

HOW CAN A KNOWLEDGE OF MIDDLE SCHOOL MATHEMATICS TEACHERS'  
PREPARATION TO TEACH CULTURALLY DIVERSE STUDENTS IN THE PAST  
AND OF THEIR CLASSROOM PRACTICES IN THE PRESENT  
INFORM MULTICULTURAL TEACHER EDUCATION IN THE FUTURE?

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A thesis submitted to the faculty of the University of North Carolina at Chapel Hill in partial fulfillment of the requirements for the degree of Master of Arts in the School of Education.

Chapel Hill  
2010

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## **ABSTRACT**

**ASHLEY J. TITTEMORE: How Can a Knowledge of Middle School Mathematics Teachers' Preparation to Teach Culturally Diverse Students in the Past and of Their Classroom Practices in the Present Inform Multicultural Teacher Education in the Future?**  
(Under the direction of Dr. Olof Bjorg Steinhorsdottir)

This qualitative study set out to explore how a knowledge of middle school mathematics teachers' preparation to teach culturally diverse students in the past and of their classroom practices in the present can inform multicultural teacher education in the future. In order to answer this question, the following contributing questions were asked: What are teachers' perceived levels of preparedness to teach culturally diverse students? What experiences have supported teachers in becoming prepared to teach culturally diverse students? What do teachers identify as their strengths and weaknesses in practice regarding the teaching of culturally diverse students? How do teachers feel they could have been better prepared through teacher education to teach culturally diverse students? In-depth individual interviews were conducted with a diverse group of seven middle school mathematics teachers. Analysis of the data produced a variety of findings which are discussed along with implications for the field of multicultural teacher education.

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This qualitative research study set out to explore, broadly, the ways in which a knowledge of how teachers have been prepared to teach culturally diverse students in the past and of their classroom practices in the present can inform multicultural teacher education in the future. In order to answer this larger question, the following contributing questions were asked: What are teachers' perceived levels of preparedness to teach culturally diverse students? What experiences have supported teachers in becoming prepared to teach culturally diverse students? What do teachers identify as their strengths and weaknesses in practice regarding the teaching of culturally diverse students? How do teachers feel they could have been better prepared through teacher education and professional development to teach culturally diverse students?

This study is significant in that, unlike many others, it provides an opportunity to showcase the voices and experiences of practicing middle school teachers in the subject area of mathematics as they discuss their thoughts and feelings about preparing to teach, and teaching, culturally diverse students. Ultimately, the study, which weaves together the fields of multicultural education, teacher education, and mathematics education, hopes to inform current and future teacher education and professional development programs in support of their efforts to prepare teachers who are capable of reaching *all* students, especially those from culturally diverse backgrounds.

### **Literature Review**

Across the field of mathematics education there is a concern over minority students' achievement in mathematics (Gay, 2000; Gutstein, Lipman, Hernandez & de los Reyes, 1997; Ladson-Billings, 2000; Malloy & Malloy, 1998; Schoenfeld, 2002; Tate, 1995). African Americans and Hispanics in particular consistently score lower on standardized achievement tests, have lower participation and success rates in Advanced Placement mathematics courses, and are far less likely to attain a college degree in mathematics than their White counterparts. As of 2007, African American and Hispanic students at the 8<sup>th</sup> grade level were significantly lagging

behind their White counterparts (31 and 26 points, respectively) on standardized tests in mathematics (National Center for Education Statistics, 2007). Available data from recent years shows that the same trend continues into the 12<sup>th</sup> grade, with African American and Hispanic students falling significantly behind their White peers in mathematics achievement (National Center for Education Statistics, 2005). Ultimately, poor performance on middle school achievement tests affects opportunities for participation in advanced mathematics courses at the high school level (The College Board, 2009). In the case of high school AP courses, Hispanic students, for example, comprise 15.4% of the national public school graduating class of 2008, but 14.8% of the AP examinee population and a smaller 13.8% of students with passing scores of 3 or higher. Even more dramatic, Black or African American students represent 14.4% of the national public school graduating class of 2008, however they only represent 7.8% of the AP examinee population, and a mere 3.5% of those with passing scores of 3 or higher. The College Board calls this problem an “equity and excellence gap;” in other words, traditionally underserved students comprise a smaller percentage of the successful student group than the percentage these students represent in the graduating class (2009, p. 7). Eighteen states have closed the achievement gap for Hispanic or Latino students, but *no* state has yet to close the gap for African Americans. In the state targeted in this study, the gap is wide. African Americans represent 29.4% of the total student population, but only 6.2% of students scoring 3 or higher on the AP Exam (The College Board, 2009). As a result of the national achievement gap in primary and secondary schools illustrated above, the number of minority students receiving postsecondary degrees in mathematics, especially compared with Whites, is outrageously low. In 2007 the U.S. Census Bureau estimated that African Americans represented 12.8% and Hispanics represented 14.4% of the national population. According to the National Center for Education Statistics (2007), however, of the approximately 15,000 Bachelor’s degrees awarded in Mathematics, only 5.7% of those were awarded to African Americans and 6.4% were awarded to Hispanics. In contrast, 73.3% of Bachelor's degrees in Mathematics were awarded to White graduates.

Although inequities in educational outcomes have persisted along racial lines since the beginning of public schooling, efforts have been made, especially in the last four or five decades, to eliminate inequity in education on the basis of not only race and ethnicity, but of other elements of cultural diversity as well. In the following sections I will discuss some of these efforts, including the development of various educational theories, to provide a backdrop for a discussion of teacher education practices aimed at preparing teachers to support the academic achievement of culturally diverse students. First, I will focus on providing relevant details about the multicultural education movement. Next, I will introduce one particular educational theory, the concept of culturally responsive teaching, which emerged out of that movement. Finally, I will discuss current and suggested practices in the field of multicultural teacher education and discuss how those practices support the preparation of culturally responsive teachers.

### **Multicultural Education**

A movement began in the 1960s, parallel to the Civil Rights movement, in which researchers, activists, and educators began to investigate the influence of culture in the processes of teaching and learning in order to better serve culturally diverse learners. Banks' model of multicultural education, as described throughout his 2004 book, *Multicultural Education: Issues and Perspectives*, was developed during a time when African Americans were fighting for equality in housing, employment, and education. Early multicultural educational reform primarily included changes in curriculum and textbooks in an effort to more fairly represent diverse groups within the formal curricula of schools. Often, however, this simply meant the addition of an African American history course, for example, in which only African American students would enroll. After the Civil Rights movement in which the rights of African Americans were the focus of multicultural education, the rights of women rose to the forefront, and gender became a central issue in the field of education. In the case of women's rights, educational reform was very similar to that during the Civil Rights movement; in other words, textbooks and

materials were superficially revised to include the important roles that women played throughout history and in the formation of the United States. Following the women's rights movement were various other movements like rights for people with disabilities and gay rights advocacy. Today, we consider multicultural education to include experiences of people not only by race or ethnicity and gender, but also by class or socioeconomic status, language, sexual orientation, and disability.

Banks (2004) identifies multicultural education as three things: "an idea or concept, an educational reform movement, and a process" (p. 3). According to the concept of multicultural education, culture plays an integral role in the processes of both teaching and learning. Within this context, Banks draws on Bullivant's (1993) definition of culture as "knowledge, concepts, and values shared by group members through systems of communication. Culture also consists of the shared beliefs, symbols, and interpretations within a human group" (p. 8). As Banks says, it is important to recognize the distinction between the macroculture, in this case of the United States, and the microcultures that exist within the larger culture of the nation. Banks identifies some of the major features of the macroculture of the United States such as individualism and an assumption of the superiority of our nation, and points out that many times, clashes between the macroculture and individual's microcultures result in cultural misunderstandings, conflicts, and institutionalized discrimination. With this in mind, the challenge of multicultural education is, in his opinion,

how to help students from diverse groups mediate between their home and community cultures and the school culture. Students should acquire the knowledge, attitudes, and skills needed to function effectively in each cultural setting. They should also be competent to function within and across other microcultures in their society, within the national macroculture, and within the world community. (p. 8)

Ultimately, Banks suggest five central practices that can be applied in order to alleviate cultural misunderstandings and prejudices in schools, to promote equity within education for all students, regardless of culture, and, most importantly, to achieve what he envisions as the primary goal of education.

In the first step of this process, Banks argues for content integration in school, referring to the "extent to which teachers use examples and content from a variety of cultures and groups" (p. 20) in their teaching. Secondly, Banks highlights the process of knowledge construction and states that teachers need to "help students to understand, investigate, and determine how the implicit cultural assumptions, frames of reference, perspectives, and biases within a discipline influence the ways in which knowledge is constructed within it" (p. 20). Third, Banks addresses the need to reduce prejudice in schools. This, he says, can be accomplished through "lessons and activities... to help students develop positive attitudes toward different racial, ethnic, and cultural groups" (p. 21). Fourth, the need for an equity pedagogy is discussed. Here, Banks identifies the various learning preferences that students of diverse cultures bring to the classroom and encourages teachers to integrate those learning preferences into their teaching in order to serve their students more equitably. In other words, teachers should modify their teaching in ways that will facilitate the academic achievement of students from diverse race, culture, gender, and social class groups. Finally, Banks encourages educators, in the fifth central practice, to create an empowering school culture for *all* students by examining, among other things, the grouping and labeling practices, sports participation, disproportionality in achievement, and the interaction of the staff and students across ethnic and racial lines in their schools.

Throughout the four decades since Banks developed his model of multicultural education, student populations in schools continued to diversify, the teaching force remained primarily composed of middle-class, white, females, and minority student achievement persisted at a level below that of the average white student. In response, educational researchers continued to develop theories of teaching and learning rooted in Banks' concept of multicultural education, some of which include the concept of culturally responsive teaching (Gay, 2000), Critical Race Theory (Delgado & Stefancic, 2001; Ladson-Billings & Tate, 1995), and the theory of culturally relevant pedagogy (Ladson-Billings, 1995). Gay's concept of culturally responsive teaching, more than others, focuses explicitly on the actual practice of teaching. Although Ladson-Billing's

theory of culturally relevant pedagogy also has implications for the practice of teaching, its focus is more on the students. As Ladson-Billings (1995) states,

Culturally relevant pedagogy rests on three criteria or propositions: (a) students must experience academic success; (b) students must develop and/or maintain cultural competence; and (c) students must develop a critical consciousness through which they challenge the status quo of the current social order. (p. 160)

While Critical Race Theory provides educators with a critical lens through which they can reconsider education and schooling, it may be difficult for teachers to envision how the theory applies directly to their practices in a classroom setting.

Although many of the elements of the aforementioned theories are applicable to the practice of teaching culturally diverse students, Gay's theory of culturally responsive teaching, unlike others, is explicitly situated within the practice of teaching. In the following section, I will further explore her theory and the ways in which its main tenets apply to teachers' practices.

