, they all just want to experience learning in a...way so that they can graduate, go to college, and make something of themselves and know that this was a good experience, that sixth grade was a good year. Because statistically they say middle school is when kids start to decide this isn’t what they want, if they want to drop out of school and they just have to wait until they’re old enough to do



that. So if you can get them in middle school, that is the neatest thing. [L. 64]

She did spend time acculturating students to her group and activity-based instructional methods. When asked how her methods might have changed if she didn't have at least half of the students already accustomed to her type of teaching, she indicated that a teacher always had to adjust practices to the specific group of students she taught.

*Beliefs: Empathy and Insights*

Kendra referred to a workshop the teachers had attended that sensitized them to the anticipated problems evacuee children would have. She felt it was important to get to know evacuee students and allow them to talk about what they had been through and their feelings about it. She felt they needed extra emotional support:

[It was important] to know these kids and knowing exactly what they lost and what happened to them....you have to hold their hand a little tighter than you do someone else because this person over here lost their grandma in the storm and their home and their car and all that, and they're sleeping on concrete, or in a tent, or in their house right now. And you know that that person needs extra, "I'm proud of you, if you ever need anything let me know, you're doing a good job..." They just need that little extra because they're going through something traumatic in their life. [L. 56]

*Beliefs: Trauma and Behavior*

Kendra related behavior to experiences and focused on how students should be supported and acculturated. She observed the impact of trauma on one student:

. . . this whole experience changed people. It was a child. I had him before this class move. A very good child. Didn't say too much. But after Katrina – he didn't come back right when school started; he came like a week later – a totally different child. He started cursing all the time. It was like emotional distress. It was something you dealt with. I know it affected him. It affected a lot of kids. I mean kids that weren't behavior problems before came back and were behavior problems. That's the way they lash out; they're hurting and that's the way they do things. [L. 76]

She also attempted to manage behavior problems as they first appeared. For example:

And some of them would come in with this kind of attitude of, “That’s how it was over there so it’s got to be here.” So if you don’t catch them the first day when they come in...you’re going to lose them. It’s just like these are my rules, kind of like, “This is Mama’s house. In Mama’s house you do as Mama says. You choose the way you want to learn. We can learn and have fun or we can...be bored – it’s up to you. Because I don’t like to be bored, but if I have to be bored so that we can learn and do stuff that’s going to keep you behaving, then that’s what we’re going to do. I don’t mind having a good time and learning. Sometimes it costs me a little extra money, but if you’re going

to walk away and remember this experience and what you learned twenty years from now, that's what's important to me." [L. 40]

*Beliefs: Influence of School Climate*

Kendra did not indicate that the school climate was an issue for her. She reported collaborating with other teachers and that they appreciated the workshops provided to the school staff and teachers that sensitized them to issues of trauma and adjustment.

*Beliefs: Testing Means I Must or I Can't*

Kendra and other teachers wanted students to be prepared for tests but they only had "three construct-response questions, so we got together and constructed some or borrowed from here and there....because we wanted the kids to get prepared....You can't fully prepare them for everything but hitting on things as much as possible" [L. 52].

## **Teacher 5: Molly**

### **Background**

Molly was a first-year teacher from the Teach Greater New Orleans (TGNO) program. Her instruction on how to teach took place over the summer (2005). She described the program as largely theory-based, especially when it came to behavior management. They wrote several lesson plans, took turns being the teacher with other TGNO students, and learned:

. . . to bring out all these bells and whistles and you pass out the M&Ms and graph the M&Ms, cut up the little shapes and put them together, and for me that wasn't particularly beneficial because that didn't teach me how to teach them – the kids, the real kids – math....how do you explain to the kids, other than how I learned it? [L 10]

The students attending the middle school where Molly taught were predominately low-income (85% free or reduced lunch), 75% African American, 20% white, and 5% Hispanic or Asian. Molly thought the students were similar to inner city high-poverty New Orleans students:

. . . we have a lot of kids that were from Orleans but not necessarily because of the storm. There was...some kind of redistricting...that they had done apparently in the summer before, so apparently there were some 'bad' neighborhoods that we allegedly got some kids from....it would be like, "Oh, that kid, he's from Orleans" or "That kid is from Orleans." [L.50, 52]

When asked what being "from Orleans" meant to the teachers, she responded:

That kid's a mess. That kid has been babysat from kindergarten through fifth grade. You know, that kid didn't go to school, he went to like daycare basically. And they had, you know, there is no structure. There's no boundaries, there's – it's a big free-for-all. The kids would think nothing about walking out of the classroom. [L. 54]

Molly believed this was due to students frequently moving and schools not being able to socialize them to the basics of school culture (“structure”) that are needed for teaching and learning:

I worked with a classroom management “remediation” teacher...sent to me by the parish because I was allegedly too nice to the kids....he said...people who have the most classroom management problems are kindergarten teachers.... this is something that starts before [school]....By the time these kids walk in the door...a lot of them...have not had any structure...and I don’t necessarily blame the parents....it’s just the whole cycle that has happened....They’ve been bounced around from place to place... [L. 56]

Molly believed the teachers at her school were excellent, “Like I would have no problem sending my own children to any of these teachers....[they] are wonderful and they do care and everything” [L 20].

### *Katrina Impact*

Molly had just completed her first week of teaching when the school was evacuated for Hurricane Katrina:

[On the first day] I came in and I saw all these kids looking at me and we were instructed to...just kind of get to know them, create those wonderful bonds, and build relationships, and that’s what I was kind of doing. And I left Friday and my math cohort and I were getting together for some drinks and celebrate surviving the first week of school and everything. And I was ready and I was going to go in Monday and start teaching. And then the

hurricane happened and that didn't, you know. I was out then for about a month. Well when I came back...[now] we're supposed to really build relationships, you know, they've been through so much....So I go in and there are maybe five kids per class. And so I'm, you know, building these relationships, and...you know what happened... [L 12]

Molly started out with five or ten students after Katrina and ended the year with one hundred twenty students:

. . . I've gone from having all these little classes, maybe five to ten at that point [October], so that was fine. And then maybe around Halloween I was to maybe seven or eight. Then at Thanksgiving [I] had about ten. Then all of a sudden in January I come back and I've got thirty-seven kids in my first period looking at me. And they're *maaad*, ooh they're mad because, you know, they had one teacher, then they had another teacher, and then they got bumped to this other teacher, and they don't even care because they hate this school and they want to go back to Texas. Texas was nice and, you know, it's like they have this little insight then as to how schools could potentially be and everything and they're angry and now they have me and they don't know me but they hate me. So, you know, it was really interesting and there were so many of them all of sudden. [L 18]

## **Research Question Responses**

### **Practice: Before and After**

#### **1. How does the teacher describe her pedagogical practices prior to the 2005-2006 school year when she absorbed Hurricane Katrina evacuee students?**

Molly had only one week of teaching full classes prior to Katrina. Then, until December she had very small classes of non-evacuee students. Her discussion of her practices prior to absorbing Katrina evacuees thus refers to the first week and the fall term prior to January of 2006 when she resumed teaching full classes of students, many of whom were New Orleans evacuees. Her observations provide a perspective different from that of the other four teachers because her reference point is not prior teaching experience (she had none) but her general expectations as a new teacher of what teaching and learning should be about.

During her first week of teaching Molly devoted time to getting to know her students and building relationships. She introduced a lesson using a “hook” – something “entertaining” or a brief story [L. 40]. But she soon discontinued using these and other engaging strategies, “because the kids would get so rowdy, I often found it was best when they were sitting and writing notes off the overhead – which is oh so sad, I know” [L. 40].

Molly found that students tended to come and go a great deal. These were not evacuees:

Just regular kids, yeah. They just, they move....And, yeah, a lot of their friendships aren't tied up in school 'cause a lot of them are living way over here but somehow have some permission or whatever to come over here 'cause they're using their dad's address even though they really live over here with their mom and it's just like such a...mess. It's so weird. There's so much just chaos that goes on and, I don't know! There you go! [L. 42]

When students didn't understand Molly felt it was usually because they were not paying attention or because they did not have an adequate mathematics background. "How I had sixth graders that did not know that four times three was twelve is beyond me" [L. 44]. For example, she asked one student what five times four was. "He went, with a pencil, five....he drew this nice little picture. Then he counted all the circles and he said, "Twenty." [L. 44]. Molly felt the students needed to learn the basic math facts so that they could eventually concentrate on procedures and problem-solving:

. . . 'cause when you're doing step by step by step by step and you just stop...in order to figure out [math facts], you're going to get lost in the problem. And I think that's what would happen and they'd pay attention, they take like half of one thing I'd said and half of another thing that I had said and smoosh it together. And somehow they're flipping, they're doing reciprocals, they're multiplying, they're flipping it back...because they're only paying attention to half of what you say. The half of one day that they



learned something and half the other day and put it together. And then everything would just be jumbled. [L. 46]

Molly was reluctant to have students work on problems independently because, “the second I give them...a couple sample problems to work they couldn’t do them” [L. 46].

Molly was frustrated that her students were so transient, frequently missing several days of classes. Perhaps this accounted for the fact that there were “no test scores whatsoever” available for students from previous grades or schools – this is for students who were at her school prior to Katrina [L. 90].<sup>63</sup>

She was surprised that the students did not seem more open to learning: They’re sixth graders. Sixth graders to me should still be kind of fresh and excited and happy to learn. They shouldn’t be sitting there like, “I’m going to drop out as soon as I turn seventeen.” You know. And that’s what I saw....They talk about positive behavior support and all that. Sometimes I think there aren’t enough M&Ms in the world to make these kids get all excited about this. [L. 46]

She also found that many students seemed physically unable to focus:

. . . some of them, they just can’t [pantomimes jittering, tapping, moving], they’re doing this and they’re dancing and you’re like, “Ok, now let’s take some of that energy and put it into this. Ok...” They’re having a good

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<sup>63</sup> One multi-year report has shown Molly’s school regularly lost as much as 25% of its students (not due to moving to high school) each year. An even higher turn-over occurred in faculty. Nearly 90% of students were eligible for free or reduced lunch. (Louisiana Department of Education, HPSI Application, 2009).

time....[But] you can't have them...do an interpretive dance to...dividing fractions or something. Maybe there is, but I have yet to encounter the web site.... [L. 78]<sup>64</sup>

Many students seemed to have rough home lives:

A lot of them come with so much baggage that I think I honestly can't even begin to really scratch the surface....maybe math isn't that important....It's like, you know, your dad's beating up your mother and this [is] going on...for some of them. And I think you can kind of figure out the kids who...[for them math is] so far down the list. [L. 78]

When students did not understand, she re-taught the lesson or attempted to present it in a variety of different ways: "I did tons of re-teaching....'Ok, you didn't get it today, let's see, let's try it in small groups today. Let's try it this way today. Let's try it..." [L. 64]. Occasionally a mother would meet with Molly about her child not learning:

A mom's sitting there and planning on using her welfare check to put her child in a Sylvan learning center 'cause he doesn't understand. You just say "No, don't do it because he's capable of...learning this and...I'll come in in the morning or, make sure he gets to me at lunch or after school, whatever, because...he needs that one-on-one attention." [L. 78]

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<sup>64</sup> Molly did have the students write their own multiplication rap songs and "they'd do this during class and.. then my boyfriend with all his recording equipment [will] come up to school and record it. I'm really excited about this little project. I think this will fix everything! [laughter]" [L. 82].

Molly felt another factor in retention was the need for students to take responsibility for their learning. This observation was confirmed for her by paraprofessionals working in her classes:

I did greatest common factors and least common multiples from January until March. And just a little bit of adding and subtracting fractions and ordering fractions and greater and less than fractions, supposed to be finding common denominators and trying to get, you know, [using fraction block manipulatives]....And then they take a test and they don't get it. I can sit there and show them how to change a fraction, equivalent fractions, common denominators, and they're like, well where did that come from? And I had the privilege of having – I had a student that was hearing impaired in one of my classes so she had a translator who's really great, really cool. And then I had a co-teacher in my class with my special ed. inclusion kids. And they would like look at some of these kids and be like, "She's been talking about this for like three months!" At some point you need to take some personal responsibility... [L. 60]

Molly had many failures on tests. She offered out-of-class help ("I'm here for detentions in the morning anyway, so come in the morning") but they didn't come: "...they would be so far behind...they would not have any idea of what to do. And I know that while I'm not a perfect teacher, I know that they should have gotten something out of something" [L. 66].

## **2. How did the teacher view her evacuee students' learning needs?**

Molly found that evacuees were fairly similar to her existing population of students. With regard to problems she identified, including behavior, motivation, low value of education, and unwillingness to budget intellectual and psychological energy, she noted: "It's by no means a Katrina evacuee thing. It's...Orleans Parish, but I would say...it's fairly across the board" [L. 22]. Students appeared to have fragile mathematics backgrounds, which meant they were only understanding a portion of what she taught when they were able to focus and were frequently not able to retain it.

Because she realized that some students would probably not be successful in her class, that they were not absorbing or retaining the material, she:

. . . decided that if some of them are going fail, I'll never completely be able to get to them, I want to...try at least to get to the point where they're learning it and understanding it. But if that's not going to happen at least they're going to remember math as a positive experience...[and pass that on to] the next generation. [L. 84]

## **3. How does the teacher describe her pedagogical practices after she absorbed Hurricane Katrina evacuee students?**

### *Acceleration or Remediation*

Molly was not able to manage student behavior enough to ensure students were learning the basic content of the curriculum. She identified some of the prerequisite skills they were missing, such as math facts and concepts of fractions.

She slowed the pace down, did not cover as much, and inserted classes focused on missing skills.

### *Communicating Concepts and Procedures*

At first Molly began class with a “hook” that would engage students’ interest and introduce the lesson, then move to explaining concepts and group work. But soon she found that students would get so rowdy that it wasn’t an effective approach for her. Also, as students were present or absent or transferred elsewhere, “you’d get one kid and it changed the entire dynamics” [L. 40]. Over the course of the year she transitioned to more direct instruction.

### *Motivating, Engaging*

Molly struggled with motivating and engaging students. Her activities to excite students about learning failed because students were unable to focus or even sit still for very long. She also struggled with finding ways to relate to them that would result in student engagement. At first she focused on building relationships because she had learned in her education program that many students were motivated by relationships if not by future career aspirations. But soon she encountered a problem with students treating her as a “pal” rather than a teacher.