### **Culturally Responsive Teaching**

According to Gay (2002) culturally responsive teaching is defined as,

using the cultural characteristics, experience, and perspectives of ethnically diverse students as conduits for teaching them more effectively. It is based on the assumption that when academic knowledge and skills are situated within the lived experiences and frames of reference of students, they are more personally meaningful, have higher interest appeal, and are learned more easily and thoroughly. (p. 106)

In order to use "the cultural characteristics, experience, and perspectives of ethnically diverse student as conduits for teaching them more effectively," however, one must first come to know his/her students. Banks (2004) encourages teachers to be familiar with the microcultures to which students belongs, and to recognize that some microcultures may have more of an influence on a student than others due to the extent of their socialization within those microcultures. Similarly, Gay also includes an element in culturally responsive teaching that addresses the importance of teachers' development of a cultural diversity knowledge base.

Explicit knowledge about cultural diversity, she clarifies, is imperative to meeting the education

needs of ethnically diverse students. This necessary knowledge includes developing an understanding of the cultural characteristics and contributions of different ethnic groups and a knowledge of the elements of culture which have direct implications for teaching and learning, such as values, traditions, and communication and learning styles. In addition to a recognition of the importance of explicit knowledge of cultural diversity, Gay's concept of culturally responsive teaching is centered around four foundational tenets: caring, communication, curriculum, and instruction. Next, I will explore each of these four tenets in turn.

According to Gay, following knowledge about cultural diversity, the first central tenet of culturally responsive teaching is caring. Caring is exemplified by a teacher who has high expectations for his/her students, uses cultural scaffolding to expand the intellectual horizons and academic achievement of his/her students, sees teaching and learning as a partnership, is able to form communal learning environments, takes seriously the responsibility of teachers for students' learning, helps students learn holistically, meaning that academic, social, and moral learning all occur simultaneously and in an integrated fashion, and envisions culturally responsive caring as action-oriented in order to ensure academic success for ethnically diverse students (Gay, 2002).

The second tenet of culturally responsive teaching deals with communication. In this case, Gay emphasizes at a most basic level, the importance of a teacher's ability to decode students language which may be different from their own because of cultural socialization in order to more completely understand what students know and can do. Further, Gay stresses the need for teachers to know and respect the linguistic structures, nuances, rhythm, and vocabulary, among other characteristics, of various cultural groups. In doing so, teachers value students' natural way of speaking, help students learn how to code-switch, or operate linguistically in both their home environment and a more formal, school environment, thereby exhibiting multicultural communication competency which allows them to participate more freely and confidently in the learning process. In addition, she stresses that teachers also need to know, understand, and respect the various protocols of participation in discourse for different cultures (active-

participatory vs. passive-receptive) and the various patterns of task engagement and organizing ideas (topic-centered vs. topic chaining), described below.

Gay defines active-participatory communication as a characteristic of many groups of color which acts in opposition to the passive-receptive communication traditionally valued in schools. Here, active-participatory communication allows those involved in communication to interrupt each other and comment and ask questions while the speaker is speaking, for example, whereas passive-receptive communication expects students to sit quietly and listen to the teacher speak until he/she is finished and ask questions or comment later. Similarly, topic-chaining is a style of discourse that is common to communities of color in which information is organized and presented in a very passionate and circulatory way, whereas topic-centered discourse, traditionally valued in school, expects that students organize and present information in a linear, dispassionate way. Because of these stark difference in protocols for participation in discourse and patterns of task engagement and organization, it is evident that culturally responsive teachers must address the communicative conflicts happening in today's schools. By valuing students' natural ways of speaking, and also by teaching them how to code-switch, demonstrating their multicultural communication competency, teachers can help students learn to linguistically operate in successful ways in a variety of cultural settings.

The third tenet of culturally responsive teaching deals with the curricula in schools. Here, Gay urges teachers to challenge the various types of curricula in their schools just as Banks suggests in his concept of content integration in multicultural education. According to Gay, teachers should challenge the formal curriculum by being critical of texts and materials and ensuring that they reflect experiences and perspectives of diverse cultural groups; challenge the symbolic, or informal or hidden curriculum which consists of events, awards, representations on bulletin boards, etc. and ensure that these also reflect various cultural groups; and challenge the societal curriculum, like media representations, for example, which can have a significant, often negative, impact on the perceptions of both teachers and students. Further, educators are also

encouraged to teach their students to be critical of the societal curriculum and discuss ways in which it affects their perceptions of others.

Lastly, Gay's fourth tenet of culturally responsive teaching is regarding instruction. This tenet encapsulates all of the others in a way, and communicates the main idea of culturally responsive teaching: that teachers should recognize the influence of culture in teaching and learning, integrate cultural diversity into the most fundamental aspects of instruction, and consciously strive to establish continuity between the operating methods of ethnic groups and school cultures in teaching and learning. Here, pedagogical bridges are recognized as a tool to help students connect new information to prior knowledge, ultimately improving their ability to learn.

Despite the development of multicultural education theories for teaching such as Geneva Gay's, however, one cannot help but wonder if today's mathematics teachers are being adequately prepared to teach the culturally diverse students of the 21<sup>st</sup> century. The following section focuses on practices for preparing culturally responsive teachers through teacher education. Particular attention is paid to current practices described in the literature, suggestions developed through research in the field, and the challenges to implementing these practices with future teachers.

### **Preparing Culturally Responsive Teachers through Multicultural Teacher Education**

Since the new millennium researchers have been paying special attention to the trends in both teacher and student diversity and many have taken note of the fact that as the student population becomes increasingly diverse, the teaching force remains mostly white, middle class, and female (Causey, Thomas & Armento, 1999; Gay & Howard, 2000). It should be noted, though, that one cannot assume that simply because a teacher is a member of a minority group, he/she is automatically a culturally responsive teacher just by virtue of his/her minority status; and alternately, one can also not assume that just because a teacher is white, he/she cannot

successfully teach culturally diverse students. That said, however, a teacher's racial, ethnic, and socioeconomic background can certainly affect the way he or she teaches, and many teacher education programs lack required opportunities for the many white, female, middle class teachers to explore their own identities and the ways in which their teaching and perceptions of students may be affected by those identities (Causey, Thomas & Armento, 1999; McIntyre, 2002; Tatto, 1996). Addressing this issue in teacher education is especially significant because, often, teachers' own racial, ethnic, and socioeconomic backgrounds differ greatly from those of their students.

**Current multicultural teacher education: The lay of the land.** A review of the literature regarding research in multicultural teacher education synthesized by Hollins and Guzman (2005) indicates that "issues of diversity have generally been separated from the rest of teacher education. Often, diversity has been addressed in optional or add-on 'diversity' or 'multicultural' courses (Ladson-Billings, 1995; Zeichner & Hoeft, 1996), whereas the rest of the teacher education curriculum has remained unchanged (Gollnick, 1992; Villegas & Lucas, 2002)" (Hollins & Guzman, 2005, p. 480). In their own synthesis of the literature, Cochran-Smith, Davis and Fries (2004) also acknowledge that relevant issues in multicultural teacher education are not always sufficiently addressed within existing programs. "By and large, teachers continue to be prepared from a monocultural perspective that eschews the pervasive impact of race, class, linguistic background, culture, gender, and ability and emphasizes instead a universal knowledge base for teaching, learning, and schooling" (Cochran-Smith, Davis and Fries, 2004, p. 932).

Other characteristics of current multicultural teacher education programs which indicate a need for improvement include (a) a lack of consensus in the field regarding what should constitute "multicultural teacher education"; (b) the pervasiveness of whiteness as normative and diversity as deficiency; (c) the perpetuation of a training or transmission model of teaching rather than using inquiry to guide future teachers' learning; and (d) a lack of program coherence around

the concept of multiculturalism. Each of these common characteristics of multicultural teacher education programs are discussed in turn below.

First, a lack of consensus over what should constitute "multicultural teacher education" prevents it from gaining credibility as an integral component of the preparation of future teachers. In addition to differences between teacher education programs defined by a four-year or five-year or traditional or alternative designation, institutional contexts (e.g. research universities, liberal arts colleges) and different state policy contexts also act as major sources of variation between teacher education programs (Zeichner & Conklin, 2008). National standards such as those set forth by NCATE have attempted to regulate teacher education programs across the country, however, even though NCATE has required multicultural education for over thirty years, "institutions still have not taken seriously its incorporation into its programs and practices' and 'equality and cultural diversity are not central to their missions'" (Gollnick, 1992, p. 237, as in Cochran-Smith, Davis and Fries, 2004, p. 946). In support of this claim, as Cochran-Smith, Davis, and Fries (2004) report, Evans, Torrey, and Newton (1997) also found that only half of the 50 states plus the District of Columbia required multicultural education course work as part of their certification and credentialing process.

Second, as Cochran-Smith, Davis, and Fries (2004) point out in their synthesis of research on multicultural teacher education, whiteness is still seen as normative and diversity continues to be seen as a deficit or deficiency in teacher education (Ladson-Billings, 1999). As a result, "normalizing practices maintain the status quo despite the best intentions for social change" (Cary, 2001, p. 405 as in Cochran-Smith, Davis, and Fries, 2004, p. 949). Further, as found by Fuller (1992) and the Holmes Group Equity and Excellence Committee, faculty and students at the institutions they surveyed were overwhelmingly White and middle-class, with most field experiences occurring in schools serving White populations (Cochran-Smith, Davis, and Fries, 2004). Ultimately, this left prospective teachers with little exposure to and knowledge of cultural diversity.

Third, in addition to a perpetuation of whiteness as normative in teacher education programs, the training or transmission models that prevail in many of these programs, Cochran-Smith and Lytle (1992) say, do not prepare teachers to be lifelong learners who can work effectively in diverse settings as adequately as the less frequently occurring inquiry-based preparation programs do (Cochran-Smith, Davis, and Fries, 2004). They clarify their statement saying,

Inquiry ought to be regarded as an integral part of the activity of teaching and... classrooms and schools ought to be treated as research sites... This argument is based in part on the assumption that the increasing diversity of America's schools and schoolchildren and the increasing complexity of the tasks educators face render global solutions to problems and monolithic strategies for effective teaching impossible. (Cochran-Smith and Lytle, 1992, p. 63-64, as in Cochran-Smith, Davis, and Fries, 2004, p. 951)

Further, the failings of this universal approach dominant in teacher preparation are reflected in most teacher education programs' lack of connection between the programs themselves and their immediate neighborhoods and communities (Haberman, 1996, Venezuela, 2002, as in Cochran-Smith, Davis, and Fries, 2004). Community-based experiences, as Cochran-Smith, Davis, and Fries (2004) say, "may be critical but are often missing from teacher preparation" (p. 953).

Fourth, with regard to program coherence, Cochran-Smith, Davis, and Fries (2004) demonstrate through a synthesis of related research that in many programs a lack of program coherence around the concept of multiculturalism prevents multicultural issues from taking center stage. Villegas and Lucas (2002) caution that "when one or two courses (often optional) are added on to the curriculum, many students as well as faculty assume they are not responsible for these issues, and a multicultural focus is ultimately undermined" (Cochran-Smith, Davis, and Fries, 2004, p. 953). As this is often the case, in response, Cochran-Smith, Davis, and Fries (2004) argue that multicultural issues must be central to the curriculum, mandatory for all prospective teachers, and infused throughout all courses and fieldwork experiences rather than contained in a single course.

In the sections that follow, I will provide an example from the literature of current practice different from those described above which attempts to move multicultural teacher education in a forward direction, and conclude with a review of suggestions from the literature of practices for more effective multicultural teacher education in the future.

**An example of current practice aimed at moving multicultural teacher education forward.** While multicultural teacher education practices may not be adequate in *all* schools of education, many schools are implementing a variety of practices at both the pre-service and in-service levels in order to prepare teachers to more successfully teach culturally diverse students. Although it only represents one course and one specific institution, the practice described below illustrates an example of how one teacher educator addresses issues of multicultural education in her teacher preparation course, bringing to the table discussions of race and ethnicity and addressing with future teachers how these factors interact with the processes of teaching and learning in schools.

In her (2002) article, McIntyre, a teacher educator and researcher, describes her use of a pedagogical tool in which prospective teachers create collages to represent whiteness. Before completing the exercise, McIntyre asks students to bring in magazines to the next class without any reasons why. She does this so that the pictures they extract from the magazines for the collages are an actual representation of the media literature to which they are exposed. Students then create their collages as groups, present them to the class, and allow others to ask questions or make comments about their representations of whiteness in the collage. The purpose of this assignment is for the prospective teachers to "(a) 'see' whiteness as an integral aspect of education discourse; (b) fix their gaze on themselves as a collective racial group; and (c) engage in processes aimed at changing beliefs, stereotypes, and practices that reproduce social and education injustice" (p. 31). Within her courses, McIntyre follows up this assignment with related readings about whiteness, an exercise where prospective teachers conduct an interview

with a person of a different sociocultural background from theirs to learn more about cultural diversity, the creation of a multicultural education curriculum, and an opportunity for prospective teachers to be a part of an action research project where they can become familiar with a culturally diverse school setting and get to know students from diverse cultures on both an academic and personal level.

Various other scholars in the field provide suggestions as to how teacher education programs can better address multicultural issues by moving "beyond the fragmented and superficial treatment of diversity that currently prevails" (Villegas & Lucas, 2002, p. 20). In addition to the practice described above, various suggestions as to how this can be done in the future are described in the following section.

**Suggestions for improvement.** Villegas and Lucas (2002) point to practices that embody six strands which they argue must be woven together in multicultural teacher education in order to develop effective teachers: (a) sociocultural consciousness; (b) an affirming attitude toward students from culturally diverse backgrounds; (c) commitment and skills to act as agents of change; (d) constructivist views of learning; (e) learning about students; and (f) culturally responsive teaching practices.

Among the practices which the authors propone, the completion of an autobiography, which is also commonly suggested by others in the field, is the first. Through this exercise, which is categorized under the first strand, sociocultural consciousness, teachers are asked to critically reflect on their own background and experiences and consider how their own culture has influenced their perspectives on teaching and learning. Teachers should also consider how their beliefs and experiences might influence they ways in which they perceive their students, and think about ways through which they can counter these influences.

With regard to the second strand, an affirming attitude toward students from culturally diverse backgrounds, Villegas and Lucas suggest that teacher educators must "help aspiring

teachers understand the consequences of teacher attitudes on student learning" (2002, p. 23). This must be done not only by presenting and discussing relevant research, but also by motivating teachers to "inspect their own beliefs about students from non-dominant groups and to confront negative attitudes they might have toward these students" (2002, p. 24).

Third, the authors emphasize the need for teacher educators to help teachers develop the commitment and skills to act as agents of social change, as indicated in strand three. By instilling in them a sense of hope about institutional change, providing them with a sense of historical agency that allows them to see that schools have, slowly over time, made positive changes, and developing their skills for collaboration and dealing with conflict, teacher educators can help future teachers become agents of social change. Additionally, Villegas and Lucas say, teacher educators need to carefully guide future teachers in developing a sense of empathy, an activist stance, and their own personal visions of education and change.

The fourth practice promoted by Villegas and Lucas recognizes that teacher educators must model constructivist practices to help them understand, through the experience of constructing their own knowledge as learners, the value in constructivist strategies for learning. This practice embodies the main idea of the fourth strand, which explicitly calls for constructivist views of learning.

Fifth, Villegas and Lucas describe one way in which teachers' influences of their backgrounds and perspectives mentioned in relation to the first strand, above, can be counteracted: by learning about their students and their students' cultures. This practice, which appropriately is categorized under the strand five, learning about students, can be done in a variety of ways. To better understand the students and their abilities, Villegas and Lucas say, teachers can observe their students both in and out of the classroom; conduct home visits; create opportunities for informal classroom discussion where they can learn about students' interests and lives in general; and reach out parents and other community members who know well the culture and experiences of the students.

The sixth practice, which reflects the essence of strand six, culturally responsive teaching practices, includes having teachers read about, analyze case studies of, and observe culturally responsive teachers in action. Additionally, an important element of this practice is allowing teachers in teacher education programs the opportunity to practice in diverse classrooms with feedback from experienced culturally responsive teachers, accompanied by guided reflection. Taken together, all six practices represent one suggestion for how teacher education programs of the future can more effectively prepare culturally responsive educators.

In her (1995) article, Cochran-Smith, like Villegas and Lucas, also mentions the commonly suggested critical autobiography. She also suggests, however, a critical readings essay in which students not only read literature but also reflect on the information critically and relate it to themselves and their experiences. While both types of critical essays are addressed as essential elements of a multicultural teacher education program, Cochran-Smith focuses most on the use of inquiry-based approaches to multicultural teacher education. She encourages teacher educators to move away from superficial activities like basketmaking to teach future teachers about other cultures, and addresses the problem of colorblindness as a method of dealing with racism and inequality in schools,

What we need are generative ways for prospective teachers, experienced teachers, and teacher educators alike to work together in communities of learners - to explore and reconsider their own assumptions, understand the values and practices of families and cultures that are different from their own, and construct pedagogy that takes these into account in locally appropriate and culturally sensitive ways. (Cochran-Smith, 1995, p. 495)

What she recommends, then, is that students of teacher education programs participate in a variety of inquiry projects to reconsider their personal knowledge and experience, to locate teaching within the culture of the school and the community, to analyze children's learning opportunities, to understand children's understanding, and to construct a reconstructionist pedagogy. Ultimately, the goal is to help student teachers "construct and confront the dilemmas of race, culture, and language in teaching by reconsidering and reconnecting their personal

experiences and knowledge" (Cochran-Smith, 1995, p. 503). This can be done, she suggests, by supporting future teachers in

locating themselves as active agents within those institutions and reconsidering the ways they, as educators, could, from now on, understand and act on the successes and failures of individual students and groups of students, on the actions and apparent inactions of parents and community members, and on the educational categories and labels assigned by experts and other educators. (Cochran-Smith, 1995, p. 504)

On a variety of levels, these inquiry projects explore a multitude of aspects of teaching and learning. At the broadest level, Cochran-Smith proposes a group project among future teachers in which their task is to gather information and learn about the community in which they will be student teaching. The next inquiry project, which is completed once future teachers are paired in a classroom with an experienced culturally responsive teacher, allows future teachers to conduct an action research project within their classroom. Finally, at the most micro level, student teachers conduct an inquiry project focused on one individual student in their class in which they conduct extensive observation and interviews. This project allows them to not only develop a close, interpersonal relationship with that child, but also to better understand what learning is like from the student's perspective and recognize the challenges the student faces because of the conflicts between his or her home culture and that of the school. Together, these inquiry projects suggested by Cochran-Smith are meant to help move future teachers beyond the familiar and help them develop effective pedagogy by reconsidering their own knowledge and assumptions and gaining a better understanding of the values and practices of families and cultures different from their own.

A final set of suggestions for improving the preparation of teachers who will teach culturally diverse students comes from Ladson Billings (2000), whose work focused mostly on successful teachers of African American students. Ladson-Billings suggests the use of a critical autobiography exercise, as so many others do, and utilization of classroom "experts" as resources, as Villegas and Lucas (2002) mention in their sixth strand dealing with culturally responsive teaching practices. In addition, Ladson-Billings also suggests the development of situated

pedagogies and the implementation of re-structured field experiences. In developing situated pedagogies, Ladson-Billings expresses a need for teacher preparation programs to think more closely about the communities in which teacher education programs are located and about the school populations that their graduates are likely to serve. Doing this, she says, will help future teachers to make the school and home experiences of diverse learners in their classrooms more congruent. Further, much like the inquiry projects suggested by Cochran-Smith (1995), Ladson-Billings' suggestion for the re-structuring of field experiences through immersion in diverse schools and communities serves two purposes. First, re-structuring field experiences will help teachers understand the daily lives of children in context and recognize the limited access students have to goods and services which may work against their willingness to participate in school tasks. Second, re-structured field experiences open up opportunities for teachers to see the strengths that reside in a culture and learn about child-rearing practices that may or may not align with practices and expectations in schools. Ultimately, all of these practices are enacted in hopes of dispelling teachers' stereotypes, negating racist attitudes, and developing teachers who will, upon completion of the program, have the knowledge, skills, and dispositions necessary to effectively and successfully teach students of diverse backgrounds.

With so many educational researchers suggesting practices to improve the implementation of multicultural teacher education programs, it seems impossible to have future teachers graduate from teacher education programs without all of the knowledge and skills necessary to act as a culturally responsive teacher in today's diverse classrooms. However, as I will discuss next, there are many challenges to implementing practices such as these within a teacher education program.

### **Challenges in the implementation of multicultural teacher education practices.**

First, as McIntyre (2002) acknowledges about the creation and discussion of "whiteness" collages, often times it is difficult to push prospective teachers past their commitment to "polite"

discourse. Racism, whiteness, and oppression are all difficult topics in which to engage as a group, and often, teachers will not express their true thoughts or feelings in effort to be polite. However, as McIntyre recognizes, often it is in these moments of uncomfortable expression that we learn something about ourselves or have a chance to learn from others. McIntyre also makes the observation that another challenge to discussing whiteness, racism, and oppression with primarily white educators is the tendency to deny, first, that racism still exists, and second, an individual responsibility for racism. As she finds, when teachers think of racism they think of members of the Ku Klux Klan, for example, not themselves, and find it difficult to relate themselves to racism because they feel that is they do not engage in blatantly racist behaviors, they are not a part of racism, even if they do benefit from having white skin. Further, McIntyre found that white teachers had a problem with seeing whiteness as oppressive. In order to avoid feelings of guilt, they convince themselves of the existence of meritocracy in society and the idea that “everyone has a chance to succeed,” rather than recognizing the oppression and inequity that exists in schools and making a commitment to change it. An overarching theme throughout, which Tatto (1996) also concludes in her own article about multicultural education with primarily white educators, is that teacher beliefs are relatively constant and resistant to change, and often in teacher education programs, there is simply not enough time for teachers to process these ideas thoroughly and change their belief systems.