### *Students Learn (Individually or in Groups)*

Molly had learned in her summer teacher education program about engaging, constructivist-type investigations that would help students develop conceptual understandings. She had difficulties keeping students on task and focused:

I wasn't allowed to do group activities very much 'cause I wasn't able to get them to work as...cohesive little units and everything....The other teachers would come and yell at me – they wouldn't yell at me – but they'd come and say this is not working....I don't know if it was my – I thought I had presence and everything. [L. 96, 98]

Molly found students were most cooperative and listened when copying material from the overhead.

### *Expectations, Coverage*

Theoretically, Molly felt the students could learn. Practically, she felt their inability to sit and focus undermined their possibilities. She told students:

. . . “it’s not whether or not you’re good at math. You might be....you could be the smartest person in my class and I would have no idea because you don’t do anything for me. You want to get up and wander around the classroom...” I’m...helping someone, and I look up and I’m like, “Why are you over there? Your seat is over here. Come back over here, sit down, do your...” They’re like, “Man, I hate this school! I can’t do nothin’ in this school.” I’m like, “No you can do something in this school. You can come over here and you can do what your assignment is. And then maybe I’ll know what you’re capable of doing.” [L. 76]

### *Acculturation and Behavior*

Apparently other teachers had problems similar to Molly’s. There did not seem to be a positive school culture – “the way we do things here” – to which she

could acculturate students. She had a sense the students were missing “structure” but viewed it as an individual characteristic rather than a cultural phenomenon. She had not yet figured out to instill structure in her students and her class.

### *Homework*

Students tended to not complete or lose homework. She thought they were understanding a concept that the worksheet covered in class but the homework would not get done or handed in:

They do the problems [in class] and some of them get it, “Good, good, good, good! Awesome. Oh my gosh, you guys are so, oh I knew you were going to be good at this, look at this, you are awesome,” and all this stuff. And then the next day, “Where’s your homework?” “I didn’t get it.” “Well you got it yesterday.” “I forgot it.” “Well, did you take your worksheet home? Did you take your notes home? Did you look at what you had done? You got it yesterday. You told me, oh this is easy and you understood and you were going to get an A on this test...” [L. 130]

### *Testing*

Students did not have a state-mandated high stakes test at the end of the course. Molly was concerned that students understand the mathematics necessary for the next grade. However 20% of her students failed the class.<sup>65</sup>

I failed for the year 20% of my students! That's a lot of failures. A lot.

And...there...could have been more, but these (80%) are...the ones that tried.

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<sup>65</sup> It is interesting to note that this is about the same percentage of students the school tended to lose each year.

It was a rough year and I gave them the benefit of the doubt. [So] that's completion grades....they...were actually trying, you know. But still – 20% and those are the kids that didn't do anything – ever! [L. 102]

### **Reflection, Reasoning, Logic about Modifications in Practice**

#### **4. In responding to the changed circumstances and needs of the students, how does the teacher explain her reasoning and logic behind the decisions she made in modifying her pedagogical practices?**

##### *Beliefs: Poverty, New Orleans Schools, Families*

Molly considered a cumulative deficit in mathematics skills, the physical inability of many students to focus or sit, and a lack of commitment to the educational project as problematic. She felt students were not socialized into school “structure,” in part because of student transience and a cycle of poverty [L. 56]. She also felt part of the problem was the fact that she was a new and inexperienced teacher. Her point of reference was her own positive educational experience in a middle-income context.

##### *Beliefs: Best Learning Approach*

Molly thinks that education should be interesting and exciting. She was anticipating being able to engage in constructivist-based explorations, creative projects, and fun activities. She referred to this when she discussed why students who returned from Texas were so angry:

. . . they hate this school and they want to go back to Texas. Texas was nice and, you know, it's like they have this little insight then as to how schools



could potentially be and everything and they're angry and now they have me and they don't know me but they hate me. [L. 18]

She explained why she thought students liked the schools in Texas (or Georgia) better:

Well, they got pushed to do things, and they did it for whatever reason, you know, maybe it was the time factor that was involved. I don't know... One little boy told me he was taking some kind of media class...where they...got to work with like TV cameras... I'm not sure exactly where he was. He actually may have been in Georgia, I think. But, you know, they got together these other schools and I, you know, you hear horrible things about New Orleans schools and everything and the teachers are so tired and this and that. You know, tired and just worn out and they don't care, and blah, blah, blah. And I'd experienced [at this school]...not necessarily New Orleans inner city schools, but... the kids come and they're so out of control. That it just takes so much out of you to get them to do what they need to do. So it's real hard then to do like the fun innovative activity. [L. 20]

*Beliefs: Empathy and Insights*

This was Molly's first teaching experience with low-income and high-poverty students. Her understanding is largely based on her students' behavior and information gleaned from other teachers or teacher training staff. She expressed empathy for the mother who struggled to afford tutoring for her child on her public

assistance income. She expressed frustration that students were not prepared to learn but did not attribute this to any innate lack of talent or ability.

*Beliefs: Trauma and Behavior*

Molly understood that students who had been through the Katrina dislocation needed additional support and relationship-building. The characteristics of Katrina evacuees, however, seemed very similar to the school's regular population and she felt the relationship-building she had started at the outset of school had not been terribly successful.

In speaking with her teacher colleagues, however, they noticed an increase in behavior problems during the school year and attributed it to post traumatic stress:

From what I heard from discussions in the teachers' lounge, some of the teachers thought we were dealing with some sort of post-traumatic stress disorder. The other teachers said I've never seen anything like this year. Like this is particularly bad. Like I'm having to hide my dry-erase markers so that the kids don't walk away...."You're stealing my stuff!" And the other teachers say, "Yeah, I guess they are." So, yeah this could have been a particularly strange group of kids; it was just some kind of an off year. [I hear in Houston] kids will skip classes and kids will come and go and, it's like...where did they come from...

But Molly did not have a "normal" frame of reference:

I don't have anything to compare it to, unfortunately. It was my first year...but from what I gather this was a particularly...off year. Now whether

or not it was the group of kids, the fact that they'd been shuffled around, the actual experience of going through the hurricane....I just think that a lot of it was going to happen one way or the other and then I think the hurricane definitely didn't help, you know. And even once they got back, there was no stability. And for me, I couldn't get used to one class dynamic before [it shifted again and then again and again]....So there was never really a chance for me to get into a groove and for them to get into a groove. [L. 132]

*Beliefs: Influence of School Climate*

Molly's experiences in the classroom were very stressful. Since she did not have past experience to use as a reference point, she often talked with other teachers to see if they agreed with how she was interpreting a situation or to garner support after an incident in the classroom. They shared a similar set of experiences and confirmed many of her responses to problem behaviors. This checking against and converging of perspectives can be understood as one way the school's informal culture functions:

So I liked going to the teacher's lounge so that we could say, "Ooh, so-and-so – they are in a mood today." And, you know, one of the veteran teachers, I like to say the grown-up teachers, would say, "Oh, I know. She was awful. This is what she said to me today." And I'm like, "Ok, good. It's not just me being, you know, stupid new teacher that doesn't know how to control her class." [L. 34]

I like to think of it as a support group. You know. It's like, you're just kinda, "Here's what they're doing and I don't know what to do and... [laughter] help me!"....there are enough kids to mess things up where I would start feeling like I was drowning sometimes. [L. 38]

*Beliefs: Testing Means I Must or I Can't*

Molly did not experience the pressure of high-stakes testing during her first year of teaching.

### **Cross Comparison of Responses by Research Questions**

The teachers included in this study reflect a range in experience, type of school, and grade level they taught. Two had ten to sixteen years of experience (Megan and Colette), two had three to four years of experience (Monica and Kendra), and for one teacher this was her first year of teaching (Molly). The two teachers with the most experience also reported that their pre-Katrina students were predominantly from middle-income or professional families (Megan and Colette). The teachers with several years' experience normally worked with students from low-income, working class, or working poor families (Monica and Kendra). The teacher with the least experience taught at a high-poverty underachieving school.

It is interesting to note that the two schools with the highest School Performance Scores (SPS)<sup>66</sup> (Megan and Colette) before and after Katrina reported middle to upper middle and professional parent incomes, close collaboration among teachers, high parent involvement, close connection of the school to its community, and a “tight” or family type organization (see Table 4). The schools with working class families (Monica and Kendra) also reported high collaboration between teachers and a fairly structured school environment. The school with the lowest School Performance Score and highest poverty (Molly) had a high level of student, teacher, and principal transience.

All teachers indicated that their work was meaningful when they could turn students around, transform their lives, empower them, and make a difference in their future opportunities. Molly, however, had moved from a primary concern for students to her own basic “survival” in the classroom.

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<sup>66</sup> The School Performance Score (SPS) was developed by the Louisiana Department of Education under No Child Left Behind in order to evaluate schools’ year-to-year improvement. Its measure includes factors such as state and other test scores, attendance, and retention rates. (Cowen Institute for Public Education Initiatives, 2010).

**Table 4**  
**Background Information for Participants**

	<b>Years Teaching</b>	<b>Socio-economic background of students</b>	<b>LA 2004 Accountability Report Baseline SPS</b>	<b>LA 2008 Accountability Report Baseline SPS</b>	<b>School Climate</b>	<b>Grade Level</b>	<b>Meaning in Teaching</b>
<b>1. Megan</b>	16 years	Middle-income professional families; Homogenous classes	97.7	106.1	Close collaboration of teachers; Strict/tight/family	7 <sup>th</sup> grade math	Likes having an impact on students; Plants seeds & hopes they'll grow
<b>2. Colette</b>	10 years	Mostly upper-middle-income; community-related school	111.6	108.2	High parent and community involvement in school	8 <sup>th</sup> grade (pre-Algebra)	Pleasure in turning around students: Wanted to cover the curriculum so students had a good background
<b>3. Monica</b>	4 years	Working poor	85.4	84.8	High collaboration of teachers and school	4 <sup>th</sup> grade math	Wants to help students be successful in learning and engaged
<b>4. Kendra</b>	3 years	Low-income and working class	85.4	84.8	Collaborated with other teachers; More structured	6 <sup>th</sup> grade math	Transforming students' lives; Motivate & empower students
<b>5. Molly</b>	1 year	High-poverty	65.7	60.7	Under-performing school; high student and teacher turnover; high poverty; high turnover in principals	6 <sup>th</sup> grade math	At first wanted to make a difference; later wanted "survive" felt like "drowning"

*Source of SPS: 2003-2004 Accountability Reports; 2008-2009 Growth School Performance Scores, Louisiana Department of Education [SPS scores have been approximated to protect teacher / school identities.]*

## **Research Question One**

### **1. How do teachers describe their pedagogical practices prior to the 2005-2006 school year when they absorbed Hurricane Katrina evacuee students?**

The teachers at the highest income schools (Megan and Colette) frequently referred to the high performance goals of their schools (see Table 5). Megan said the teachers were very proud of their high grades and scores and that students from neighboring areas wanted to send their children to her school. Colette indicated her school placed a very high value on test scores and she in fact spent the most time (fifty hours) on class test preparation. There was a difference in the teachers' approaches and in the interest level of the students. Megan used a constructivist-based and varied approach, paid a great deal of attention to her students' lives to help her make lessons interesting and meaningful, and reported students were engaged and interested. Colette, however, did not report using a conceptual approach, her students had difficulty remembering and sorting content from different chapters, she focused on facts and basics, and reported her students were not very interested in mathematics.

Monica and Kendra who taught working class and low-income students used a constructivist-style concept-building curriculum, employed a variety of engaging methods to involve students in learning, and both felt motivation was their most important task. The teacher who had an end-of-year LEAP test (Monica) prepared by teaching the normal curriculum rather than teaching to the test.

Molly, who taught at the higher poverty school, began her first year of teaching by attempting to engage students, build relationships, and use a creative and activity-based approach. But, through the interplay of her inexperienced trials and her experiences with students, along with the support of other teachers helping her to cope, she moved to a focus on basics using a direct instructional approach.

In sum, the teachers who taught at the lower- and middle-income schools promoted conceptual and applied as well as skills learning, focused on motivating and engaging students, and used diverse pedagogical approaches, including constructivist-based collaborative investigations and direct instruction. Where the course ended in a state test, they primarily relied on the regular curriculum to prepare students. The teacher in the upper-middle professional school placed a high value on test preparation and test-taking strategies, and focused more on basics and computational skills than on conceptual understanding. She offered out-of-class tutoring when students had difficulty understanding, and she had difficulty motivating students. The teacher who taught higher-poverty students in the lowest-income school had the least teaching experience and the weakest mathematics background. She began the year using engaging and relationship-building activities, but had difficulty managing behavior and making learning possible.



**Table 5**  
**Teacher Practice, Pre-Katrina**

	<b>Approach to Learning Gaps</b>	<b>Teaching Orientation</b>	<b>Student Engagement</b>	<b>Fact or Conceptual Orientation</b>	<b>Impact of Test Preparation</b>
<b>1. Megan</b>	Accelerates so students can keep up with others; High expectations	Relates concepts to real-life situations and applications; Constructivist in explore, apply, make concepts useful; also uses direct sometimes	Engaged and interested; Listens to students to find ways to relate	More conceptual and applied than disassociated fact	Used normal curriculum to prepare for tests
<b>2. Colette</b>	Tutoring; Slow down as needed	Not conceptual: Students have trouble relating learning from different chapters so tests over smaller segments so they don't get confused	Students not interested in math; students often say they are "just not a math person"	More on facts and basics and computational skills	LEAP: school places a high value on test preparation and high scores
<b>3. Monica</b>	Re-teaching; many had trouble retaining the learning	Curriculum draws on constructivist-style conceptual-building; Almost scripted; But students aren't linking concepts	Difficult to motivate students	Teaches conceptual orientation; but students are missing prerequisite skills	LEAP: did not base teaching/curriculum on test preparation; followed normal curriculum
<b>4. Kendra</b>	Re-teaching & catching up is part of normal practice	Used both direct and activity-based approaches; didn't dichotomize approaches	Felt motivation and engagement were central to learning and focused practices on this	Focused on both conceptual understanding and basic facts	No state test; did some preparation for end-of-year test
<b>5. Molly</b>	Not able to accelerate; Remediated and slowed down	Very short teacher education training; Knowledge of teaching approaches is more practical/activity-based & not theoretical; Moved to direct instruction due to behavior problems	Attempted to use activities; Decreased group work	More fact-based & concern with basics; Didn't understand point of constructivist activities	No high stakes test so no major test preparation

## **Research Question Two**

### **2. How did teachers view their evacuee students' learning needs?**

All teachers noticed major gaps between the mathematics prerequisites expected at their grade level and the actual preparation of their evacuee students, especially those from Orleans Parish (see Table 6). One impact of absorbing the evacuees, then, was the heterogeneity it introduced in their students' prior learning. Megan spoke of how the teachers at her school had always worked together very hard to coordinate the sequence of mathematics learning and skills; thus, teachers knew precisely what students had or had not yet studied. Evacuee students from other schools in the area were similar in prior knowledge but the evacuee students from the higher poverty schools of Orleans Parish introduced a major challenge to teachers. Monica assessed the evacuees' mathematics knowledge and found them to be two grade levels behind the other students in her class. Molly's evacuees were similar in skill level to the students already attending her higher poverty school.