Bennett, in his (1993) model of intercultural sensitivity, attends to issues such as those addressed above, especially by McIntyre (2002). More specifically, intercultural sensitivity, or “the ability to discriminate and experience relevant cultural differences” (Hammer, Bennett & Wiseman, 2003, p. 422), is described along a continuum. “The underlying assumption of the model is that as one’s *experience of cultural difference* becomes more complex and sophisticated, one’s potential competence in intercultural relations increases” (Hammer, Bennett & Wiseman, 2003, p. 423). Teachers who deny difference and racism, such as those mentioned by McIntyre, might be described as falling on the ethnocentric end of the continuum. On the other hand,

teachers whose own culture is experienced in the context of other cultures, would fall on the ethnorelative end. This model, I believe, helps us better understand some of the challenges to implementing multicultural education and gives us an idea of both the challenges and possibilities as we move forward. Having described Bennett's (1993) model and how it relates to some of the challenges which surface in multicultural teacher education, I will now continue this discussion by presenting other various challenges to the implementation and success of multicultural teacher education practices.

Gay and Howard (2000) identify some specific challenges to implementing practices in multicultural teacher education as well. First, they acknowledge that “secondary education student teachers often express doubts about the relevance of multicultural education for their content areas,” (p. 3) especially in the subject areas of both Math and Science. Additionally, they assert that “both pre-service and in-service teachers are puzzled about how they can teach simultaneously for meeting standards of academic excellent and multicultural education” (p. 3). In their final observation about the challenges to implementing multicultural teacher education, Gay and Howard express that they have observed the ways in which a lack of forced opportunity to confront issues of race and class yields teachers who exhibit (1) fear of teaching students of color and (2) resistance to dealing directly with race and racism in teacher preparation and classroom practices, which ultimately get in the way of multicultural teacher education, as indicated previously by McIntyre.

In a related way, Glazier (2009) acknowledged challenges not only for white educators, but also for educators of color as well in her study about positionality and discussions of diversity within a culturally diverse professional learning community. In this case, Daniel, an African American male, was positioned by himself and others as the “expert” in the group because of his race. Daniel felt it was his "right, duty, and obligation" (Glazier, 2009, p. 832) to speak about his experience as an African American. Because of this, however, his own experience became the focus of his thoughts and speech in the group's discussions, and he became limited in his ability

to try to understand the experiences of others, namely whites, and their perspectives. Ultimately, this limited his and other members of the group's learning.

Lastly, in an article about practices for preparing successful teachers of culturally diverse students, Causey et al. (1999) acknowledged that many times, the effects of a "diversity treatment" may be reversed once a teacher is left alone in the field. In other words, a teacher may exit a teacher education feeling prepared to teach culturally diverse students successfully, but challenges in the field of enacting culturally responsive practices on a daily basis may ultimately unravel the lessons learned during his/her teacher education program about how to be a culturally responsive teacher. As in the case of Susan, while her beliefs regarding diversity seemed to have transformed shortly after the "diversity treatment," the authors found through a follow up interview that after only a few short years in the classroom, Susan, unfortunately reverted back to her old ways of thinking and teaching.

For obvious reasons experts in the field are calling for a redesign of teacher education to more thoroughly address issues of race and class in education (Causey, Thomas & Armento, 1999; Gay & Howard, 2000; Ladson Billings, 2000). Not only are schools still not achieving the goal of successfully educating students of diverse racial, ethnic, and socioeconomic backgrounds, but as illustrated through the literature, many challenges also exist in the process of preparing culturally responsive teachers that are capable of meeting that goal. In addition to the practices that schools of education currently implement successfully and that researchers in the field have suggested, innovative ideas for more thorough teacher preparation need to be developed in order for the field of multicultural teacher education to continue to move forward. As this study demonstrates, listening to the voices of practicing teachers will provide a great deal of valuable information regarding multicultural education as we move forward in considering how our goals for the education of culturally diverse students might most effectively be accomplished.

This study builds on and contributes to existing literature in the field by exploring teachers' perceived levels of preparation to teach culturally diverse students, and the manners by

which they came to be prepared. This study also analyzes teachers' self-identified strengths and weaknesses in teaching culturally diverse students through a lens of culturally responsive pedagogy to investigate whether or not teachers seem to be knowledgeable of and/or employ culturally responsive practices in their classroom. Lastly, the study gives value to the voices of practicing teachers in research and in the field of teacher education by gaining their insight into how other pre-service and in-service teachers could be better prepared to face issues of racial, ethnic, and socioeconomic diversity in their classrooms.

### **Methodology**

Data in this qualitative study were collected from seven middle school mathematics teachers over a period of five weeks through individual interviews. The chosen method was most appropriate for this study as its purpose was to uncover and describe the participants' perspectives of their own experiences in teaching mathematics to culturally diverse student populations.

### **Research Questions**

The goal of this study was to explore the overarching research question: How can a knowledge of how teachers have been prepared to teach culturally diverse students in the past and of their classroom practices in the present inform multicultural teacher education in the future? In order to explore this broad question thoroughly, the following sub-questions were considered:

1. What are teachers' perceived levels of preparedness to teach culturally diverse students?
2. What experiences have supported teachers in becoming prepared to teach culturally diverse students?
3. What do teachers identify as their strengths and weaknesses in practice regarding the teaching of culturally diverse students?
4. How do teachers feel they could have been better prepared through teacher education and professional development to teach culturally diverse students?

All four of these sub-questions, which are directly reflected in the prompts of the semi-structured interview protocol used to conduct all seven interviews, inform a part of the answer to the

overarching research question. The first two sub-questions regarding teachers' levels of preparedness to teach culturally diverse students and the experiences that have supported their preparation answer the first part of the broader question, providing us with a knowledge of how teachers have been prepared to teach students of diverse racial, ethnic, and socioeconomic backgrounds in the past. The third sub-question, which seeks to discover the practices that teachers identify as their strengths and weaknesses with regard to teaching culturally diverse students, answers the second part of the overarching question, illustrating a picture of teachers' practices in the present. Finally, the fourth sub-question speaks to the future element of the broader question, asking teachers explicitly how they feel they could have been better prepared through teacher education and professional development to teach culturally diverse students.

## **Sites**

This research was conducted at four public middle schools within three school districts in the southeast region of the United States. The four target schools were selected from twenty-four local middle schools in five local school districts. Selected schools were chosen in order to represent a variety of school performance levels, based on the 2008-2009 State School Report Cards, and a variety of demographics (2008, NCES), as indicated in Tables 1 and 2 below. Due to the fact that the largest populations of students in the targeted state are White, Black, and Hispanic, I compared only these groups when selecting target schools. This in no way suggests that other groups, such as Native Americans or Asians, do not need the same support as the other, larger, minority groups, namely Blacks and Hispanics, rather simply that I chose to compare only the largest minority groups to limit the complexity of my comparison.

The first school, classified as a “School of Distinction,” has a student body comprised of approximately 50% White students, 15% Black students, and 10% Hispanic students, as illustrated in Figure 1. At this particular school, between 80% and 90% of students overall perform at grade-level on standardized achievement tests in both reading and mathematics.

However, while greater than 95% of White students pass both exams, only about half of the Black and Hispanic students in the school, respectively, pass both.

Table 1

*School Performance Levels and Approximate Passing Rates by Racial Group*

| School    | Performance Level     | Approximate Percentage of Students that passed both Reading and Math Exams |       |          | Largest Difference Between White and One Minority Group's Passing Rates on Exams |
|-----------|-----------------------|--|-------|----------|--|
|           |                       | White  | Black | Hispanic | Group 1 - Group 2  |
| School #1 | School of Distinction | >95  | 50    | 55       | 45   |
| School #2 | School of Distinction | 75   | 55    | 60       | 20   |
| School #3 | Priority School       | 30   | 25    | 30       | 5  |
| School #4 | Priority School       | 80   | 25    | 25       | 55   |

Table 2

*School Demographic Data: Approximate Percentages of Students by Race*

| School    | White | Black | Hispanic |
|-----------|-------|-------|----------|
| School #1 | 50    | 15    | 10       |
| School #2 | 70    | 15    | 15       |
| School #3 | 5     | 75    | 20       |
| School #4 | 20    | 50    | 25       |

The second target school, also classified as a “School of Distinction” where 80% to 90% of all students pass both standardized achievement tests, has a slightly larger White population of students which makes up about 70% of the student body, but also has higher percentages of Black and Hispanic students: about 20% and 15%, respectively. This is due to an Asian population of students at the first school nearly half the size of its White population, but much smaller at the second school. At this school, the gap between percentages of White and minority students that

pass both standardized tests is smaller. Here, while about three-quarters of White students pass both exams, between 50% and 60% of Black students and Hispanic students also pass.

At the third school, the performance gap is even smaller, yet the demographics are significantly different and overall performance is poor. In this case, the school's student body is comprised of approximately 5% White students, 75% Black students, and 20% Hispanic students, making it a “high-minority” school. Due to the fact that less than 60% of all students pass both standardized tests, this school is classified as a “Priority School” according to the state's School Report Cards. Specifically, only 25% to 30% of each group of White, Black, and Hispanic students pass both exams.

Finally, the fourth target school, like the third is also classified as a “Priority School” due to an overall passing rate of less than 60%, and can be considered a “high-minority” school due to its approximately 20% White, 50% Black, and 25% Hispanic population. This school is located within the same county and school district as the third target school, described above. The fourth school is different however, because of the large gap between percentages of White students and Black or Hispanic students who pass both standardized tests. Here, while about four out of five White students achieve passing scores on both the Reading and Mathematics EOGs, only about one out of four Black students or Hispanic students achieve the required scores.

I chose these schools because I was interested to see, within a variety of settings, the similarities and variations between teachers' knowledge of and focus on matters of race in school achievement, specifically in mathematics; teachers' perceived levels of preparedness to teach culturally diverse students; and teachers' strategies for supporting student learning for culturally diverse students in the mathematics classroom.

## **Participants**

Seven middle school mathematics teachers from the four target schools were selected on the basis of their willingness to participate in this research study. From the beginning, it was

hoped that included in the pool of participants would be members of both genders, individuals of varied race/ethnicity, and teachers varying in age and years of teaching experience, in order to maximize variability of the study's sample. In fact, as indicated in Table 3 below, this was the case.

Table 3

*Teacher Background Information*

| Name   | School | Gender | Ethnicity        | Years of Teaching | Certification Route | Degrees, Certificates, etc. Related to Education  |
|--------|--------|--------|------------------|-------------------|---------------------|---|
| Jamie  | 1      | M      | White            | 10+               | Traditional         | Bachelor's; Master's  |
| Jack   | 1      | M      | White            | 6                 | Alternative         | seeking Master's  |
| Emily  | 2      | F      | White            | 9                 | Traditional         | Bachelor's  |
| Caelin | 3      | F      | White            | 10+               | Traditional         | Bachelor's; certification in Gifted Education; seeking Master's   |
| Amanda | 4      | F      | African American | 3                 | Traditional         | Bachelor's; seeking certification in ESL  |
| Robert | 4      | M      | African American | 10+               | Alternative         | Master's; certification in Gifted Education, ESL, K-12 Principal, and Curriculum and Instruction; Doctorate |
| Eric   | 4      | M      | White            | 1                 | Traditional         | Bachelor's  |

The final group of participants included three females and four males; two individuals who self-identify as Black or African American, and five who identify themselves as White; and educators

who range in age from approximately mid-twenties to mid-fifties and in teaching experience from one to over ten years. Missing from the participant pool are teachers of Hispanic, Asian, or American Indian ethnicities, but data shows that the significantly low percentages of Hispanic, Asian, and American Indian teachers employed in the targeted state (NCES, 2004) renders their participation in the study highly unlikely. In order to provide a more detailed description of the seven participants of this study, a brief introduction of each teacher, along with a summary of their educational background and teaching history, is included here. To protect the anonymity of participants, a pseudonym for each teacher is used to replace their real first name.