All teachers also noted that motivation was a major problem: students were not interested in mathematics, didn't see its relevance, and didn't see the importance of engaging with it. Colette, whose upper-middle-income school stressed high test scores and test preparation, may have previously relied on students' shared high value on good test grades to leverage engagement and effort. She found, however, that evacuees were "not even fazed" by failing test grades.

Teachers felt the students seemed to have been accustomed to more textbook-driven instruction ("do this page in the book"). Teachers reported the students did

not seem accustomed to group work, exploration activities, or giving input into the design of independent projects. Teachers knew homework would be a problem because of the students' dislocation and the temporary nature of their home situation. Monica, Kendra, and Molly thought that homework might not have been a regular practice at their previous schools, or was a formal practice (on the books) but not an actual practice (never really expected).<sup>67</sup> Monica said the students responded to a homework assignment "as if it were a joke." Kendra thought a problem was that parents had inadequate education themselves and could not help students complete it. Molly found students immediately understood (she did not have to teach them) the classroom practice of copying notes from the overhead.

When asked what type of classroom environment the evacuees seemed accustomed to, most agreed they must have had less "structured" or less "strict" schools. Megan held Orleans Parish teachers in high esteem and believed it was more of an overall administrative issue related to poor discipline. Examples of behaviors on which they based this view included unchecked talking out of turn in class, walking out of class, disruptive behaviors, sleeping in class, disrespect of

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<sup>67</sup> The interplay between formal rules in high poverty schools and their actual implementation may be important to understanding the dynamics between top-down policies intended to reform schools and day-to-day high poverty school realities. Lack of implementation is often blamed on incompetent administrators and teachers who refuse to enforce rules, do not care, or are not committed to educational improvement. But in some cases this dissonance may be tolerated because: a) having policies on the books may satisfy some stake-holders while lack of enforcement functions as a safety-valve for unachievable policies, or b) it gives elasticity to strict policies focused on symptoms rather than causes. In high-poverty schools in another state the current researcher found many instances of formal policies and administrative talk that could not actually be and were not expected to be implemented. Teachers would begin the year enforcing formal policies (such as shirts tucked in) as a nod to the principal who was being observed and evaluated, but soon made decisions not to enforce the policy because of its potentially negative impact on the learning climate in their classroom. In one instance a new teacher who was unfamiliar with the informal rules attempted to enforce the policy, was injured, was not backed up by the principal, and soon left teaching as a career.

teachers or other students, unfamiliarity with the etiquette of group work, and unwillingness to apply themselves to working and learning except through direct teacher pressure. Some also based their views on experiences student-teaching or observing in Orleans Parish schools. On the other hand, behaviors they associated with the trauma of dislocation included attention-seeking behavior, withdrawn or listless behavior, anger, and lack of interest in working at a new school where they didn't want to be. Megan, Monica, and Kendra spoke of the need for practices that acculturated students to the new school and classroom norms and expectations.

In sum, teachers who taught in the lower- and middle-income schools noticed the greater heterogeneity in mathematics preparation (often at least a two year difference) introduced by their evacuee students. Additionally, they encountered challenges in motivating the new students, although they already made motivation and engagement an important piece of their practice. They also reported evacuee students were unfamiliar with their classroom norms and collaborative group etiquette. The teacher in the upper-middle professional school noted evacuee students' weak mathematics preparation, especially their lack of basic skills. She discovered her usual means of motivating students – by appealing to common professional aspirations and college entrance goals – seemed ineffective. The teacher at the lowest-income school reported her evacuee and non-evacuee students were similarly underprepared for grade-level mathematics instruction. She also found many evacuee and non-evacuee students had difficulty sitting or focusing,

were unmotivated to learn, and were not accustomed to traditional classroom norms.

**Table 6:**  
**Teachers' Understandings of Evacuee Student Learning Needs**

	<b>Gap</b>	<b>Motivate/Interest</b>	<b>Apparent Teaching Style Accustomed to</b>	<b>Homework</b>	<b>Behavior, School Culture</b>
<b>1. Megan</b>	Evacuees: Introduced a great deal of gap to a previously homogenously-prepared student population	Not motivated	Orleans evacuees: accustomed to less strict classroom environment; not accustomed to group work. NON-Orleans evacuees were similar to prior student population	Not able to assign much homework due to home dislocation situation	Evacuees from Orleans were unaccustomed to school norms
<b>2. Colette</b>	Evacuees: many gaps in prerequisite skills	Appear to not be "fazed" by failing test		Not able to do much homework because of dislocation	Some initial behavior and cultural issues
<b>3. Monica</b>	Measured a 2-year gap between her regular students and the evacuees (2 years below grade level); Monica had prior experience in Orleans and anticipated many evacuees would be more in need than her low-income students	Even less interested or motivated than her prior students	Evacuees: accustomed to textbook-driven instruction ("Do this page in the text"); not accustomed to exploration	Not accustomed to doing homework ("a joke")	Attention-seeking and bullying behavior; worked with mental health professionals
<b>4. Kendra</b>	Evacuees had weak math backgrounds; their grades didn't reflect abilities	Students needed to be motivated	Evacuees: accustomed to less structured schools; accustomed to text-book driven instruction	Had a problem with homework; parents lacked education to help	Needed to be acculturated to group work
<b>5. Molly</b>	Evacuees were very similar to her existing students; all were missing prerequisite skills and knowledge	Students were not motivated	Students responded best to copying notes from overhead	Didn't complete or lost homework (and tests)	Not accustomed to a structured school environment; accustomed to walking out of class "at will" or coming to school intermittently

## **Research Question Three**

### **3. How do teachers describe their pedagogical practices after they absorbed Hurricane Katrina evacuee students?**

Megan, Monica, and Kendra approached the couple year gap in prior mathematics knowledge through acceleration (see Table 7). That is, they followed the grade-level curriculum but also taught missing prerequisite skills – individually or to the class – as they were needed. All teachers mentioned slowing down. Colette and Molly especially slowed down the pace. Prior to Katrina Colette had relied on homework practice to reinforce lessons and to help her progress through the curriculum. After Katrina she stopped assigning homework and spent a great deal of time remediating. But, because her school placed a high value on test scores and test preparation, she shifted from the normal curriculum to a test-preparation curriculum for the last several months. Thus, students learned a portion of the course content in the context of test-preparation. Molly became focused on the basic skills her high-poverty students were missing, which she felt had to be learned before higher order concepts and skills could be taught.

Megan, Colette, Monica, and Kendra all increased the use of group work, downplayed the importance of homework, increased flexibility in terms of testing (take-home, re-test, etc.), and increased one-on-one and peer assistance. Megan did more modeling of concepts. Molly, on the other hand, decreased group work and moved to a more direct instructional approach.

All attempted to relate problems and lessons to students' interests. Megan reported actively learning about her students' lives and interests in order to more effectively engage them. Monica made her explorations around topics meaningful to them and Kendra found issues she thought would excite and involve her students. Molly wanted her students to care about mathematics and not close doors that they might later regret. But she struggled with motivational strategies such as building relationships and beginning class with exciting or engaging activities as she lost control and then was unable to teach.

Most teachers spoke of acculturating students to norms and expectations. Kendra placed "structured students" (prior students who were already acculturated) with "unstructured students" (new evacuee students) when doing group work so that students would learn the etiquette of collaborative work. Monica reported teaching classroom behavior. Megan used the same "reeling in" approach she used to increasing students' level of achievement when she acculturated students to classroom practices. Each week she would "up the ante" ("that was last week; now you know better...").

Two teachers had final high-stakes state tests at the end of the school year. Only Colette shifted from following the normal curriculum to a test preparation curriculum. Two teachers spoke of increasing flexibility in grading. Colette adjusted grades for some students so that they could pass and not be penalized by factors they could not control. She also added flexibility to testing, especially when she was moved by the traumatic experiences some of her students had had. Molly's



passing grades reflected that the students had at least done “something” in her class. Twenty percent did not pass because they had done “nothing” in her class.

In sum, the teachers who taught at the lower- and middle-income schools reported following the grade-level curriculum but accelerated evacuees’ learning by patching in missing pre-requisite skills and knowledge as needed. They continued to use diverse methods, but increased modeling and group work. Teachers reported working hard to find ways of relating lessons to students’ interests. They also explicitly taught classroom norms and acculturated students to academic expectations and the etiquette of group work. The teacher in the upper-middle professional school slowed down the pace, focused on remediating basic skills, and increased group work. She reported she continued to have problems motivating students. In the spring she stopped following the curriculum and shifted to teacher-directed extreme test-preparation. The teacher who taught at the lowest-income school also focused on remediating basic skills, moved to more direct- rather than activity-based instruction, and struggled with motivation and behavior.

**Table 7**  
**Teacher Practice, Post-Katrina**

	<b>Acceleration or Remediation &amp; Expectations</b>	<b>Teaching Practice, Format, Homework</b>	<b>Motivation, Student Engagement</b>	<b>Acculturation</b>	<b>Impact of Test Preparation</b>
<b>1. Megan</b>	Acceleration; high expectations	Increased: modeling, hands-on; flexibility; decreased: homework (from 10/day to fewer)	Learned from students about interests and worked them in	Acculturated students to strong pre-existing school and classroom culture; mentored students	Followed regular curriculum
<b>2. Colette</b>	Slowed down; stopped assigning homework practice; remediated and tutored; shifted learning to extended test preparation; felt sorry and changed grades for some	Discontinued homework; same teaching style but more group work (mixed ability); later, shifted from activities (constructivist-type content) to test preparation	Tried to relate problems to students' interests	Some early behavior problems stopped ("I'm from Orleans; I'm bad")	LEAP: Shifted learning to 50 hours of test preparation; taught to test
<b>3. Monica</b>	Worked on accelerating students individually	Used homogeneous groups to focus help; made math interesting; felt constructivist-based approach fared well with low-income students	Tried to make explorations around meaningful topics to them	Taught classroom behavior	LEAP: Followed regular curriculum
<b>4. Kendra</b>	Accelerated ("back the truck up"); did not cover less (went faster than other classes)	Increased group work and helped students adapt to structured groups	Related content to students' interests	Acculturated students to classroom, group work procedures by mixing structured students with evacuees; taught students to have input into choice or design of some activities	Followed regular curriculum
<b>5. Molly</b>	Remediation and slow down	Moved to more direct instruction	Struggled with motivation, relationships, and behavior problems	Attempted to establish culture (you can't put head down in class, etc.) but not so successful	Followed regular curriculum; 20% failed class: they "did nothing"; others passed because they "did something"

## **Research Question Four**

### **4. In responding to the changed circumstances and needs of the students, how do the teachers explain their reasoning and logic behind the decisions they made in modifying their pedagogical practices?**

All teachers who had lived in the area for a while had views on schools in Orleans Parish's high-poverty neighborhoods. Several had student-taught or observed in some of the schools during their teacher education training. Megan and Colette, the teachers with the most years of experience, had the most thoughts on the relationship of poverty to student learning. Megan attributed much of the blame to parents' low expectations and aspirations for their children (not caring what they do or if they learn, just have them in school). She also felt that, although the teachers in Orleans tried their best, the administration and school's lack of structure made it impossible for teachers to be successful. Megan had a strong sense that education was essential to upward mobility. She placed a high value on her success stories, such as the daughter of a waitress who saw little value of education for her future but who was "turned around" and eventually had a professional career. Megan saw herself as a change agent, planting seeds and hoping they'll grow. She invested a great deal of attention into learning about her students and getting insights into what they were interested in so that she could better engage them. She had a developmental and guardedly optimistic view of her students' abilities and potentials. She attempted to strategically move her students week by week from where they were when they first came to her class to where she

thought they should be for their grade level. She provided examples of some of her evacuees who at first had not wanted to be at her school but who later said their mother wanted to move them to the area so they could continue attending the school. This example is similar to other reports that evacuee students ended up liking the higher performing schools they attended after Katrina (and the varied opportunities the schools provided) and wanted to stay.

Colette had typical stereotyped views [her words] of the relationship between poverty and student learning: problem behavior, getting into trouble, no parental involvement, and low value on education. She spoke about two different experiences that challenged her stereotypes and made her reflect on this connection. One was a student who was not always at school but when he was, he would ask for the make-up tests – usually when she was in the middle of something. When she learned that he had spent several days on the roof of his home before being rescued, she began to see his behavior in a new light and altered her policies and practices that were becoming obstacles to his success. She reported that working individually with a student from the Ninth Ward whose character and effort again caused her to rethink stereotypes she held. In most of the examples where she reported changing her views, she characterized the students as quiet, sweet, nice, or even listless. Colette's initial views on the Katrina experience moved her to feelings of pity. Her response was to slow down, provide remedial support, and probably lower her expectations for higher order learning. She also attempted to relate mathematics to students' interests and was more flexible in her policies (such as not assigning

homework and allowing re-testing in multiple forms). Because of the high-stakes testing environment in which she taught, she then had to speed up the curriculum in the spring and spent several months (fifty classroom hours) in intensive test preparation.

Monica and Kendra who each had three to four years of teaching experience had more thoughts about their students' individual needs and learning styles than they had about the general relationship between poverty and student learning. They both placed more emphasis on students' individual needs and expressed opposition to views that prescribed a particular type of instruction to a particular socioeconomic class. Both emphasized the value of their constructivist-based curriculum to all students, despite students' backgrounds or the testing demands. Monica and Kendra saw motivation as essential to helping students catch up to their grade level (two grade levels, in fact). They both spoke extensively about their efforts to "bring [mathematics] to life," to engage students' imaginations, or to draw them into lessons. They did not express feelings of pity but did speak of the trauma many students had experienced and the need for extra support.

Because this was Molly's first teaching experience, she was unsure about how things should or could be when teaching in her high-poverty context. The lack of learning and success in her classes that was apparent to her and others led her to struggle with the question of, what part of the problem was a result of her own inexperience and what was the result of the students not taking responsibility? Other than her own educational experience, her reference point was what she

learned from other teachers at her school, the parish behavior coach, and the TGNO teachers. Molly's situation differed from that of the other teachers in this study in that the high-poverty evacuees at her school were being integrated into a school context that was homogeneously high-poverty, rather than into a middle or working class school. Unlike Molly, the other four teachers (Megan, Colette, Monica, and Kendra) could rely on their pre-existing already-acclimated students to help socialize evacuees and keep expectations high. Some of Molly's students did get a glimpse into an alternative type of instruction during their brief experience with the schools in other states. Perhaps for the first time the students became aware that there was a different type of education out there and it exposed them to interesting directions (media, robotics, etc., i.e. beyond becoming a basketball star) they hadn't known existed. Molly agreed that was the type of education the students deserved but she didn't know how or wasn't able to deliver it. Additionally, her concern with the students' trauma and dislocation waned (since she had no prior experience to compare it to) in relation to her own trauma ("drowning") in her teaching experience. The support that carried her through came from other teachers at her school who helped her shift the simultaneous feelings of powerlessness and responsibility for the situation to the students, their parents, the socioeconomic base of the school, and the school's structure. Over the course of the year, Molly's instruction moved toward the direct instructional practices depicted in the educational reproduction of inequality literature. Finally, of the five teachers in the study Molly was the least-prepared to teach and was teaching in the highest

poverty school. (The teachers with the most experience taught in the middle- and upper middle-income schools.)

Table 8 provides an overview of teachers' beliefs and reasoning related to changes they made in their practices to accommodate their evacuee students.

In sum, the teachers who taught at the lower- and middle-income schools reflected a range in views of students' socioeconomic and cultural backgrounds: from deficit-like views (parents' don't value education, Orleans schools are not strict enough) to positive views (parents' lack of formal education seen as an opportunity to "teach two"). They engaged students through hands-on activities and applications, and several were almost evangelical in their desire to turn students on to mathematics and higher aspirations. They acculturated students to classroom norms and expectations and believed their regular curriculum would prepare students for state-mandated tests. The teacher in the upper-middle professional school expressed deficit-type views of students' backgrounds and behavior. She expressed pity for some students but was disparaging of less-docile student behavior. She was more flexible in requirements, but also lowered expectations. She believed mathematics learning had to be learned in a progressive sequential manner, which led her to focus on remediation and basic skills. She covered less of the curriculum but, because of the high value her school placed on high tests scores, she devoted much of the spring term to test-preparation as it seemed like a more efficient method to reach assessment goals. The teacher who taught at the lowest-income school had the least experience. She began the year optimistic about her

ability to change lives and turn students on to mathematics. She encountered problems keeping classes focused or on-task during group-based activities. She found students seemed accustomed to direct instructional styles and moved toward traditional instruction. Her emerging views on what types of instruction worked with her students, what could be expected of the students, and who was at fault were influenced by her teacher peer community.



**Table 8**  
**Teacher Beliefs, Reasoning Connected to Practices with Evacuees**

	<b>Poverty, Push or Flexibility</b>	<b>Trauma, Slack Off Expectations</b>	<b>Motivation, Student Engagement</b>	<b>Cultural View; Acculturation</b>	<b>Test Pressure</b>
<b>1. Megan</b>	Saw low-income related to low expectations and lack of motivation; still retained high expectations; saw fluidity in class mobility (success stories)	Teachers were sensitized to symptoms of trauma and stress for the first time; introduced flexibility and acceleration but not diminished standards	Motivated through hands-on activities; kept them actively involved; real world applications; showed students respect; maintain boundaries	Acculturated students: “I want something more for you and this is the way we do it”; used humor; got them to like math	Did not alter curriculum
<b>2. Colette</b>	Had stereotypes of low-income students (behavior, trouble, low value on education, absent parents); work with 9 <sup>th</sup> Ward student challenged views	Added more flexibility with test-taking (when, take-home, re-take); accommodated upheavals in students’ lives	Tried to relate activities to student interests; moved from activities to last months of test preparation; used group work (mixed ability)		Devoted 50 hours of classroom time to test preparation (pressure due to lost time and weak backgrounds)
<b>3. Monica</b>	Had worked with Orleans students before, expected greater needs; worked to catch them up to grade level with normal curriculum	Covered less, more slowly (due to lost time, re-teaching); (did not speak of pity or of adjusting grades)	Primary problem (besides poor academic preparation) was interest and motivation; tried to “bring it to life” and apply	Students learned expectations, ways of doing things; bullying, attention-seeking behavior was modified with help	Felt test pressure, constructivist-based methods took more time, but did not change curriculum
<b>4. Kendra</b>	Focused on individual students’ learning styles, not impact of poverty; sought ways to motivate all students	Important to provide emotional support, allow students to express feelings; trauma changes behavior; did not slack off	Wanted to engage and interest students; this is age that influences later choices to drop out	Acculturated students to group work, give effort, empowerment in activities that asked for input and choice	Did not alter curriculum; some test preparation at end
<b>5. Molly</b>	Deficits as cumulative product she could not fix; many physically unable to sit, focus; passed students who made effort; the 20% who failed did nothing	Trauma was subsumed in overall effect of high-poverty backgrounds; just tried to get them to do something and learn something or like it	Wanted to engage students but lacked skills to do the things she wanted to do given the behavior of students	Tried to acculturate students to enable teaching, learning; saw students’ violation of these norms as individual acts rather than more broadly	No high-stakes testing so no major test-preparation mode

## Chapter Summary

The teacher participants in this study reflected a range of experience from one to sixteen years. Two taught at middle- or upper-middle-class schools, two taught at working class schools, and one taught at a school with a high level of poverty. Most teachers used some combination of constructivist-based explorations, concept-building discussions and activities, and direct presentation.

The 2005-2006 school year was very stressful for all the teachers. They found their evacuees had much weaker mathematics backgrounds and were sometimes two grade levels behind their other students. In all cases evacuees were in classes that also contained non-evacuees who were already accustomed to the school's way of doing things and generally learning at grade-level. As a consequence, teachers repeatedly reported experiencing the tension between ministering to their less prepared students and keeping their other students challenged.

Where evacuee students were integrated into classes with higher income non-evacuees, teachers reported acculturating students to classroom and academic grade-level norms. Teachers also worked hard to help students acquire missing prerequisite skills and knowledge. They increased modeling and group work and they gave a great deal of attention to finding ways to relate mathematics to students' interests and to motivating them to become vested in learning. Teachers in the working class schools and another in a community-based school already had well-developed motivational strategies. One teacher continuously adjusted her expectation threshold allowing her to "reel" the students in gradually to higher

academic standards and achievement without losing them in the process. The teacher in the highest income school that also placed the highest pressure on test performance found that failing grades did not motivate students and had to develop other strategies. This same teacher who devoted major time to remediation for the first part of the year, then switched to test preparation mode for the final several months where students presumably learned the remainder of the curriculum.

Where evacuee students were integrated into classes with students from similar socioeconomic backgrounds in schools that were struggling to avoid failing status, acculturation of evacuees was to the same low academic level of the pre-existing student population. The teacher with the least experience taught in this school and experienced her own form of first-year trauma. Without a strong teacher education background, her views of her responsibilities to and possibilities for her students were influenced by the teacher culture that gave her support.

In the next and final chapter issues raised in Chapter Two regarding poverty, schools, teacher views, and teacher practice will be considered in light of these findings.

## CHAPTER FIVE: DISCUSSION

### Introduction

Education in the United States is inextricably connected to one of this nation's *raison d'être* – guaranteeing equal opportunity to all its citizens. The democratic promise of equal educational access gives legitimacy to the association of merit with economic rewards. Yet, many studies show that, although there are many individual exceptions, on a broad societal level education reproduces an unequal class system, guaranteeing privilege to those who come from privilege and limited opportunities to those who start with less (e.g., Anyon, 1982; Bourdieu, 1977c; Bowles & Gintis, 1976). This circumstance persists despite successive generations of educational reforms and regardless of the fact that teachers generally enter their profession believing they can make a meaningful difference in their students' lives.

How does it happen that a transformative teaching profession and an opportunity-ensuring educational system serve some well and others not? Much of the answer lies with political choices that impact people's access to family-sustaining livelihoods, how education is funded, and how schools are populated. But many important factors reside within schools where teachers negotiate theory, practice, policies, school climate, and the complex needs of their students and where, ultimately, aspirations are sorted out.

## **Purpose of Study**

This study examined the relationship between teachers' mathematics pedagogy and the socioeconomic class of their students. The post-Hurricane Katrina evacuation of New Orleans' low-income public school children and their absorption into often middle-income or working class schools taught by middle-income teachers during the 2005-2006 school year provided an opportunity to study the impact of socioeconomic class (teaching low-income students) on existing pedagogy used by teachers in higher income schools. The study was interested in understanding how teachers alter their teaching strategies through the problem-solving and dialectical nature of teacher practice. Do middle-class teachers continue to deliver pedagogy and curriculum typical of middle-class schools to their low-income students, or do they move toward traditional, direct, and basic skills instructional approaches?

There are many dimensions to the issue of pedagogies that low-income students experience – the larger political and economic structures that produce and maintain poverty, the economics and politics of residence and school assignment, student dispositions and learning preferences, school and administrative structures, communities of teacher peers, and parental factors. The present study is concerned with how teachers interpret and assess class-related problems and modify or reconstruct their pedagogical practices.

## **Research Questions and Summary of Findings**

Immediately following the 2005-2006 school year, I interviewed middle school mathematics teachers who taught at schools located in areas adjacent to the storm-damaged regions of New Orleans and that had absorbed low-income Orleans Parish evacuees. The teacher participants reflected a range of experience from one to sixteen years. Two taught at middle- or upper-middle-class schools, two taught at working class schools, and one taught at a school with a high level of poverty. Prior to Hurricane Katrina, most teachers used some combination of constructivist-based explorations, concept-building discussions and activities, and direct presentation.

The research questions that guided this study and a summary of findings follow. Findings are discussed in greater detail and with respect to the literature in the subsequent section.

### ***1. How do teachers describe their pedagogical practices prior to the 2005-2006 school year when they absorbed Hurricane Katrina evacuee students?***

According to teacher interviews, prior to the 2005-2006 school year, participants varied in their teaching orientations and the type of knowledge they hoped to convey. Three teachers (Megan, Monica, and Kendra) reported focusing on a combination of conceptual, applied, and basic mathematics understanding. All three used reform-based curricula. Megan and Kendra emphasized the importance of motivational strategies, including relating mathematics to student interests,

devising applied activities where students could make choices or relate knowledge to something within their experience. A fourth teacher (Colette) was more concerned with facts, basics, computational skills, and enabling students to score high on mandated tests. She also reported students frequently confused content from different chapters and having to move to tests over smaller segments, a common problem when instruction is skills- and procedure-focused rather than conceptually-driven. A fifth teacher had minimal preparation and was beginning her first year of teaching. She started the year with a focus on building relationships and providing engaging activities but had not yet developed her thinking about types of knowledge or connections between theory and practice.

## ***2. How did teachers view their evacuee students' learning needs?***

All teachers noticed major gaps in their evacuees' mathematics understanding. Some teachers used pre-assessments to determine students' level (usually two or more years behind their non-evacuee students). Where students' transcripts were available, teachers often found grades for mathematics courses did not correspond to the same level of learning and achievement as comparable grades for the same courses at their schools. In four cases (Megan, Colette, Monica, and Kendra) evacuee students were in classes with higher-income students who were performing at grade level and teachers emphasized the extreme tension they felt between providing attention and support to their below-grade-level students and needing to challenge their at-grade-level students. All teachers also reported their

students seemed unmotivated. One teacher (Colette) who had relied on middle-class students' desire for high grades to motivate students found failing test grades did not have the same effect on her new students. The new teacher (Molly) found her high-poverty evacuee and non-evacuee students were similarly below grade level and generally unmotivated. She also reported that many students seemed physically unable to sit and focus (jittery, tapping, wandering around the classroom) except when performing low-level tasks such as copying notes.

***3. and 4. How do teachers describe their pedagogical practices after they absorbed Hurricane Katrina evacuee students? In responding to the changed circumstances and needs of the students, how do the teachers explain their reasoning and logic behind the decisions they made in modifying their pedagogical practices?***

The three teachers (Megan, Monica, and Kendra) who reported a pre-Katrina focus on conceptual, applied, and basic mathematics understanding reported that during the 2005-2006 year they continued to teach the regular curriculum but slowed down and accelerated the background skills of their evacuee students. That is, evacuees covered more new material during the school year than the regular curriculum as teachers patched in missing prerequisite skills for each new curriculum segment. They also did not consider exchanging their reform-based and diverse-method teaching practices for more direct-instructional approaches. Although they did increase modeling problem-solving strategies for students, they



reported increasing collaborative and applied group activities in order to engage and motivate students.

The teacher who was accustomed to teaching upper middle-income students and had benefitted from a shared high value on test-taking strategies and high test scores for getting into good colleges (Colette) chose a remediation approach. She slowed down, focused on missing basic skills, and was not able to cover the regular curriculum. She caught up over the final months through fifty hours of intensive test preparation. She used a mixture of reform-based and other teaching practices but, due to time-constraints, reported often choosing activities that were less time-consuming.

The new teacher whose evacuee and non-evacuee students were from similar high-poverty backgrounds (Molly) also focused on remediation and basic skills. At first she attempted to use activities she had learned over the summer (such as using M&Ms in modeling and graphing), but she understood their purpose as making mathematics more interesting or fun. She was not able to manage student behavior, and was instructed by her teacher peers to discontinue them. She eventually opted for a more direct instructional approach to minimize disruptive and off-task behavior.

## **Discussion**

In this study teachers made choices about whether to continue using diverse methods (including collaborative investigations and activities) or to move to direct

instructional practices that are the hallmark of the pedagogy of poverty. They also made choices between accelerating below-grade-level students or devoting the class to smaller basic skills goals and remediation. Finally, they made choices about how to negotiate cultural complexities – through correction, acculturation, or more culturally inclusive code-switching approaches. In the following section these key choices teachers made will be discussed. The interest will be in illuminating the factors that influenced their choices and practice, including: the socioeconomic heterogeneity of their students, the school’s approach to high-stakes testing, teachers’ professional preparation, teachers’ cultural views, and the nature of teachers’ peer collaboration.

### **Pedagogical Orientation and Its Implications**

In an earlier chapter, two broad educational orientations were referenced that have influenced, if not defined, educational discourse over the past century:

a) Administrative progressivism, in pedagogy and structure, largely mirrors a top-down work situation in the world of business and industry (teacher providing direct instruction, students complying). In curriculum, advocates of this approach push for useful knowledge that can easily be measured and assessed. This orientation came to dominate the United States educational system with the most extreme forms of direct instruction (“pedagogy of poverty”) characterizing lower-income schools.