Two teachers from School #1 participated in this study. "Jamie," who has taught at School #1 for nine years, and taught one year prior to that in another middle school within the same district, is a white male who studied Education at both the undergraduate and graduate level. According to the program's website, only one course related to diversity, "Literacy, Language, and Culture in the Middle Grades," in addition to a semester of student teaching was required for his undergraduate degree in Middle Grades Mathematics. At the graduate level, the program he attended discussed diversity at length in the description of its conceptual framework and required two specific courses related to diversity for graduation titled, "Reinventing Teaching," and "Culturally Responsive Teaching," in addition to others focusing on research and leadership, mathematical content knowledge, and pedagogy. Jamie, however, said that the class on diversity lacked "any practical discussion or application to our classrooms" (Interview, December 8, 2009).

While Jamie claims that he benefitted little from his coursework in education with regard to preparedness for diversity in the classroom, he mentioned learning a great deal from both his experience in the classroom, and from his experience working with other educators of various races and ethnicities. In addition, he noted students and the close relationships he has built with them over the years, in addition to other teachers, as resources that have contributed to his knowledge of diversity and its implications on teaching and learning.

The second teacher at School #1, "Jack," is also white male and has six years of teaching experience, all of which has occurred at School #1. He described his own educational upbringing as having occurred in a "somewhat diverse" setting, but also acknowledged a lack of exposure to the linguistic diversity with which he is now faced as a teacher. Jack entered the teaching profession following a switch from another profession, and utilized the lateral entry route to certification. He was a Mathematics major at a local prestigious university, and is currently enrolled in a Master's program in Education at the same institution which Jamie attended for graduate work, where he said he encounters the topic of cultural diversity in schools in his coursework. For example, he describes learning about "different approaches to take to teaching how your own culture or your own experiences will affect the way that you teach and how you need to be aware of that, and how, if you are aware of differences, then you can alter the way you teach to be more inclusive of more people" (Interview, December 16, 2009) in "Reinventing Teaching." Additionally, he notes the use of an assignment in which students in the class were asked to write, "a paper about our educational experiences we have had representative of our education experiences growing up. It was supposed to be a snapshot how that picture represented our memories of our school experiences" (Interview, December 16, 2009) in order to reflect on their own experiences and consider how those might impact the ways they teach.

The third participant in this study, "Emily," was the only teacher at School #2 that decided to participate. A white female raised in the Northeast and educated through twelfth grade in a nearly all-white public school setting, Emily pursued Education as an undergraduate at a public university in her home state. In her undergraduate program, Emily was required to take one course in "Contrasting Cultures" in addition to one class on "Prejudice and Discrimination" as a part of her general education requirements. No courses, however, focused specifically on diversity were listed as a part of the requirements for her Early Childhood Education major. She did, though, as in most other undergraduate programs in Education, have to complete one semester of student teaching. She was initially certified for grades kindergarten through 6 with a

concentration in English, but has since become certified to teach sixth grade mathematics, as well as general elementary school including grades kindergarten through fifth. She described her student teaching experience as having taken place in culturally diverse schools in an urban area near her university, and mentioned a summer work experience at a camp near her hometown where she encountered ethnic, socioeconomic, and linguistic diversity among low-income Puerto Rican and Dominican populations. She has worked at School #2 since she graduated from college for a total of nine years.

School #3 also included only one participant in the study, "Caelin," the fourth teacher out of seven. Caelin is also a white female, and grew up in the Northeast. After switching her major from Accounting, she majored in Elementary Education with a concentration in Early Childhood at a state college in her home state. In the Education program at her college, coursework focuses on "promoting diversity, collaboration, and developmentally-based education," and students gain "practical experience in local schools and child care centers, starting in the first year." As the college says, "inherent in this professional preparation is the promotion of sensitivity to the variety of learners, and an understanding and respect for diversity within student populations, families, and communities." Further, their conceptual framework describes some of the core values as including a "critical stance toward ourselves and our profession, recognizing how we as educators are shaped by our own experiences and culture, showing respect and openness towards diverse perspectives showing respect and openness towards diverse perspectives, and engaging all learners by combining a knowledge of students and one's subjects within the cultural, social, and institutional context."

In addition to her background in a traditional route of teacher education, Caelin has teaching experience at a variety of grade levels in a variety of school settings. Out of college, Caelin taught one year at the kindergarten level. After a move, Caelin next taught for a few years at a preschool in a mid-Atlantic state before taking time off to start a family. Upon returning to teaching, she accepted a position at a Catholic K-8 school which served a generally low-income

population where she taught a variety of grades over a period of a few years until the school closed due to financial difficulty. Next, Caelin taught at another Catholic school, however this particular Catholic school served a much wealthier population than the first. Another move brought her to the Southeast, and she has been teaching at School #3 since, for a total of five years. While here, Caelin has encountered classes in cognition and cultural differences through the completion of certification in Gifted Education and current pursuit of a Master's degree in Special Education at a local university. Caelin in pursuing her Master's degree at the same institution as Jamie and Jack, where at least one course related to diversity is required and where a focus on cultural diversity is evident throughout the program's conceptual framework. During the interview Caelin also mentioned that, in terms of her own personal background, she had experienced poverty and homelessness first-hand earlier in her life, was always interested in different cultures, was the President of the International Student Association in college, and married interracially to a man with whom she now has two biracial children. Throughout the interview, Caelin articulated a more acute awareness of some of her students' struggles because of these personal experiences.

The fifth, sixth, and seventh participants in this study all currently teach at School #4. The fifth teacher, "Amanda," is African American female with about three years of teaching experience. Amanda graduated from a public university in a neighboring state with a Bachelor's degree in Elementary Education, Math Education, and Special Education. Program requirements for her degree included "general education courses, field experiences, content specialty courses, and the development of discipline-specific skills and dispositions which reflect a commitment to teaching and learning as well as lifelong professional growth and development." Although diversity is not directly addressed, the school itself boasts a "multi-cultural community," which Amanda specifically mentioned as having sought out as a part of her undergraduate college experience. After completing her degree, Amanda taught for two years in the state in which she attended college before moving to the state at hand, where she took a job at School #4 at the

beginning of the current school year. Amanda admits to seeking out employment at a high-minority school, in part, for financial reasons, as it would allow her to cancel some of her student debt from her undergraduate education, but also acknowledges that since she was a child, she appreciated experiencing cultural diversity in her life and the opportunities it gave her to explore others' perspectives. Even with the wide variety of specialties she studied as an undergraduate, Amanda identified a frustration with her lack of fluency in the Spanish language, and is currently enrolled in an ESL certificate program to further her education.

The sixth teacher who participated in the study, "Robert," is an African American male with many years of experience in the field of education. Robert has accumulated an extensive amount of degrees and certifications throughout his lifetime, earning a Bachelor's degree in both Mathematics and Computer Science; a Master's degree in Education; Academically or Intellectually Gifted (AIG), English as a Second Language (ESL), K-12 Principal, and Curriculum and Instruction Graduate Certificates; another Master's degree in Divinity; and finally, a doctorate in Clinical Pastoral Counseling. Robert entered teaching as an initially licensed teacher through lateral entry from a different profession. His teaching experience includes mathematics instruction at the community college level, seven years of teaching middle school mathematics at School #4, and weekend, college-level instruction at a theological seminary in a neighboring state.

The final teacher from School #4 is a white, male named "Eric" who is currently in his first full year of teaching. Eric grew up in the Northeast and attended college at a state university in his home state (the same college as Caelin attended as an undergraduate), and majored in mathematics, completing his student teaching requirement for middle school mathematics. Throughout his teacher education, despite the university's claims to focus on and promote diversity, he claims that most of the focus on diversity dealt with students' languages and that he wasn't faced with the level of challenges related to diversity during his student teaching experience as he is in his current position at School #4. Directly after completing his Bachelor's

degree in Mathematics and Middle Grades Education, he was hired in his home state in the Northeast to teach high school mathematics at a nearly all-white school, but only stayed for one semester. He worked briefly in another profession, and returned to teaching upon moving to the Southeast this year, securing his position at School #4 shortly before the start of the school year.

In the next two sections, a description of data collection methods explains how information was gathered from the above-mentioned seven teachers, and an explanation of qualitative analysis techniques describes how data was analyzed to answer the initial research questions. Additionally, a discussion of the limitations of this study precedes the following section regarding findings.

### **Data Collection**

During the individual interviews participants were asked to discuss the questions posed in the interview protocol (see Appendix) in depth. More specifically, teachers were prompted to discuss (a) their educational background and teaching history; (b) their perceived level of preparedness to teach students of diverse racial, ethnic, and socioeconomic backgrounds; (c) the ways in which they have come to feel prepared to teach students of diverse racial, ethnic, and socioeconomic backgrounds; (d) their self-identified strengths and weaknesses in teaching mathematics to culturally diverse students; and (e) the ways in which their knowledge base and skill set could be further developed by teacher education or professional development programs. Interviews generally occurred only once and, with the exception of one interview due to technical malfunction, were audio recorded to ensure accuracy in data collection then transcribed.

### **Data Analysis**

Data from the interviews were transcribed then coded and qualitatively analyzed according to the research sub-question to which they applied.

1. What are teachers' perceived levels of preparedness to teach culturally diverse students?
2. What experiences have supported teachers in becoming prepared to teach culturally diverse students?
3. What do teachers identify as their strengths and weaknesses in practice regarding the teaching of culturally diverse students?
4. How do teachers feel they could have been better prepared through teacher education and professional development to teach culturally diverse students?

In the analysis for the first research question, which aims to determine teachers' levels of preparedness to teach culturally diverse students, teachers' responses to explicit prompts about their preparedness were reviewed. Specifically, teachers were asked, "When you first got into the classroom, how prepared did you feel to teach the students in your classroom of diverse racial, ethnic, and socioeconomic backgrounds?", "Do you feel any more or less prepared now? How so?" and, "When searching for a job, what were your thoughts about teaching in a high-minority school?" After reviewing responses to the prompts in all seven interviews, I began coding responses in pencil in the margins of the pages according to teachers' reported levels on preparedness to teach in culturally diverse settings, and compared those with characteristics of teachers' and their experiences. Two simple categories emerged, prepared or not prepared. Within each category, I then looked at the factors of teachers' backgrounds that influenced their preparedness. Factors found included: (a) race, ethnicity, and socioeconomic background; (b) length and type of teaching experience; and (c) participation in undergraduate or graduate teacher education programs.