As was previously noted, enduring characteristics of the management (or, in Freire's words "banking" (1973)) orientation include:

- the central role of the teacher in directing instruction and learning;
- the type and form of content that is being transmitted (bytes) and the nature of its delivery (banking);
- the way students learn (usually individually rather than collaboratively);
- the impact of high-stakes testing on curriculum and pedagogy (altering what is learned and how);
- the differentiation of students' learning experiences according to students' backgrounds and society's expectations for them; and
- the importance of matching school curriculum and pedagogy to the types of knowledge and socialization employers demand.

b) Pedagogical progressivism focuses on engaging with students to construct understanding and knowledge. The descendants of pedagogical progressivism in mathematics education include constructivist-based reform views such as NCTM's professional standards. Characteristics of constructivist-based orientations (related to Freire's dialogical method) include:

- a less visible but more strategic role of the teacher who structures a sequence of experiences, explorations, discussions, or investigations that are within students' range, guides construction of new knowledge, and helps students integrate new and old understandings;

- an understanding that the knowledge that is constructed is conceptual, relational, and can be meaningfully applied to solving new problems;
- a more collaborative role for students in investigations and drawing conclusions, since knowledge is constructed socially and in community with other thinkers;
- the starting point of constructivist-based pedagogy is the student and the end point, if there is one, is his or her potential and interests, not pure and simple labor force needs.

The constructivist-based reform orientation is commonly believed to provide deeper and more transferable understanding, than the direct banking-type model.

If students in higher poverty schools are more likely to receive direct instruction as research suggests (e.g., Anyon, 1981; Bowles & Gintis, 1976; Haberman, 1991), then questions arise about whether all students have equal access to high quality learning and development of student potentials. As previously noted, these two types of educational orientation are to some degree constructs but have heuristic value in identifying tendencies within complex educational contexts that have different social and learning consequences. Stiff (2001) has written, “In discussions about effective mathematics teaching and learning, we must be wary of oversimplified characterizations of *Standards*-based [reform] mathematics. [It] is not synonymous with constructivism or any other single teaching approach” (para. 10).

The teacher participants in this study did not dichotomize constructivist-based reform models (posing problems, helping students make connections with

other ideas, encouraging students to explain their logic, providing opportunities for students to model or represent ideas or to apply them to their own experience or “real-world situations”) and direct models of instruction (teacher explaining or providing notes, having students practice procedures and skills individually). They reported using both models opportunistically to engage and keep students participating and learning. They did not believe (in fact, strongly disagreed) that direct instruction was more appropriate for low-income learners.

For example:

a) Megan did not feel pressured by the students to adopt a more traditional teaching method. She tended to use, and the students liked, hands-on activities and explorations. She said she applied what she learned in university mathematics and science graduate programs where the curriculum “was geared towards hands-on activities with the students, a lot of graphing, a lot of things that the kids could do. So, basically that’s what I’ve always done. But...I do mix it up. I...do ‘drill and skill’ on some days, too. It just depends” [L. 117].

b) Monica was also not a purist in terms of instructional strategies. She reported she did not dichotomize constructivist-based and direct practices: “I think the combination works well with them, [as] with anyone” [L. 70]. She did not believe that certain strategies are best for some students and not for others:

I don’t like having to separate them [low-income evacuees] from others. I feel like they’re all the same and they had a situation happen to them but it

shouldn't be the determinant factor about how they're taught. So I really, I mean, I don't think I did anything differently; maybe I should have. [L. 70]

Thus, she did not believe constructivist-based strategies were limited in their effectiveness by the background of the students: "they [the strategies] work as well with them as with students who are not low-income. I don't think there's any difference" [L. 80]. Differences she mentioned paying attention to were more individual, such as learning styles and interests.

c) Kendra also did not dichotomize instructional approaches as direct or constructivist. She reported that she drew on a spectrum of approaches, from direct presentation to drama and video clips to student-designed surveys and projects. She did note that her evacuee students seemed to be accustomed to direct instruction and had little experience with group work [L. 58]. This was reported by the other teachers, as well.

d) Molly had an idea of what she considered high quality education. However, as previously noted, she had found her students were most cooperative when they were copying notes from the overhead. They knew immediately what to do; she did not have to train them. She was beginning to learn about constructivist-based reform teaching practices in a workshop the summer following her Katrina experience. However, in light of her first year of teaching, she was unsure how reform mathematics would work:

I think it's cool, I think it's good, I think a lot of the stuff they're doing is going to be waaaaaay over my kids' heads....I'm just like, ok, you kind of sort

of lost me at this point so I'm pretty sure that my students would be not with me at this point. But, I think a lot of it is real cool, and I think it's real fun and I, you know, some of the stuff they were doing, absolutely, I'll do next year. [L. 126]

The interviews with teacher participants, provided information about what instructional practices their evacuee students were already familiar with and what teachers had to acculturate them to. All teachers indicated their low-income evacuee students seemed to have been accustomed to more traditional direct instructional practices. This tends to be supported by other research, which shows that instruction in high-poverty schools frequently relies upon more traditional methods (e.g., Anyon, 1981; Haberman, 1991). Indeed, Molly, a first-year teacher and the only participant teaching in a high poverty school, moved to this approach because the students were already habituated to it and she had not figured out how to engage students in group-work and activities without the result being chaos and disruption.

The other teachers retained their mixture of reform-based and other instructional approaches and acculturated the new students to their way of doing things. This was facilitated by the fact that evacuees were integrated into classes with higher income non-evacuee students who were already accustomed to the methods. Teachers used a variety of methods to acculturate their students to classroom etiquette, expectations, how to work with manipulatives and investigations, and collaboration.

This study's findings support views that higher-order reform methods can be used with high poverty as well as middle-income students. However, students who have already been acculturated to more direct forms of instruction or leadership styles (either by schools or families) may need to be consciously acculturated to the new practices. This was much easier for teachers with a pre-existing population of students who were already acculturated. By strategically pairing evacuees with non-evacuees, teachers made it possible for students to learn more than mathematics from each other.

### *Student Preferences*

While reform methods are believed to promote higher order and more transferable conceptual learning, some research suggests that high-poverty or lower-income students sometimes prefer more direct teaching styles and pressure teachers to adopt them. Lubienski (2000) found that her high-performing lower socioeconomic students felt disempowered by reform methods where the connection between their effort and results (numbers of problems correct on a test) was less clear. Delpit (1995) argues that reform methods that are less teacher-centered can sometimes unfairly advantage middle-income white students, in part because teachers incorrectly assume students share common cultural understandings and views of how authority is expressed and understood. Germain-McCarthy and Owens (2005) believe that *especially* low-income students deserve high-quality reform teaching but that cultural and class-based assumptions and skills embedded in reform practice (including social and discourse skills such as explaining and



justifying, collaborating in groups, taking notes, making and testing conjectures, and applying multiple strategies), need to be taught.

As previously noted, teacher participants in this study reported on the types of instruction they thought their evacuee students were accustomed to: textbook-driven instruction (“do this page in the book”), teacher-directed instruction and little collaborative group work. Nevertheless, Megan, Monica, and Kendra reported they continued to “mix it up” with their methods (collaborative, explore, direct, group activity, etc.) and did not feel pressured to move to more direct forms of instruction. They used their interpretations of students’ past pedagogical experience to guide norming and acculturation of the students to their more diverse methods. They benefitted from having other students in the class already accustomed to practices who could help new students adapt.

Molly, the first-year teacher in a high-poverty school, felt good mathematics education should be engaging and activity-based. However, apparently none of her students were already acculturated to the etiquette of collaborative activities and she did not know how to shape new classroom behaviors. She also had a highly transient student population, which made her task more challenging. Molly did find that students were trained in staying quiet and seated when taking notes. While students did not necessarily prefer direct instruction, they seemed to be accustomed to it and eventually it appeared the only option available to her.

In sum, where teachers had a mixture of students, some accustomed to diverse and reform methods, some accustomed to direct instruction, teachers

reported acculturating evacuee students to their methods. Where the teacher was inexperienced and was working with all high-poverty students accustomed to more direct pedagogies, the teacher moved to more direct methods that enabled her to regain some order and guide students through missing prerequisite skills and parts of the curriculum.

*Teacher Collaborative Climate: Context and Type*

Teacher culture and a cohesive school culture were important to the reported success of several teachers. In speaking about their practice prior to Katrina, these teachers referred to a strong collaborative environment among their mathematics colleagues. They placed high value on their ability to ensure that all mathematics students in one year learned a curriculum of concepts and skills that would be drawn on and extended the next year. They worked together to create a safety net that ensured students were homogeneous in their learning and achievement from one grade to the next and that students did not fall behind. If one looks at the Katrina year as stage one in acculturating a new incoming less-prepared group of students to these teachers' school culture, helping them acquire not only mathematics knowledge but also "the way we do things here," then one might expect students in stage two to eventually assimilate into the teachers' safety net, which would ideally sustain gains from year to year.

Teacher culture was also important for the first-year teacher in the higher poverty school, but with very different implications for teacher pedagogy and student learning. Molly, the least prepared for teaching, was given perhaps the

most difficult teaching assignment. Although she may not have understood the underlying mathematics of the activities she attempted to use with her students, she reported being initially creative and working on building relationships. She had an idea of what good education should look like but found she didn't know how or wasn't able to deliver it. As her teaching difficulties mounted, her concern with the students' trauma and dislocation waned in relation to her own trauma ("drowning") in her teaching experience. The support that carried her through came from other teachers at her school who helped her shift her feelings of powerlessness in the situation, to assigning fault and responsibility to students, their parents, the socioeconomic base of the school, and the school's structure. Over the course of the year, her instruction moved toward direct instructional practices similar to those described in the education-as-reproduction-of-inequality literature (e.g., Bowles and Gintis, Anyon, Freire, and Willis).

These two different examples of teacher cultures – one in a school that is working and perhaps individually transformative, another in a school that is broken and does nothing to alter the reproduction of an unequal system – have complex functions and significant repercussions for student learning. One fosters a logical sequence of concepts and skills across the middle school years of mathematics courses. The other consoles teachers but does not empower them to find better solutions to hard problems.

## **Remediation and Acceleration**

Differences in teachers' practices in this study, such as acceleration or remediation, or reform-based or direct instruction, had some correlation with whether high-poverty evacuee students were integrated into higher-income or into the same low-income level schools. Two related discourses (discussed in Chapter Two) may provide insights into the relationship between student achievement and heterogeneity or homogeneity in school socioeconomic class composition.

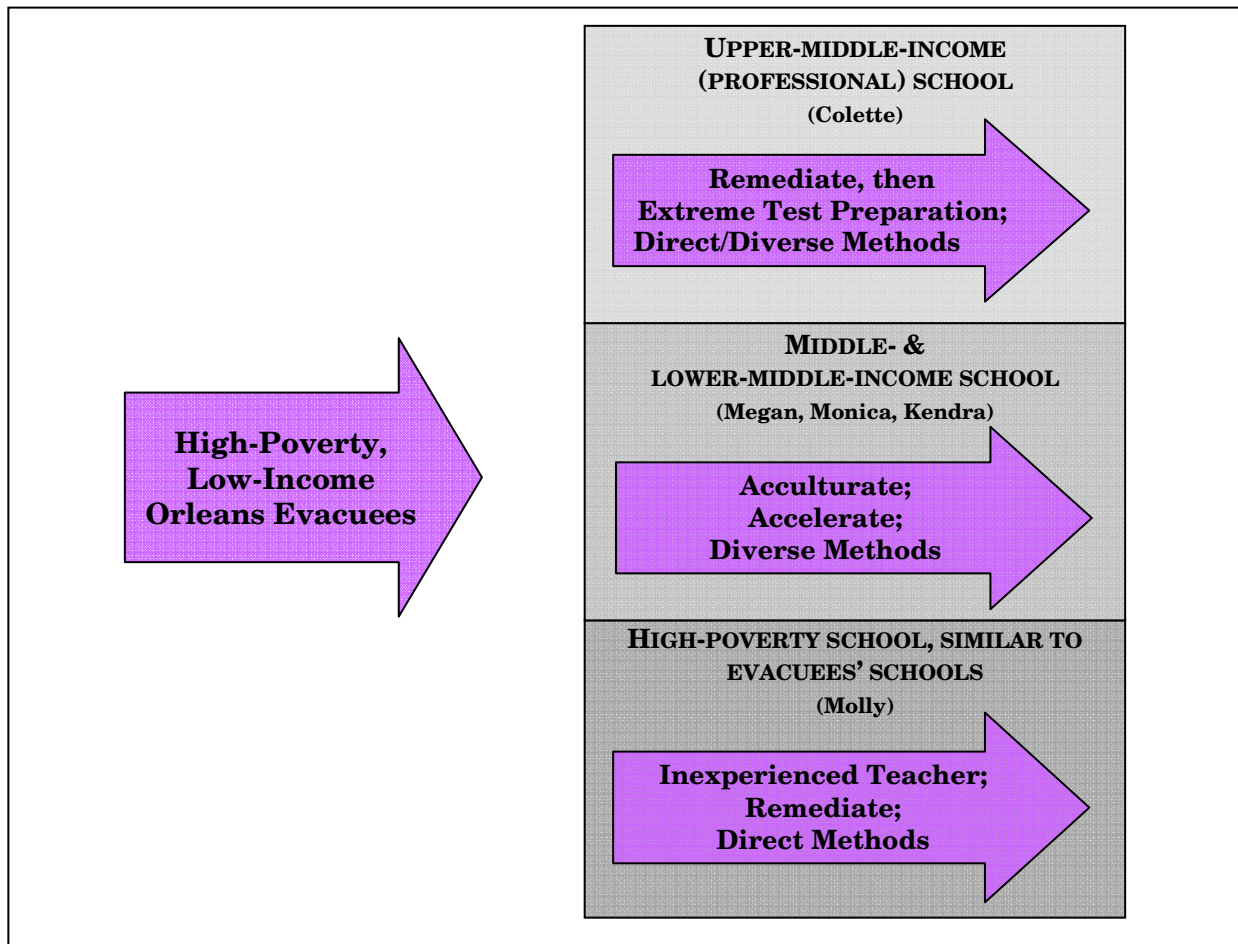
Ready and Silander (2009) have researched the positive impact on low-income student motivation and achievement of going to school with higher income more advantaged students. Boger (2003) and others have looked at the impact of the current trend in the South toward racial and economic resegregation of schools on student achievement. The intensification of high poverty levels in many schools places "children at substantially greater risk of poor academic performance – whatever their personal academic potential" (p. 1375). He also reports that, "the convergence of racial resegregation and statewide, high-stakes accountability measures is likely to increase the racial segregation and economic isolation of some public schools – whose students will disproportionately fail state accountability tests, thereby entrenching broad patterns of grade retention, student demoralization, and teacher flight" (p. 1376). Resegregated high-poverty "failing schools" place increased pressure on teachers to raise student test scores.