For the second research question, which aims to discover what experiences have supported teachers in becoming prepared to teach culturally diverse students, a similar method of analysis was used. In this case, the explicit prompt during the interview asked, "How would you describe the ways in which you became prepared to teach students of diverse racial, ethnic, and socioeconomic background?" If teachers' responses were relatively brief, I would then ask more specifically, "How do you feel that your own racial or ethnic and socioeconomic background affected your feelings of preparedness to teach students of diverse racial, ethnic, and

socioeconomic backgrounds? Did you ever feel that your own background served as an asset or a drawback?", "What aspects of your teacher education program helped you to prepare to teach students of diverse racial, ethnic, and socioeconomic backgrounds? How so?", and "What experiences in or out of the classroom have affected your feelings of preparedness to teach students of diverse racial, ethnic, and socioeconomic backgrounds? What did you learn from these experiences?". Teachers' responses to all of these prompts were then reviewed. To find further evidence of experiences which supported teachers' preparation to teach culturally diverse students which may have been implicitly stated in responses to other interview questions, I then reviewed each interview in its entirety to look for other responses, in addition to responses to the aforementioned explicit prompts, which would indicate experiences that contributed to the preparedness of the teachers. I then coded the data, once again in pencil in the margins of the pages, according to emerging themes. Using constant comparison (Glaser, 1965), I then came up with a number of categories which I believed included all responses about experiences that supported the preparation of teachers to teach culturally diverse students. These categories included teaching experience in diverse settings; racial, ethnic, and socioeconomic background; exposure to diversity outside of the classroom; and participation in teacher education and professional development programs.

Upon reviewing my analysis for both the first and second research sub-questions, one which aims to examine teachers' perceived *levels* of preparedness to teach culturally diverse students, and the other which seeks to investigate the *experiences* that have supported teachers in becoming prepared to teach culturally diverse students, I came to realize that the emerging categories for these two questions overlapped. More specifically, the categories of racial, ethnic, and socioeconomic background; teaching experience; and participation in coursework in Education appeared for both the first and second question. The analysis for the second question included one more additional category: exposure to cultural diversity outside of the classroom.

For this reason, the first and second questions are addressed together in the Findings section, under the sub-heading "Preparedness."

Analysis and coding of responses for the third question, which asks what the practices that teachers identify as their strengths and weaknesses in practice regarding the teaching of culturally diverse students are, utilized four preset categories drawn from Geneva Gay's (2000) concept of culturally responsive teaching: caring, communication, curriculum, and instruction. An additional "other" category was left open during analysis, however, it remained unused as all of the teachers' responses fell into one of the a priori categories or another. As I mentioned earlier, I chose to use Gay's concept of culturally responsive teaching for part of the analysis in this study for a variety of specific reasons. First, more than other theories of its kind which developed after Banks' model of multicultural education, it applies specifically to the practice of teaching. Whereas others focus on the students, or on the policy and politics of the school as an institution, Gay's concept focuses on what it means to be a culturally responsive *teacher*. Further, while other theories which were developed parallel to Gay's focus on the teaching of *specific* ethnic groups, culturally responsive teaching applies to a broad range of culturally diverse groups and tends not to focus on one more than the others.

In order to code the data relevant to the third research question asking about teachers' strengths and weaknesses in practice with regard to teaching culturally diverse students, responses were reviewed to explicit prompts in the interviews which asked teachers, "What would you identify as your own strengths with regard to teaching mathematics to middle school students of diverse racial, ethnic, and socioeconomic backgrounds?" and, "What would you identify as your own weaknesses with regard to teaching mathematics to middle school students of diverse racial, ethnic, and socioeconomic backgrounds?" Additionally, responses to other questions throughout the interviews were reviewed for evidence of teachers' opinions about what it meant to be either a good or bad teacher of culturally diverse students. Ultimately, as I read each teacher's interview in its entirety, I coded responses according to the five categories of

culturally responsive teaching practices (caring, communication, curriculum, instruction, and other) using five different colored highlighters. In the end, all of the practices teachers identified fell under one or more of the four preset categories set forth by Geneva Gay's concept of culturally responsive teaching, therefore the other category remained empty, and the final analysis reflected the following categories regarding teachers' practices: caring, communication, curriculum, and instruction.

Finally, the fourth research question, which aimed to understand how teachers feel they could have been better prepared through teacher education and professional development to teach culturally diverse students, was answered through a process of analysis and coding similar to the first and second questions. For this question, the final prompt in the interview provided most of the data which was to be analyzed for this question. That prompt asked teachers explicitly, "Finally, what do you think would allow you to further develop your knowledge and skills for facilitating student learning of mathematics for students of diverse racial, ethnic, and socioeconomic backgrounds? In other words, what do you think professionals in the fields of teacher education and professional development could do, or have done, to help you become an even more effective mathematics teacher of *all* students?" The data analyzed included responses to this prompt, however, they also included comments made throughout the rest of the interviews. Other relevant comments analyzed included unsolicited critique when teachers were initially asked to provide background questions about their experiences with teacher education and professional development programs. Additionally, analysis also included responses related to the question which asked teachers in what ways they came to be prepared to teach culturally diverse students. Ultimately, each interview was reviewed in its entirety and coded thematically, using a pencil to make notes about themes in the margins. Using constant comparison (Glaser, 1965), a list of emerging categories was created to reflect teachers' critiques of and suggestions for the future of teacher education. Categories that emerged indicated that suggestions fell into three categories: the role of teacher education programs; the role of K-12 schools; and the role of

teachers. Within the first two categories, subcategories emerged. In the category describing the role of teacher education programs, subcategories included knowledge teachers gained through university coursework and gaps in preparation for communication, curriculum, and instruction. In the category describing the role of K-12 schools, subcategories included opportunities for collaboration among teachers, professional certifications, and professional development programs.

Further details regarding the findings of the analysis, including evidence from the interviews which supports the above-mentioned categories for all four research sub-questions, are provided in the following section. However, before I begin the section detailing the findings of this study, I would like to acknowledge the impossibility of obtaining a full picture of each teacher's practices through one interview. In order to truly understand the complete picture of teachers' practices, one would need to gather further data in addition to the interview, including perhaps classroom observations over an extended period of time and possibly even student accounts of teachers' effectiveness with regard to teaching culturally diverse students in mathematics.

Additionally, while an interview was an effective method for hearing a teacher's perspective of their own preparedness to teach students of diverse racial, ethnic, and socioeconomic background,

Unfortunately, the basic human tendency to present oneself in the best possible light can significantly distort the information gained from self-reports. Respondents are often unwilling or unable to report accurately on sensitive topics for ego-defensive or impression management reasons. The result is data that are systematically biased toward respondents' perceptions of what is "correct" or socially acceptable. (Fisher, 1993, p. 303, as in Maccoby and Maccoby, 1954)

In this case, due to the widely known research in the field of education about "best practices" for teaching culturally diverse students, it is possible that, in accordance with social desirability bias, teachers in the study who had knowledge of "best practices" for teaching culturally diverse students might have given specific responses to interview questions because they those responses

were desired. Ultimately, the fact that I was a graduate student conducting research on the teaching of culturally diverse learners as part of a Master's program in the field of education might have influenced some of the teachers' responses.

On the other hand, it is important to remember that through one individual interview, I could not possibly capture a full picture of each teacher's practices. Also, there may be ideal practices which a teacher is enacting in his or her classroom that the teacher may not realize he or she is even doing, or it simply may not have come up in the course of our discussion during the interview. Again, for this reason, collection of further data such as classroom observations over an extended period of time to supplement data from individual interviews would be ideal, however I will address the need for this type of further research in the Discussion section of this paper. As this was an exploratory study aimed at capturing a broad sense of teachers' perceptions of their preparation to teach culturally diverse students, I focused only on obtaining data through individual interviews with teachers. However, I do realize that because of this choice, my analysis is limited in that it captures only a piece of the big picture.

In addition to the limitations of my analysis based on data that was or was not collected as a part of this study, it is important to recognize that my analysis is also limited by my positionality as the researcher within the context of this study. As a white female from the Northeast, I realize that I have interpreted this data through a lens different than that through which many others from various other walks of life would interpret it due to my own personal background. Also, my years of teaching experience in middle school mathematics, although relatively few, along with my enrollment and participation in a graduate Education program focused on matters of educational equity and social justice and employment and dedication to the Upward Bound program at the university which serves future first-generation students from low-income backgrounds, many of whom are students of color, provides a backdrop for many of my questions asked and conclusions made throughout the course of the study and sheds some light onto the reasoning behind much of my analysis. That said, I move now to a discussion of the

findings gained through data collection and analysis in this exploratory study about middle school math teachers' preparation to teach culturally diverse students.

## **Findings**

The findings of this study are broken down into three sections: Preparedness, Reflections of Culturally Responsive Teaching in Teachers' Practices, and Moving Forward with Teacher Education. Each section corresponds with at least one of the original research questions set out to be answered through this study. The section on preparedness reflects the first and second research questions regarding teachers' perceived levels of preparedness to teach culturally diverse students and the manners by which they came to feel prepared. Next, the section on culturally responsive teaching and teachers' practices mirrors question three as it addresses the ways in which teachers' self-reported practices embody the four central tenets of culturally responsive teaching. Finally, the section regarding the future of teacher education speaks to question four, which aimed to gain an understanding of the elements of teacher education that worked or didn't work for teachers, and suggestions for how it can be improved for future generation of educators, and ultimately, for the diverse populations of students they teach.

### **Preparedness**

The seven teachers' levels of preparedness to teach culturally diverse students were found to be most closely related to years of experience in a diverse setting. Nearly all of the teachers, in one way or another throughout their interviews, mentioned the value of classroom experience in the development of their knowledge and skills for teaching a culturally diverse student population. In addition to classroom experience, teachers' levels of preparedness were remarkably affected by their identities as racial, ethnic, and socioeconomic beings; their experiences outside of the classroom with populations or individuals characterized by racial, ethnic, and socioeconomic diversity; and their amount of exposure to coursework and theories

around cultural diversity and learning differences, and more specifically, graduate coursework in Education. Regarding subsets of participants who indicated a higher level of preparedness than others, it was evident that teachers of color, namely Robert and Amanda, expressed more initial preparedness to teach students of culturally diverse backgrounds. Additionally, teachers who had participated or were currently participating in graduate programs in Education, like Jamie, Jack, Caelin, Amanda, and Robert, also acknowledged a confidence in effectively teaching students of culturally diverse backgrounds which could be related to their level of education and familiarity with these issues.

**Influences of racial, ethnic, and socioeconomic background.** When asked how their own racial, ethnic, or socioeconomic background or identity influenced their preparedness to teach culturally diverse students, teachers generally correlated feelings of preparedness with their identities either as racial minorities, or as individuals who had directly experienced poverty in their lives. With the exception of one white, female teacher, Emily, responses were similar according to racial identity. Generally, white teachers noted feelings of apprehension and unpreparedness during the first year of teaching, while African American teachers seemed to use their own racial or ethnic background to lay an initial foundation on which practices for teaching culturally diverse students would then be built.