Multiple-year studies of Katrina evacuees in Texas schools have also provided data on the long-term effects on student achievement when students move

from high-poverty segregated schools to higher income schools. A Texas Education Agency study (2010) found that when a Katrina student sample was matched with a sample of non-evacuees with similar demographic characteristics, the Katrina evacuees made significantly higher gains on state assessments over the four-year study period. Mathematics gains were particularly evident between the first and second years of their study. They attributed these gains to the positive peer effect of low-income students learning with higher-income peers. Other studies showed middle-income suburban Louisiana (non-Orleans) evacuees who evacuated and returned to middle-income schools did not see the same types of gains in mathematics achievement (Sacerdote, 2008).

Peer-effect studies do not discount the importance of teacher qualifications and the teacher-effect in the gains Orleans evacuees made in Texas, but they do not provide insight into this professional and practice level. How are students engaged with the curriculum and with each other in the classroom? How do teachers help construct these transformative results? The findings from the current study may shed light on this process. In all of the cases evacuee students were integrated into classes with non-evacuee students and in four of the cases low-income evacuees were attending higher-income schools. All teachers reported evacuees' academic preparation was often two or more years behind other students in their classes. Teachers had to determine what to do about these learning differences and how they would alter their practice. The participants in this study made three different types of choices (see Figure 3):

**Figure 3**  
**Correspondence of School Income Level and Teachers' Pedagogical Choices**  
**When Teaching Evacuee and Non-Evacuee Students**



a) Remediation may appear to be more of an option when *all* students in a class are similarly less-prepared. This was one first-year teacher's choice in a situation where ill-prepared student evacuees were combined into classes with other under-prepared non-evacuee students in a school that was near failing status.

b) Three teachers chose to accelerate students, pulling their skills up as they continued with the regular curriculum, albeit at a slower pace. They expressed a great deal of frustration with their difficulty in meeting all their students' needs,

feeling that they sometimes neglected one group while working with another. Nevertheless, they were highly motivated to accelerate the less prepared students to the level of their higher achieving students. They used means such as acculturation to learning practices, extensive modeling, strategic group collaboration, flexibility in policies, and moving thresholds of expectations (“reeling them in”). They also reported collaboration with colleagues and professional counselors. These teachers all used a combination of constructivist-based and direct instructional approaches. Even though constructivist-based explorations and group collaboration took longer, they did not discontinue them. In fact, all reported increasing collaborative or group work.

c) One teacher in an upper middle-income school that placed greater pressure on test performance first slowed down to remediate missing background knowledge but ended the spring term with two months of intensive test preparation. She lengthened the test preparation time, not only because many students were lacking required skills and knowledge of test content, but also because she had discontinued assigning homework, which had previously helped reinforce student learning.

Teachers’ choices about remediation and acceleration are important and related to teachers’ beliefs about gaps in learning. Two teachers in this study focused on the cumulative and insurmountable nature of missing knowledge recalling the proverb, “You must learn to crawl before you can walk.” These teachers chose remediation. Others understood catching up as a more dynamic or

elastic process. They patched in missing pieces of background knowledge as needed. Perhaps because in some cases they were in the habit of working with other teachers in planning the sequence of their curriculum, they could identify the patches that needed to be made. They also acculturated students to classroom expectations. Their model of learning was more dynamic (“reeling them in”) than framed by stages.

Teachers in this study who experienced an initial influx of students who were less prepared than other students in the same classroom worked hard to motivate and accelerate the lower group to the level of the higher group. This incentive to accelerate may be absent in classes where all students are at the same lower level in which case teachers may opt for remediation. The differential impact of remediation and acceleration strategies was previously discussed. Remediation is a driving force behind the achievement gap. It is worthwhile recalling Stiff’s study (2009) of a group of students with similar test scores who, at the end of fifth grade, were placed into either accelerated or remedial middle school mathematics tracks. Small differences in fifth grade soon became large differences at the end of eighth grade, which now earned the designation “achievement gap.”

*“Toxic Mix”: High-Stakes Testing and Underprepared Students*

All teachers whose courses ended in high-stakes assessments were concerned with their students’ preparation and achievement and frequently used sample test items as warm-ups. However, while Megan, Monica, and Kendra continued to follow the regular curriculum, Colette devoted much more class time (fifty hours) to



test preparation. Her approach was related to both structure (school constraints) and beliefs about her students and mathematics learning. Colette's school was focused on meeting the needs of her professional-aspiring student population for whom high test scores indicated quality preparation for college and upper middle-class careers. Colette reported that she usually gained students' cooperation through appealing to their desire to get into good colleges and higher-paying careers.

Colette's approach was also related to her beliefs. Her low-income evacuees did not have the same buy-in to the educational project as her middle-income students and were not positively motivated by the fear of failing tests or appeals to gaining admission to good colleges. When the students' behavior was considered from her middle-class mindset it appeared irrational and confirmed her views that low-income students do not value education and therefore do not get ahead.

Colette's pity for her evacuee students and her discouraging view of their academic potential and verve were consistent with her remedial approach. However, slowing things down and focusing on the basics came into conflict with the high pressure she felt to achieve good test scores. Thus, she moved from remediation during the first part of the year to extreme test preparation in the second part. Since not all content was covered during the remediation period it is likely that remaining course content was covered through test preparation material intended to review concepts already learned. Teaching for conceptual understanding, if it had any place during the remediation period, was replaced with

procedural and skills-based pedagogy for the remainder of the year. Colette's experience is consistent with Eisenhart et al. (1993) and others' findings about the tension between teaching for coverage and teaching for conceptual understanding in high-stakes test environments.

Molly who taught in a high-poverty school did not have a high-stakes test to prepare for. However, extreme test preparation and a focus on skills-based curriculum are frequently cited for undermining teaching for understanding in high-poverty schools and for disempowering students who cannot transfer or apply memorized procedures and rules.

## **Culture Matters**

Cultural arguments raised in this study about what students should learn and how they should be taught have ranged from progressive era views of low-income and immigrant families' limiting cultural and intellectual potentials (e.g., Thorndike, 1939; Taylor, 1911; Snedden, 1929)<sup>68</sup> to modern deficit views of cultural and intellectual potentials of low socioeconomic, immigrant, and minority students. Haberman's (1991) classic indexing of characteristics of the "pedagogy of poverty" filled in classroom-level detail to the broad landscape of class and education drawn by Bowles, Gintis, and others (1976).<sup>69</sup> Deficit views that underlie these practices

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<sup>68</sup> On Thorndike, see Lagemann (1989); on Taylor, see Taylor (1911); and on Snedden, see Labaree (2011).

<sup>69</sup> Although Haberman's discussion of the "pedagogy of poverty" (presented in Chapter Two) was first published over two decades ago, it continues to be used by educational researchers such as Gladson-Billings to refer to the type of instruction "reflecting the basic mode of teaching in schools serving poor urban students (who are likely to be students of color, immigrants, and children whose first

assume some people have (dominant) culture and academic potential while others are defined in terms of their lack.

However, a growing body of educational research (e.g., Delpit, 1995, 2012; Ladson-Billings, 1995) uses models that treat cultures more equally. According to this view, all students are raised with cultural understandings about themselves, their community, and language, and all cultures have developed knowledge forms around the problems they solve. Schooling then becomes a location where cultures meet, rather than where dominant culture and knowledge are deposited into students' empty minds (Freire, 1973). Bourdieu, for example, took as a starting point the encounter of two equally valid cultures and knowledges, but that differed in their access to power. He has argued that, to understand unequal educational access, one must look at educational processes relationally. The relationship between a teacher and a low-income student is not merely personal or individual but represents an asymmetrical power relationship between one who is an agent of dominant values and knowledge and the other whose habitus and dispositions reflect their non-dominant social class and cultural origins. Bourdieu shows how the interplay between a student's habitus and the school's dominant habitus (curriculum, norms, and pedagogy) results in differential access to learning. Students come to school unequally equipped with the instruments of appropriation; what begins as a small gap increases over time. Thus, dominant pedagogy, while appearing natural and fair, and rarely questioned, matches the habitus and prior

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language is not English)...It is no surprise that the kinds of instruction students have access to breaks along racial fault lines" (Ladson-Billings, 2004, pp. 59-60).

knowledge of some students who are rewarded (in part for knowledge they gained outside of school) but does not match the habitus of other students who are penalized. Freire similarly argues that the teacher defines a reality for the students that is unconnected to their lives or experience, isolated, and alien (1970/1973). This unconnected and unfair system serves to legitimize existing hierarchies and eventually leads some students to check out of further education.

Delpit (1995), Ladson-Billings (2013), Germain-McCarthy and Owens (2005), and others also operate with an egalitarian view of cultural validity but recognize differences in their relationship to power. Delpit argues that families of students from non-dominant backgrounds “want to ensure that the school provides their children with discourse patterns, interactional styles, and spoken and written language codes that will allow them success in the larger society” (1995, pp. 28-29). In other words, students need training in code-switching (when and how).

Germain-McCarthy and Owens focus on how to provide all students with the tools to appropriate high level reform teaching. Some high-order reform curriculum or practices assume middle-class culture. Students from other backgrounds need to be taught the discourse, collaboration, conjecture-making, and conjecture-testing skills that will enable them to benefit equally.

Ladson-Billings not only proposes training in code-switching, but also believes that *all* students need to: become bi-cultural, learn for understanding and participate in knowledge construction, and develop critical social and political thinking through applications of knowledge to the community and society.

### *Teachers on Culture*

In the current study, teachers not only noted a several year gap in students' mathematics preparedness but also socio-cultural differences between their middle-class norms (dominant habitus) and evacuees' learned behaviors and dispositions. Except perhaps for Kendra, teachers did not tend to see student and school cultures as two distinct but equally valid habitus. Rather, they focused on the presence or absence of dominant school values and dispositions (deficits). Colette especially was disparaging of students' deficits, operated out of a sense of "pity" for quiet ("listless" or "sweet," more often female) victims, and wrote off those whose behavior was active or oppositional (more often male) – except where she reported being moved by a student's traumatic experience. Her concern for her students' deficiencies led her to remedial rather than accelerating practices followed by teaching-as-test-preparation in the spring.

All teachers reported putting effort into acculturating their students to the new classroom norms. Acculturation cannot be described as a neutral process when it implies the acculturation of one lesser status group to the norms of a dominant one. In such a case students begin with a deficit and must work towards redemption. A deficit model also demeans students' families and past school allegiances. This can lead to divided loyalties, discussed next. Acculturation between two distinct but equally-valued cultures is more often described as code-switching. In this case students have equally valid starting points but must learn to translate or code-switch (Delpit) or acquire a second culture (Ladson-Billings).

While most teachers in this study operated with some form of deficit view of students' background (for some, cultural deficits and for others, background deficits that did not provide students with the appropriate means of learning the dominant curriculum), most had developed a somewhat more optimistic view of culture and habitus than Bourdieu. In Bourdieu's model the gap caused by unequal habitus only increases because students cannot benefit from or access dominant knowledge and they eventually check themselves out of the educational system. Several of the teachers in this study, while disparaging the parents' lack of support and the ineffectual administration of the Orleans schools, were passionate (almost evangelical) in their promotion of mathematics learning, middle-class values and aspirations, and their students' academic success. Megan, for example, took great pride in relating stories of students who started out hating mathematics but got "turned on" or the evacuee student whose mother decided to move the family to the area permanently because her son ended up liking Megan's class and school. Kendra viewed teaching a student as teaching a family. In her teaching experience, parents often did not have more than a high school education and counted on teachers to help their children understand so that they could do their homework. She related that, "if you can find some way for those kids to understand, and they can, they're going to go home and teach their parents. And so you taught two people" [L. 10].

Additionally, some teachers did employ acculturating practices that may have led evacuee students to feel included and affirmed rather than denigrated or excluded. Examples include:

- using heterogeneous groups (evacuee and non-evacuee) that may have helped students develop friendships and feel included or feel like they belong (e.g. Megan, Monica, Kendra);
- getting to know students' stories and affirming their backgrounds, empowering them in activities by asking for their input and allowing them to make curricular choices (Kendra);
- learning students' interests and experiences and connecting lessons to students' known world (Kendra, Megan);
- using flexibility in teaching and assessment strategies so as to relate to a variety of learning styles and practices students may have been accustomed to (Megan, Colette, Kendra).

Megan and Kendra, who were the most passionate about mathematics teaching and learning, were also the most curious about their students' interests, families, and experiences. They used this information in order to get students interested in and connected to mathematics or to engage their imagination.

#### *Absence of Socially Critical Pedagogy*

Freire has argued that education can have a transformative role when its focus is authentic (students themselves identify critical issues to study that affect their communities and their futures) and when pedagogy is intellectually

challenging and socially critical. Although several teachers in this study were concerned with making mathematics relevant, they did not express social justice goals or encourage students to develop critiques of their place in society. Most viewed their optimal role as conveying students to greater opportunities within the existing (unchallenged) social order. Although they clearly believed in their important roles as change agents, the world of opportunity they describe for the students has questionable validity within an unchanged society. Students buy into this worldview but experience a different reality. This phenomenon is what Bourdieu has called symbolic violence, is what Freire refers to as teachers defining for their students an unconnected and alien reality, and is the meritocratic ideology Althusser and others critique.

#### *Divided Loyalties (Culture and Class)*

Bourgois (1995), in his ethnography of Puerto Rican drop-out street culture, discussed the phenomenon of divided loyalties. By this he meant that many of the youth he came to know had experienced a conflict between home and school, which contributed to their eventual elimination from the education process. He provided the example of a youth who attended a school that ridiculed or devalued his mother who could not speak English and was illiterate. This created a conflict for the youth between buying in to school (a middle-class project) and betraying (being disloyal) to home (the student's high-poverty immigrant family). In the current study, conflicting loyalties between school and home were related to the insertion of



students from homogeneous high poverty Orleans Parish neighborhood schools into higher income schools at a lower status.