Robert, for example, indicated in his interview that he felt prepared to teach "*his* people" (Interview, December 14, 2009). He continued, though, to identify one of his grandfathers as white, and thus expanded his statement by saying, "when I see the kids, I see me *all* the way across" (Interview, December 14, 2009). Similarly, Amanda identified the influence of her childhood playmates on her views of diversity as an adult, "Growing up I was around a lot of different people. My Mom worked for the State and so I was able to play with mostly white kids and a few Black kids. When I'd go home, it was Black kids; when I was with my mom, it was a little bit of everything" (Interview, December 14, 2009). Amanda also described her high school

as very culturally diverse, and added that, "I deliberately went to a different type of college so that I could see different types of people; so that I could get to see how other people think." For her, the exposure to cultural diversity she experienced as a child, adolescent, and young adult helped prepared her for her classroom in a high-minority school, and helped her embrace that diversity with a yearning to learn from other peoples' experiences. On the other hand, Jack, a white male, admitted that he was pretty uncomfortable when he began teaching, in part due to his lack of education background through alternative licensing, but also because of his race, saying, "I was definitely concerned about how am I going to reach those students that are not like me, and how I am going to help close the achievement gap" (Interview, December 16, 2009).

Caelin, another white teacher, noted the beginning of her experience in her school was "a shock" and relayed a conversation she recently had with the principal of her school in which the principal acknowledged her positive transformation over the last five years, "She said, 'when you first came here, you were in a flower dress, and you were so different from the kids, and the way that you spoke was different,' and she said, 'Now I see you, you come to school, and you're dressed like, you know, everyone else, and you speak to them in a way that they understand'" (Interview, January 20, 2010). In this case, the conversation between Caelin and her principal reemphasizes the importance of classroom experience in the level of preparedness, especially for white educators from backgrounds in which they are unaccustomed to cultural diversity.

Emily, a white female and the only exception to the rule, answered the question of how her own racial, ethnic, or socioeconomic background influenced her level of preparedness to teach culturally diverse students by saying, "I didn't feel unprepared. Maybe I was, but I didn't feel like I was" (Interview, December 10, 2009). Interestingly, it became apparent as the interview continued that while Emily was comfortable discussing issues of socioeconomic status and language differences in her classroom, she either did not feel comfortable addressing these differences during our conversation, or she truly did not recognize differences among students according to race and ethnicity. In a related conversation in an interview with another participant,

Jamie, a white male, mentioned how, in retrospect, he could now see that when he began his teaching career approximately ten years ago, he sincerely believed that he was, in fact, "colorblind," and used to think that this was the politically correct stance to take as an educator. He noted that he learned through his experience in the classroom that differences between racial and ethnic groups and their implications on students' learning simply cannot be denied. Rather, they must be both valued and embraced in order to successfully promote student learning for all in a diverse educational setting. According to the Developmental Model of Intercultural Sensitivity established by Bennett (1993), if in fact Emily did not recognize racial and ethnic differences in her classroom, she might be considered to fall on the ethnocentric end of the intercultural sensitivity continuum, a position characterized by her denial and minimization of ethnic differences in her mathematics classroom. Jamie, on the other hand, acknowledged his beginnings as a white, male educator also on the ethnocentric end of the continuum, but described his transformation and movement along the continuum through ethnorelative stages as he learned to accept cultural differences, adapt to them as an educator, and integrate them into his mathematics curriculum and instruction.

Returning to the topic of preparedness, interestingly, most of the white teachers besides Emily admitted to feeling unprepared to teach culturally diverse students when they began their careers not only because of their racial or ethnic identity, but, in fact, their own geographic origins may have played a role as well. Three out of five white teachers in the study were displaced northerners generally from the Northeast. Clashes in culture between the North and the South could certainly be exacerbated in diverse educational settings, and I would argue that some of their feelings of discomfort and uneasiness were also due, in part, to the differences between their new geographic location in the South and their Northeastern home culture, and all of the cultural implications that go along with that during their first years of teaching. For example, Eric pointed out his struggle with language in his classroom. Not only did he acknowledge a challenge in communicating with ESL students with whom he had little contact in his home state,

but he also admitted to a difficulty in understanding the language used by Black students in his classroom due in part to the unique linguistic nuances of southern Black culture. In his own words, "Language is a huge thing. I can't understand what a lot of the kids are saying a lot. I have to say, 'Excuse me, what did you say?', and I'm from the North so there's a different dialect, and putting words together and not using, like, proper English, it sounds bad but I'm like, 'What?'; I just don't get it. And then obviously with the Hispanic population, I have no idea what they're saying" (Interview, December 15, 2009). In an effort to improve communication in his classroom, Eric also said, "I try, like if they say something and I don't know what it is, I'm like, 'What is that?'. And they'll laugh about it, but then they tell me, and I learn more about them" (Interview, December 15, 2009). In his first year of teaching, Eric is making an effort to overcome challenges of language in his classroom by engaging in an openness to the cultures of his students, learning more about them with each challenge he encounters.

Although Caelin, a white, female teacher from the northeast, did not necessarily feel more prepared to teach in a high-minority school because of her *own* racial or ethnic identity, she did mention an acute awareness of the struggles of ethnic populations when she discussed her interracial marriage and the experiences of her two biracial children. Further, her status as a single mom was significant to her in the development of her relationships with students. "I do tell them, 'You know, I'm a single mom and I'm raising two kids, and I don't have money to run out every second and buy pencils.' And so, they know I struggle, and I think, in a way, that kind of endears me to them, because a lot of them come from houses where they have a single mom" (Interview, January 20, 2010). In this way, her experience as a single mom both helped her to form close, personal relationships with her students, and helped her to understand some of the challenges they may face due to the non-traditional structure of their family unit at home.

In addition, Caelin seemed to feel more prepared than others to confront issues related to low socioeconomic status within her classroom because of her own life experiences with poverty. She shared with me a story of her own childhood, "My parents did not have a lot of money. They

don't have a lot of money still. And, when we were growing up, I was homeless for a while. And I think that also kind of makes me relate to some of the issues my kids go through. When they don't have something, it's not necessarily that they didn't bring it, it's that they don't *have* it" (Interview, January 20, 2010). In her case, her first-hand understanding of poverty and homelessness enabled her to empathize with some of her students and to relate to their challenges on a more personal basis, thus increasing her ability to teach them effectively based on her understanding of their experience.

Levels of preparedness in this study were not only affected by number of years of experience in diverse settings and racial, ethnic, or socioeconomic identity, but also by experiences with cultural diversity outside of the classroom. Additionally, I would argue that participation in undergraduate or graduate programs and professional development programs in which diversity or learning differences were explicitly addressed had an impact on teachers' levels of preparedness as well. Experiences outside of the classroom that directly impacted teachers' levels of preparedness, which I will discuss in the next section, included involvement in athletics or coaching experiences, home visits and conversations with parents, summer camp employment, memberships in organizations for diversity, and community service.

**Experiences with diversity outside of the classroom.** All of the experiences that teachers described having with diversity outside of the classroom occurred on two levels. At the more micro level, teachers described experiences such as involvement in school athletics and conversations with parents and families as a way to get to know diverse groups of individuals situated within the school context, but outside of the classroom. On a more macro, societal level, teachers described experiences through which they came to have a better understand of the diversity of the broader community surrounding the school. Examples of these experiences included community service opportunities, summer camp employment, and membership in

organizations for diversity. In this section, I will discuss all of these practices which relate to diversity at both the school and the broader community level.

*Experiences with diversity at the micro level.* Four out of seven teachers in the study identified involvement in athletics or coaching experiences a factor which affecting their preparedness for culturally diverse classrooms. Both Jack and Emily mentioned how both coaching and a general interest in sports help them connect with their students, both in conversation and on the field. For Robert, it seemed that his position as a coach of three sports was important to him as it kept him actively involved in the students' lives outside of the classroom. He even boasted of a recently designated title of champions of the local athletic conference in soccer. For Eric, athletics and the value of working as a team was something he was able to translate over into the classroom. As he indicated in his interview, Eric used the concept of a team as a metaphor by which he was able to motivate his students. Not only did the relationship between academics and athletics help him motivate his students, but it also was able to help students come to the realization that if they worked together in collaboration, they were much more likely to achieve success.

For Robert, working together with his students also meant establishing relationships and building partnerships with parents outside of school through home visits and simple conversations. Not only did this allow him to gain a better understanding of the students' perspective and of what it takes to be a parent in a particular setting, but as he said, it also "lets the kids know that I care about them...and then when I have to be tough, they receive it better, as tough love" (Interview, December 14, 2009). Caelin also recognized the value in building relationships with parents when reflecting on one of her early teaching experiences in a bilingual preschool. Here is where, she said, she "learned really early on to be an advocate and to work with parents" (Interview, January 20, 2010).

*Experiences with diversity at the macro level.* Other experiences outside of the classroom acted as conduits through which teachers became exposed to elements of racial, ethnic,

and socioeconomic diversity that they had never experienced before, such as Emily's employment at a summer camp whose population was low-income and Puerto Rican and Dominican; Caelin's membership in and presidency of the International Student Association in college; and Amanda's volunteer work in homeless shelters. Amanda's experience, in particular, opened her eyes to the reality of homelessness in America. Through serving her community she came to realize that homelessness and academic ability are in no way correlated, and was able to disprove the stereotype in her mind about the race of homeless individuals, whom she used to believe could never be white. In her own words, "Homelessness has no color; smartness has no color" (Interview, December 14, 2009).

In addition to experiences outside of the classroom, even despite the way in which its significance in the preparation of teachers is downplayed in comparison to field experience, participation in education coursework, especially at the graduate level, along with professional development programs, as I will discuss next, did, in fact, have an effect on teachers' levels of preparedness to teach culturally diverse students.

**Significance of teacher education and professional development programs.** Although many seemed skeptical of their influence on teachers' perceived abilities to be effective in the classroom, university coursework and professional development experiences emerged from the data as factors that did, in fact, influence teachers' preparedness to teach culturally diverse students. In this section, I will discuss each of these factors separately.

**University coursework.** Caelin clarifies a distinction between her experience in diversity courses as an undergrad and as a graduate student. As a undergraduate student, she says, she remembered thinking, "This is such a strange class. What does this have to do with anything?" (Interview, January 20, 2010) because she wasn't yet in the classroom and hadn't ever been faced with many of the issues that were topics of discussion in the class. In retrospect, however, she says, "I realized later on that it had a *lot* to do with what I was going to encounter" (Interview,

January 20, 2010). Caelin discussed the use of a critical autobiography, which she has completed more than once, and admitted that even though "It sort of feels like I'm taking out all of my bones from the closet every time, so it's kind of painful" (Interview, January 20, 2010), she learns something new every time she does it. In addition to the productive practice of writing a reflective, critical autobiography, Caelin also identified a class on cognition in a certificate program for gifted education through which she learned a great deal about the way children and adolescents think. For her, all of the meaningful coursework experiences she engaged in were at the graduate level, once she was a practicing teacher in her own diverse classroom and could relate the concepts she was learning in class to her experiences with culturally diverse student.