Four of the teachers reported students having conflicts in loyalty between their previous and new schools. The socioeconomic class and perhaps race differences make this conflict more complex than a simple transfer between equivalent schools:

a) Many students at Megan's school began the school year retaining loyalty to their previous school. To engage at the new school meant for some to accept the loss and, in a sense, be disloyal.

b) One teacher spoke of a student she had taught a number of years earlier who was enabled to reconcile her loyalty to her uneducated mother with putting effort into her own learning when the teacher convinced her that choosing a different path for herself would not contradict retaining respect for her very hard-working single parent mother. Removing the conflict in loyalty or opposition between middle-class education and lower-income family made a difference for this student.

c) Colette reported that some students initially had conflicts in loyalty or acceptance in the new school, such as one girl who, "came around toward the end of the year. I think she was just kind of having like this little territorial thing, you know, 'I'm from Orleans and I'm bad'....And we let her know that that doesn't work at our school" [L. 70]. In this case identity politics (who I want to be versus what you think I am), resistance to elements in an unequal social context, and conflicting

loyalties may all have been issues at play (Lei, 2003). The student may have learned how to “code switch” (or saw the utility of doing so) from opposition and resistance strategies to something more acceptable and less threatening in the new school.

d) Monica reported that New Orleans students with common evacuee experiences banded together as a group. They appeared to have ambivalent feelings about belonging to the new school. Similarly, some of Kendra’s students experienced a conflict (in the form of “attitude”) between the need to be included in the new higher-income school and their loyalty to the prior home school and its way of doing things.

Bourdieu and others have pointed out that schooling is a middle-class project and reflects dominant values and beliefs. Some students from lower-income backgrounds who believe the school is opposed to their culture and family or that, despite its promises, it is “rigged” against them, may resist (as in Willis’ and Bourgois’ ethnographic examples), thereby ensuring their lack of access to greater economic opportunities.

### **Summary: Factors That Influenced Teachers’ Choices**

Teachers in the study modified their pedagogical practices in a number of ways to accommodate their low-income evacuee students. They made choices about whether to continue using diverse methods (including collaborative investigations and activities) or to move to direct instructional practices that typify deficit-based

poverty pedagogies. They also made choices between accelerating below-grade-level students or move to remediation strategies to reach smaller goals. Finally, they made decisions about how to respond to cultural differences in learning – through correction, acculturation, or more culturally inclusive code-switching approaches. A summary of key factors that influenced particular choices and practice follows. Key factors included: the socioeconomic makeup of their classes, the teacher’s level of mathematics knowledge and experience, the school’s degree of emphasis on test scores, the teacher’s view of students’ culture (deficit and static or more dynamic), and the teacher’s peer environment.

*1. Pedagogical Orientation: Diverse and Reform-Based or Direct*

Teachers who chose to continue diverse and reform-based instructional approaches were already experienced in reform methods, their schools had a more balanced approach to test-preparation (teachers used their regular curriculum to prepare the students), low-income evacuee students were in classes with higher-income students already-acculturated to teachers’ practices, and teachers reported at least a two-year range in their students’ mathematics preparation. The teacher who moved to direct instruction had no experience in reform (or any other) methods, her low-income evacuee students were integrated into classes of similarly low-income or high-poverty students, students were generally all several years below grade-level, and teacher peers initiated the teacher into deficit views that matched poverty pedagogies. The teacher who moved to remedial and intensive test-preparation pedagogies taught in a school that was hyper-focused on achieving high

test scores, and had a deficit view of high-poverty students' culture, which influenced the type of knowledge she taught and her expectations for her students.

## *2. Remediation and Acceleration*

Teachers who chose acceleration had socioeconomically heterogeneous classes with large gaps in students' backgrounds, were experienced in mathematics instruction, had more dynamic views of student learning potentials ("reeling them in"), and tended to be very enthusiastic ("evangelical") about sharing their appreciation for mathematics. Influences on teachers who chose remediation and a focus on basic skills differed by the socio-economic level of their schools. The teacher at the higher-income school was influenced by her lowered expectations of her students and by the time versus content tension created by the high-stakes testing environment. The teacher at the lower-income school chose to remediate in part because she was influenced by her inexperience with pedagogical options available to her and the coaching of peer teachers on how to manage missing basic skills.

## *3. Culture Matters*

Teachers who chose to acculturate students to middle-income learning practices (collaborative and exploratory activities, listening and discussion etiquette, expectations and standards) extended practices they had already developed to establish a working classroom environment to include some code-switching techniques (in this class we do it this way), but varied in their views of low-income students' backgrounds (from culturally egalitarian to disapproval of

families' dress, language, and communication styles). One teacher who did not speak of acculturating students expressed a more static deficit view of students' backgrounds. The new teacher had initially made attempts to connect culturally with her students (music, rap words to mathematics algorithms) but eventually felt overwhelmed and powerless to manage behavior that was foreign to her middle-class experience.

## **Implications for Improving Education for High-Poverty Students**

The following are three general practices that the research literature on education for high-poverty students has shown promotes higher-order learning, more transferrable knowledge, the reduction of the achievement or learning gap, and the cultural teamwork in knowledge construction. Based on the experiences of the teachers in this study, the following factors emerged that may have put these practices at risk or that may have supported their use when teaching low-income students.

1. **Reform-based and diverse method pedagogies** – including collaborative investigations, scaffolding discussions, applied problem-solving, and students participating in knowledge-construction (as opposed to direct seat-based “banking” type instructional practices aimed at lower-order thinking and skills):

- Variables that put these pedagogies at risk include teacher inexperience, extreme pressure to raise test scores, unresolved disconnect between teacher leadership expectations and students' prior learning experiences,

homogeneous high-poverty student grouping, and a climate of teacher powerlessness.

- Variables that support these pedagogies included heterogeneous classes, teachers trained and experienced in reform-based methods and the underlying mathematics, a balanced approach to mandatory test preparation, and strong collaborative teacher peer community empowered to coordinate and develop curriculum.

2. **Acceleration** – of below grade-level students (as opposed to remediation with reduced learning goals):

- Variables that put this practice at risk include cultural deficit views, beliefs that learning occurs in set stages, homogeneous grouping of students from similar high-poverty backgrounds, and extreme high-stakes test preparation.
- Variables that support this practice include classes containing students both at grade-level and students who are not, teachers' mathematical knowledge of sequences of concepts and what to “patch in” and when, dynamic views of knowledge and learning, and possibly a belief that catching students up in a heterogeneous class situation will lead to greater homogeneity in student preparation in future classes.

3. **Exchange between equally-valued cultural experiences** – Expanding classroom practice to encompass greater cultural exchange, cultural complexity, and code-switching between equally-valued student cultural experiences (as opposed to

deficit views of cultural difference and classroom thinking restricted to one cultural group's experience or worldview):

- Variables that put this approach at risk include deficit views of students' backgrounds and conveying these views when motivating students to succeed (better themselves based on merit) in dominant culture (creating conflicts in loyalty and opting out).
- Variables that support this approach include teacher efforts to learn students' interests and experiences, teacher prior experience with another culture, and non-deficit views of student culture (such as an awareness that students have learned other ways of doing things rather than just not learned the correct way of doing things).

## **Limitations**

1. Selection of Participants: The teacher participants were enrolled in a summer professional development course taught by University of New Orleans (UNO) faculty. Although the present researcher was not involved or connected with the course in any other way, the fact that the teachers were taking a course to maintain certification that was reform-based could be a limitation. The course, however, was one of the few places (June 2006) where middle school mathematics teachers could be found who had just completed a year teaching students including Orleans evacuees. Nevertheless, since the current researcher was from UNO teachers may have wanted to appear more knowledgeable of best practices.

2. **Researcher-Participant Relationship:** In the context of an interview, the interviewer always has some influence on the person being interviewed. Teachers may have selected experiences and views they thought would be in agreement with or of interest to a university-based researcher.

3. **Representativeness of Teacher Experiences:** Although the teacher participants' experiences coping with large learning gaps and cultural and class differences may have broad relevance, their specific experiences cannot be representative for all types of teachers at all types of schools.

4. **Low-Income Student Behavior Complicated by Unusual Circumstances:** There are many factors associated with being uprooted from homes, schools, and communities that may influence evacuee students' responses to a new classroom environment. For example, they may feel temporary and not wish to be engaged with the curriculum, with non-evacuee students, or with the school in general. They may be absent a great deal due to an unstable living situation or due to a desire to stay close to the family in a time of uncertainty and stress (a mindset sometimes referred to as "circle-the-wagon"). Finally, they may suffer from depression or Post-Traumatic Stress Disorder. On the other hand, many of these confounding factors also may be typically present for high-poverty students even without the experience of Katrina dislocation.

5. **Race and Ethnicity, Gender:** The study focused on the relationship between socioeconomic factors and teacher practice. It did not investigate issues of race and ethnicity. Thus, the study is missing insights into this important



dimension of students' and teachers' experiences. In this study four teachers were white, one teacher was Hispanic, and no teachers were African-American or Asian. Additionally, all participants were female.

## **Recommendations for Future Study**

The following ideas for future research emerged from the study.

1. A parallel study should be conducted that considers student differences in students' cultural and learning experiences in socioeconomically heterogeneous mathematics classes. Student insights might add depth to teachers' understandings of cultural factors that influence learning, motivation, aspirations, and disaffection.

2. This study has been concerned with inequalities in our educational system – the symbolic violence that Bourdieu speaks of – that have major implications for the minds and futures of high-poverty students. But, in fact, all students lose when knowledge is learned or constructed in culturally and socioeconomically segregated contexts. Further research should investigate the intellectual benefits to students of learning in culturally diverse contexts when diverse and higher-order pedagogies are used. I will close this study with one of the most poignant examples of how mono-cultural learning might stymie complex and critical thinking and how the level of mathematics learning might be increased when investigations and problem-solving occur among student teams with diverse experiences working on pressing social issues. One of the most poignant examples of this, told by Gloria Ladson-

Billings, follows. It illustrates how mono-cultural learning might stymie complex thinking and why complex and higher order thinking and problem-solving might occur best among students with diverse experiences:

So you want kids to understand mathematics as a useful tool for them to participate in the struggle. How do you analyze the world mathematically? Some years ago I was engaged with the Urban Math Collaborative and one of the things we were doing was testing out mathematics problems because – you’ve probably got NCTM guides and you know how hard it is to push that particular rock about “Let’s change the way we think about mathematics.” So one of the things we were trying to do was see if we can engage kids in inquiry-based thinking about mathematics, not just think about getting the right answer. You know getting the right answer is easy. You can pick up your phone and calculate and get the right answer. But do you understand and have you thought about a problem?

So we had this problem and it was a word problem. And the problem was something like this: A city bus fare is \$1 each way. A Fastpass is \$50 a month. Which is cheaper for going to work, paying the dollar or getting the Fastpass? So we took the problem to a suburban upper-middle-class white community, showed the kids the problem. We said, “Now before you think about solving the problem, what questions does the problem provoke for you?” Absolutely no questions. They said, “There’s about 20 work days in a month, \$1 each way is \$2,  $2 \times 20$  is 40. 40 is cheaper than 50, which is the Fastpass.

It's cheaper to pay as you go." We couldn't get them to find anything problematic about that problem.

On the second day we went into the city to an urban middle school. Same problem and we said, "Look at the problem carefully and tell us what questions does this problem provoke for you?" Hands all over. First hand, "How many jobs are we talking about? Because if you have two jobs it's not \$2 a day it's \$3." Second question: "Is there a car in the family at all?" Our suburban kids presumed a car, right? You're just going to work, back and forth and you're going to it 9 to 5. Our urban kids said, "cause if there's no car you can use that Fastpass on the weekend; you're not just using it to go to work. And you can use it to go to the beauty parlor, barber shop, church, grocery shopping, you know." The third question they asked was: "How many people are in this family? Because the Fastpass is transferrable, and when I am finished using it I can give it to you and then you can go somewhere." And the final question, which I loved, was the kid said: "If the Fastpass is not cheaper why is the bus company spending so much money advertising it to us all the time?"

So here is exactly the kind of thing you want kids to be able to do to, in some ways what Ralph Putnam's calls, mathematize their world. And I find the use of statistics and helping kids actually see the statistical inequalities and then not just solving a problem but asking well why is this this way? How can we come to understand it? (Ladson-Billings, 2012)

## Concluding Comments

The study looked at how mathematics teachers developed and modified their practice in working with low-income or high-poverty students, including: how they interpreted and constructed their understanding of their low-income students' culture- and class-related learning dispositions (*habitus*), and how they chose to adjust or modify their instructional practices through problem-solving within the frameworks they operated.

Factors that influenced particular choices and practice included: the socioeconomic makeup of their classes, the teacher's level of mathematics knowledge and experience, the school's degree of emphasis on test scores, the teacher's view of students' culture (deficit and static or more dynamic), and the teacher's peer environment.

More specifically, factors that supported diverse and reform-based instructional approaches included integration of low-income or high-poverty students into classes with higher-income students already acculturated to collaborative and communication practices of reform-based instruction, teacher understanding of conceptual mathematics instructional goals, and schools that had a balanced approach to test preparation. Factors that supported accelerating rather than remedial approaches to closing significant gaps in students' mathematics backgrounds included dynamic and optimistic views of student learning potentials, and a desire to turn students on to mathematics. Teachers also consciously taught

collaborative and classroom etiquette and norms, either directly or by pairing new and already-aculturated students. Factors that undermined instruction aimed at higher order conceptual and transferable knowledge included integration of high poverty students into socioeconomically homogeneous (isolated) low-income or failing schools or into high-stakes testing climates, especially where teachers expressed a deficit view of student potential or where a variety of conditions resulted in a teacher community of shared powerlessness.

It was noted that teachers considered themselves, at their best, change-agents but that practical effects fell far short of such goals – in some cases teachers perpetuated (reproduced) social inequality by providing pedagogy-of-poverty type instruction. All attempted to motivate students with meritocratic ideals that did not correspond to high-poverty students' realities and, if internalized, could result in students' accepting their lower status as a result of lack of merit or ability. None spoke of guiding students to a more critical view of their relationship to society.

Yet, when looking at individual-level small achievements, some teachers were able to interest and accelerate students and some used practices that could have been inclusive and empowering. Combined with a more socially critical curriculum, a reduction in income disparity, and a school environment that does not isolate students by race or socioeconomic class, these accelerating practices could have longer-term transformative potential. The benefit would not be for high-poverty students alone – collaboration on problems by students with diverse

cultural experiences can result in more closely replicating the complexity of real problem contexts and can result in better, higher-powered problem-solving.

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## APPENDIX A

### Initial Survey

1. How long have you taught in St. Tammany Parish?  What School (2005-2006): _____	<input style="width: 40px; height: 25px;" type="text"/>	Years
2. <b>Prior to Hurricane Katrina</b> , how would you describe the income level of the <i>majority</i> of your students? Middle income, professional Lower-middle income, working class Low-income, at-risk families	<input style="width: 40px; height: 20px;" type="text"/> <input style="width: 40px; height: 20px;" type="text"/> <input style="width: 40px; height: 20px;" type="text"/>	
2. <b>Following Hurricane Katrina</b> , approximately how many Orleans Parish evacuees did you personally absorb into your classes?	<input style="width: 40px; height: 25px;" type="text"/>	Approx. Total
3. Approximately how many of these evacuees do you think were low-income (prior to evacuation) or from low-income schools in New Orleans?	<input style="width: 40px; height: 25px;" type="text"/>	
4. For these low-income evacuee students, did you find some of your previous methods:	<input style="width: 40px; height: 20px;" type="text"/> <input style="width: 40px; height: 20px;" type="text"/> <input style="width: 40px; height: 20px;" type="text"/>	
5. What teaching strategies did you feel were (just briefly):		
... <b>most</b> successful (with low-income students)?	... <b>least</b> successful?	
6. How would you describe your low-income evacuee students' learning preferences (how do you think they learn best)?		
7. Did you find there were differences between your low-income evacuee students and your prior St. Tammany Parish students that affected their learning? Describe differences:		

8. Did you receive helpful assistance or advice regarding how best to teach your evacuee students? (from whom?)

9. Would you be willing to share your experiences teaching mathematics to evacuees (in an interview)?

**YES**

**NO**

a) If you are willing, how can you be contacted:

Name (please print) \_\_\_\_\_

b) How can you best be reached?

Best phone #(s):

Best time:

Best email:

## APPENDIX B

### Teacher Interview: Outline of Format

Project Title: Class and Math Post-Katrina: The Impact of Experiences Teaching Mathematics to Low-Income Middle School Evacuees on Middle-Class Teachers' Pedagogical Strategies

A.	Background Information
	1. Confidentiality (discuss, obtain consent)
	2. Name
	3. School where teaching; subjects and grade levels. How long have you taught?
	4. Educational background; how were you taught math and taught to teach math.
	5. Impact of Katrina evacuation in practical terms: did you have evacuees in your classes, when did they join class, did you change what you were originally assigned to teach, what was the time-line.
B.	Comparison of teaching pre-Katrina students and post-Katrina evacuees (aim is to compare teaching of students in terms of socioeconomic class). <b><i>[All questions in this section should involve, first an account of pre-Katrina teaching, then an account of post-Katrina teaching.]</i></b>
	1. Describe your students' cultural and economic background, their preparation to learn mathematics, and how important mathematics will be to their futures. (pre- and post-)
	2. What methods did you use (pre- and post-):
	a) How did you introduce a new lesson (e.g. post a question or problem; discuss students' solutions; present model problem on board or overhead and model the procedure to solve; students copy notes of model solution and do homework to reinforce skill)? (pre- and post-)
	b) When students did not understand, what usually was the reason? (e.g. academic apathy; weak background; placed in wrong level class; student doesn't ask questions in class; student is not a math person (doesn't catch on easily to mathematics; talents in other areas); class presentation did not connect with student's prior scheme). (pre- and post-)
	c) What did you do about these students? (pre- and post-)
	d) Did you feel you could challenge and extend student knowledge, or had to focus entirely on remedial work? (pre- and post-)
	e) Were students interested, asked questions, and sometimes anticipated the next lesson? Or were they uninterested...? (pre- and post-)
	f) Did you find students would learn individual lessons, but, when taking a test over several lessons, they got them confused? (pre- and post-)
	g) When students did not do well on tests, did you find they were making

	computational errors (deficiencies stemming from <i>prior</i> mathematics learning), or conceptual errors (deficiencies arising from not understanding <i>current</i> concepts taught), or both? (pre- and post-)
	h) How important was test preparation, and how much of your class time was devoted to it? (pre- and post-)
C.	Analysis of changes due to change in socioeconomic class of your student population
	1. Expectations: At first, when your student population was changing, how did you think it would impact your methods? (e.g. no change in methods or content would be needed; may have to slow pace; may need additional remedial support)
	2. Initial methods: Did you begin teaching the new population by using your previous methods and curriculum, or did you begin with altered methods and curriculum?
	3. What problems did you encounter using your initial methods?
	4. What kind of student feedback did you encounter about the teaching methods you used (e.g. preference for direct instruction)? How do you think this impacted your choice of methods?
	5. In your opinion, what do you think caused these problems in adjustment between students and instruction? (e.g. students' socioeconomic family or cultural background; different learning dispositions; accustomed to different methods; accustomed to different curriculum format; the evacuation context)
	6. If you adjusted your practice, how?
	a) Curriculum (covered less; less in-depth; did not alter)
	b) Classroom methods (more direct instruction; more support; acculturated them to your methods)
	c) How "successful" do you feel you were (and how do you define "success")?
D.	Reflection
	1. If you were asked to train teachers who were going to teach low-income students for the first time, what wisdom or advice would you share with them?
	a) About how the students learn best.
	b) About how their culture, family income background, and prospects impact learning.
	c) About how you think they were previously accustomed to being taught, and what to do about that.
	d) About how best to engage them.
	e) About how to transition – (from _____ to _____?) (e.g. what is developmental or processual (rather than static) about their responses; do they begin with traditional methods and move (acculturate) students to higher order learning approaches? do they begin with remedial work but quickly move students to grade-level work?)
	2. What do you know about reform methods (professional guidelines) and how, in your experience, did they fare in teaching low-income students?
	3. We have compared your pre-Katrina students with your post-Katrina low-income evacuees. In what way is this not a fair comparison? That is, aside from class background differences, in what way(s) do you feel their evacuation experience affected their learning and your teaching?



## APPENDIX C

### Consent Form for Initial Survey



### CONSENT FORM for Initial Survey

Institutional Review Board (IRB) Approval: 02jun06

#### **Title of Research Study**

Class and Math: How Mathematics Teachers in Previously Middle Income Middle Schools Adjust their Pedagogy When Teaching Low-Income Katrina Evacuees

#### **Project Director**

Susan Ikenberry, doctoral student, Department of Curriculum and Instruction, University of New Orleans. [email and phone numbers]

Principal Investigator (PI): Dr. Yvelyne Germain-McCarthy, Department of Curriculum and Instruction, University of New Orleans. [email and phone numbers]

#### **Purpose of the Research**

The purpose of this study is to understand what “wisdom” teachers develop for teaching mathematics to low-income middle school students and how they correspondingly modify their practice.

#### **Purpose of the Initial Survey**

The purpose of the Initial Survey is to help the researcher identify participants whose teaching experiences might be helpful in answering the study’s research questions and who are willing to be interviewed (1 to 1½ hour).

#### **Procedures for this Research**

An Initial Survey will be administered on a voluntary basis to teacher participants in the summer 2006 *Meaningful Mathematics through Models* professional development project offered by the University of New Orleans’ Curriculum and Instruction and Mathematics Departments to St. Tammany Parish middle school mathematics teachers (during June and July 2006). The brief survey asks about the type of students teachers taught prior to Katrina and about how much experience they had teaching low-income Orleans Parish evacuees during the 2005-2006 school year. Some teachers will be invited to participate in an interview about these experiences. Interviews will be independent of the summer class.

**Potential Risks or Discomforts**

Potential risks or discomforts are minimal. The survey is brief but may take 20 minutes or so to complete. Participation in the study will in no way affect participants' standing in the summer course. Course instructors will not be aware of who participated or did not participate in the study.

**Potential Benefits to You or Others**

No direct personal benefits to the interviewee are expected. However, teachers might feel positive about contributing to our professional knowledge about instruction for low-income mathematics students.

**Alternative Procedures**

Your participation is entirely voluntary and you may withdraw consent and terminate participation at any time without consequence.

**Protection of Confidentiality**

All measures will be taken to protect the confidentiality of the participants. Information from the survey and interviews will be coded by the principal investigator to protect each participant's identity. All reports and potential publications will report information in a format that will not permit the identification of any participant.

**If You Have Further Questions**

If you have questions regarding your rights as a human subject research participant, please contact Dr. Anthony Kontos at (504) 280-6420.

**Consent to Participate**

Completion of the survey is indication of consent to participate.

*Please keep this cover letter in case you have any questions at a later point in time.*

## APPENDIX D

### Consent Form for Interviews



### CONSENT FORM for Interviews

Institutional Review Board (IRB) Approval: 02jun06

#### **Title of Research Study**

Class and Math: How Mathematics Teachers in Previously Middle Income Middle Schools Adjust their Pedagogy When Teaching Low-Income Katrina Evacuees

#### **Project Director**

Susan Ikenberry, doctoral student, Department of Curriculum and Instruction, University of New Orleans. [email and phone numbers]

Principal Investigator (PI): Dr. Yvelyne Germain-McCarthy, Department of Curriculum and Instruction, University of New Orleans. [email and phone numbers]

#### **Purpose of the Research**

The purpose of this study is to understand what “wisdom” teachers develop for teaching mathematics to low-income middle school students and how they correspondingly modify their practice.

#### **Procedures for this Research**

Participants will be interviewed about their experiences teaching mathematics to low-income evacuees during the 2005-2006 school year, e.g., what challenges they encountered, how their experiences impacted their teaching practices, and what “wisdom” they developed for teaching low-income students. Interviews will take 1 – 1½ hours and will be audiotaped. A follow-up conversation, possibly by phone or e-mail, may be needed, for example, to clarify the interviewee’s meaning on a point raised in the interview.

#### **You Were Selected Because...**

Participants are selected to be interviewed based on their teaching experiences.

#### **Interview Topics**

Interview topics include: the teacher’s pre-Katrina teaching background, comparison of teaching pre-Katrina students with post-Katrina evacuee students, why and how methods were chosen, their conclusions about low-income students’ learning dispositions, and what “wisdom” they have developed for teaching mathematics to low-income students.

**Potential Risks or Discomforts**

Potential risks or discomforts are minimal. In-person interviews may last 1 to 1½ hours and participants may experience fatigue. If so, participants may take a break or stop the interview. Participation in the study will in no way affect teachers’ standing in the summer course. The instructors of the summer course will not be aware of who participated or did not participate in the study.

**Potential Benefits to You or Others**

No direct personal benefits to the interviewee are expected. However, teachers might feel positive about contributing to our professional knowledge about instruction for low-income mathematics students. Participants may request a summary of research findings when the study is completed.

**Alternative Procedures**

Your participation is entirely voluntary and you may withdraw consent and terminate participation at any time without consequence.

**Protection of Confidentiality**

All measures will be taken to protect the confidentiality of the participants. Information from the survey and interviews will be coded by the principal investigator to protect participants’ identities. All reports and potential publications will report information in a format that will not permit the identification of any participant.

**If You Have Further Questions**

If you have questions regarding your rights as a human subject research participant, please contact Dr. Anthony Kontos at (504) 280-6420.

**Signature and Consent to Participate**

I have been fully informed of the above-described procedure with its possible benefits and risks and I have given permission of participation in this study.

<b>Signature of Subject</b>	<b>Name of Subject (Print)</b>	<b>Date</b>
<b>Signature of Person Obtaining Consent</b>	Susan Ikenberry <b>Name of Person Obtaining Consent (Print)</b>	<b>Date</b>

*[Copy one for participant. Copy two for investigator.]*

## APPENDIX E

### Human Subjects Completion Certificate



### Completion Certificate

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This is to certify that

**susan ikenberry**

has completed the **Human Participants Protection Education for Research Teams** online course, sponsored by the National Institutes of Health (NIH), on 12/12/2004.

This course included the following:

- key historical events and current issues that impact guidelines and legislation on human participant protection in research.
- ethical principles and guidelines that should assist in resolving the ethical issues inherent in the conduct of research with human participants.
- the use of key ethical principles and federal regulations to protect human participants at various stages in the research process.
- a description of guidelines for the protection of special populations in research.
- a definition of informed consent and components necessary for a valid consent.
- a description of the role of the IRB in the research process.
- the roles, responsibilities, and interactions of federal agencies, institutions, and researchers in conducting research with human participants.

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## APPENDIX F

### IRB Approval Letter

#### ***University Committee for the Protection of Human Subjects in Research University of New Orleans***

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*Campus Correspondence*

Yvelyne Germain-McCarthy, Ph.D.  
Susan Ikenberry  
Curriculum and Instruction

June 9, 2006

RE: Math, class, and Katrina aftermath: The impact of experiences teaching mathematics to low-income middle school evacuees on teachers' pedagogical strategies in middle-income schools

IRB# 02jun06

The IRB has deemed that the research and procedures are compliant with the University of New Orleans and federal guidelines.

Please remember that approval is only valid for one year from the approval date. Any changes to the procedures or protocols must be reviewed and approved by the IRB prior to implementation.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best of luck with your project!  
Sincerely,

Laura Scaramella, Ph.D.  
Chair, University Committee for the Protection of Human Subjects in Research

## VITA

Susan Ikenberry graduated with a B. A. from Manchester College in Peace Studies, an interdisciplinary field with concentrations in political science, international relations, social science, and religion. She served as a fellow/intern at the Carnegie Endowment for International Peace, Washington, D. C. investigating U.S. foreign policy issues. She also received an M.A. in Cultural Anthropology from City University of New York with concentrations in early Latin American cultures and religious movements in early-modern Europe. She was a Chancellor's Scholar at the University of New Orleans while she pursued her Ph.D. She has taught mathematics in New Orleans' private and public schools, Mathematics Methods at the University of New Orleans, and accelerated mathematics (two years in one) at a high-poverty laboratory school in North Carolina. She also served as a Johns Hopkins Talent Development Mathematics Coach in North Carolina. She has developed interdisciplinary curricula related to geometrical and mathematical perspective in art, mathematical modeling and the changing environment, and grassroots mathematics competitions.

She was living in New Orleans and was formulating her IRB proposal for dissertation research in the New Orleans public schools when Hurricane Katrina struck. During a year living with family she reformulated her proposal and returned to Louisiana to conduct interviews. She currently lives in North Carolina where she works at Guilford College in Institutional Research on subjects such as student retention, global perspectives, and diversity. She also serves on the Corporate Board of American Friends Service Committee (AFSC) and is an advisor for their regional programming. She has lived and studied in Costa Rica and Germany and enjoys languages.