For Jack, who lacked any training in the field of education as an undergraduate, any meaningful experience he has had in a teacher education program learning about cultural diversity has been either through a lateral entry program or a part of his coursework for a Master's degree in Education. For him, however, the most significant aspect of his learning was not about racial, ethnic, or socioeconomic diversity, or even about the learning styles of culturally diverse students in his classroom. It was, however, about his reflection on his own culture and the biases that he brings to the table as a teacher. Like Caelin, part of this reflection was also brought about through the use of a critical autobiography assignment. In discussing the particularly effective class in which he was asked to write a critical autobiography, Jack said, "It wasn't so much about a diverse student population as it was about different approaches to take to teaching, how your own culture or your own experiences will affect the way that you teach and how you need to be aware of that, and how, if you are aware of differences, then you can alter the way you teach to be more inclusive of more people" (Interview, December 16, 2009).

Amanda, on the other hand, unlike Caelin and Jack, *was* able to have a meaningful coursework experience with a class on diversity as an undergrad. In her case, however, she identified not only the course itself, but also the significance of pairing that class with the ethnic and socioeconomic diversity she encountered in her practicum. Unlike some of the other teachers

whose student teaching experiences were in schools that lacked a great deal of racial, ethnic, and socioeconomic diversity, Amanda was able to experience diversity first-hand in schools while she was studying diversity in her program as an undergrad. Further, Amanda commented that not only did she learn a lot from the simultaneous combination of her coursework and her experience with ethnically and socioeconomically diverse students and parents during her practicum, but, as she says, "Even the teachers were all different themselves, so I could get a little bit of everybody's perspective, put them together, and get my own" (Interview, December 14, 2009).

*Professional development experiences.* Aside from influences of teacher education coursework on the levels of preparedness of the seven teachers in the study, professional development programs were also identified as having a significant impact on two particular teachers, Robert and Caelin. Interestingly, both are teachers at low-performing, high-minority schools. In their interviews, both teachers mentioned the same program, Capturing Kids' Hearts, a nation-wide program that teaches educators through a three-day program, "how to form relationships with students rather than being isolated from them" (Interview, January 20, 2010), said Caelin. The website for the program describes it by saying,

Truly remarkable outcomes are possible in a classroom where trust, respect, and caring relationships flourish. But creating such an environment is a tremendous challenge. Capturing Kids' Hearts is a 3-day off-site learning experience that provides tools for administrators, faculty and staff to build positive, productive, trusting relationships — among themselves and with their students. These processes can transform the classroom and campus environment, paving the way for high performance... CKH is a dynamic, skill-driven, participatory experience. It is not a theoretical or motivational lecture, but the beginning of an important transformational process. Teachers, staff, and administrators learn and practice skills they will use and model in their schools... The optimal outcome [is] an intentional culture shift. ("Capturing Kid's Hearts," 2010)

Caelin detailed an account of the effect the program had on her classroom practices and her relationships with her students,

the other day I was teaching... and walking around... and I needed some hand cream. And I put it on my hands and then I realized that, one of the things they tell you in Capturing Kid's Hearts is just a little thing like offering them some hand cream is a big deal, and that helps form a relationship. I walked around and they were... kind of shocked that I was sharing my hand cream... it's sort of what they call a 'gift with no strings.'" (Interview, January 20, 2010)

Through her experience with this particular professional development program, Caelin was able to use her knowledge of the power of "gifts with no strings" to improve her personal relationships with her students in an effort reach them more effectively in academics. As Geneva Gay would say, this simple act that Caelin performed in her classroom exemplifies one of the broader concepts that characterize a culturally responsive teacher. Through this act of resource sharing, Caelin showed her students that she is a caring teacher by demonstrating that teaching and learning is a partnership, and the importance of community building embedded within instruction.

In the next section, I will look at how evidence of all four tenets of culturally responsive teaching, including caring, were exhibited through participants' comments throughout the interview, as with the Caelin's example above. Each tenet will be explored to gather information regarding the areas in which teachers already exhibit an ability to act in culturally responsive ways and how they are doing so, and the areas in which teacher growth toward cultural responsiveness needs to be further supported by teacher educators and professional development programs.

### **Reflections of Culturally Responsive Teaching in Teachers' Practices**

Having discussed factors influencing teachers preparedness to teach culturally diverse students in middle school mathematics, I turn now to an exploration of the ways in which teachers' self-reported classroom practices reflect the four central tenets of Geneva Gay's (2000) concept of culturally responsive teaching: caring, communication, curriculum, and instruction. Each tenet, and the practices reported by teachers which correspond to the elements of that tenet, will be discussed in turn.

In addition to the patterns identified in the data across the group, it is important to address that within-group patterns existed as well, at least with regard to one of the tenets of culturally responsive teaching: communication. As for caring, it may be assumed by some that because of

the often nurturing roles of women in schools, caring would be a tenet relegated to the practices of female teachers. However, this was not the case. As further discussed below, elements of the tenet of caring were discussed frequently by both female and male members of the group alike. Because of this abundance of responses related to caring, it was difficult to determine within-group patterns related to this tenet. Similar to caring but for different reasons, it was difficult to find patterns in the responses of participants according to subgroups for both tenets of curriculum and instruction, in these cases however, due in part to an overall *lack* of responses relevant to these tenets. Interestingly though, one within-group pattern can be identified with regard to communication.

Through analysis of the data, I found that issues of communication were most often addressed by White teachers in high-minority schools. White teachers at primarily White schools, such as Jack, Jamie, and Emily, addressed communication very little, as did both African American teachers in the study employed at high-minority schools, Robert and Amanda. Not only does this demonstrate the importance of ensuring that teachers are knowledgeable about and aware of issues of communication in their diverse classrooms, but also tells me that teacher education needs to bolster its focus on the tenet of communication even for teachers preparing to teach in majority-White settings. Even though teachers in these schools may not perceive issues of communication to be particularly pressing, it is quite possible that there is still a large number of students from culturally diverse backgrounds in those schools who struggle with issues of communication in their learning. In addition to the tenet of communication, general findings of across-group patterns for all four tenets of culturally responsive teaching are discussed below.

**Caring.** Nearly all of the elements that Gay identifies as part of being a caring, culturally responsive teacher emerged in one or more of the interviews. Of the elements of caring, those discussed most frequently included cultural scaffolding; learning communities; high expectations; partnerships; responsibility; action; and community building. The element of holistic learning, on

the other hand, was the only one of the elements that was not significantly present in teachers' discussions related to culturally responsive caring. It is important to note that, of the four main tenets of culturally responsive teaching (caring, communication, curriculum, and instruction), the tenet of caring seemed to come up most frequently.

***Cultural scaffolding.*** The first of the elements described in culturally responsive caring which arose quite frequently in interviews with teacher is that Gay (2002) calls cultural scaffolding. Gay (2002) describes cultural scaffolding as "using students' own cultures and experiences to expand their intellectual horizons and academic achievement" (p. 109). Robert indicated an effort to practice cultural scaffolding in his mathematics classroom, as he said, "I'm prepared to meet them where they are. But you gotta find where they are. If you don't take the time to do it, then ya lose out... And they really wanna get there, but they don't know how, and so we have to lead and guide them as best we can, and be there to support" (Interview, December 14, 2009). Amanda made a similar comment in her own interview, " I have always wanted to be able to identify and speak with a kid on their level, and then pull them to where I am, where I want them to go" (Interview, December 14, 2009). As a part of cultural scaffolding, Gay also includes the use of cultural validation and strength, which Robert also referred to in his interview, "I don't look at their diversity as a handicap, I look at it as a opportunity to help them develop" (Interview, December 14, 2009).

***Learning communities.*** In addition to using cultural scaffolding, culturally responsive teachers also build culturally responsive learning communities in their classrooms. In these learning communities, the goal is for all students to learn, and for all students to feel safe and accepted. Robert emphasized learning went both ways, saying, "almost every day the kids will teach me something new" (Interview, December 14, 2009).

With regard to the environment in which students learn, Caelin noted that it was especially important to her that all students felt welcome and safe in her classroom. She described the need that she felt, especially during the middle school years, to address student uses

of derogatory language regarding sexual orientation. She felt it was her responsibility to be attentive to the way that they interact with each other, as she wanted them to know it was unacceptable to her for them to hurt each others' feelings. Caelin acknowledged that when students do hurt each others' feelings, as they might through their use of derogatory language, it interferes with their ability to learn. As her goal is for all students in her class to learn, she feels that she cannot stand by and watch this type of behavior happen.

***High expectations.*** The next, and most widely addressed element of being a caring, culturally responsive teacher is having high expectations for one's students. Gay (2000) emphasizes that "teacher expectations significantly influence the quality of learning opportunities provided to students" (p. 57). Further, she posits that "If teachers expect students to be high or low achievers, they will act in ways that cause this to happen" (p. 57). Amanda, I believe, would agree with this position, and recognized the significance of teachers holding high expectations of their students, regardless of life circumstances such as homelessness, rather than using that unfortunate circumstance as an excuse or a crutch for a child not reaching his or her potential academically. In his own statement, without explicitly saying that he had high expectations for his students, Robert implied so by saying, "I was being pulled by the force to force-feed them math when, you have to allow them to gradually develop into the mathematicians that they're gonna become" (Interview, December 14, 2009). His use of the word "mathematician" implies that he expects each student to become a master of the subject, along with his support, as they "gradually develop."

Jack and Amanda talked about their ways of allowing opportunities for this development to happen in their classrooms. Amanda acknowledged that she is not scared to ask her students difficult questions, and Jack noted the value in simply asking students questions " instead of giving them an answer... so they are taking ownership of it and I am forcing them to do the thinking and forcing them to come to an understanding of the problem" (Interview, December 16, 2009). As students develop into mathematicians, Caelin stresses the importance of mathematical

language use in mathematical problem solving. The way that she explicitly addresses the guidelines for classroom conversation with her students shows them that she has high expectations of their abilities to use professional and mathematical language when necessary in the appropriate contexts.

***Partnerships.*** The next element of caring addressed numerous times throughout participants' interviews was the development of partnerships. As Gay says, "culturally responsive caring places teaching in an ethical, emotional, and academic partnership with ethnically diverse students, a partnership that is anchored in respect, honor, integrity, resource sharing, and a deep belief in the possibility of transcendence" (2000, p. 52). In his interview, Jamie said, "The only way to truly teach students is to get to know them and build relationships with them. Students need to know that I value them as individuals; that I care about them, not just about their grade" (Interview, December 8, 2009). Also about developing relationships, Robert mentioned in his interview the development of partnerships not only with his students, but also with their parents. As for his students, he said, "I, as a minister, a pastor, I do feel deeply, which sometimes gets me in trouble. I wanna help the kids" (Interview, December 14, 2009). He later says, "Generally, I run an open door policy and folks run in and out... I don't think I ever met a stranger. I would give away all my stuff... And so, yea, I'm a wimp when it comes to that, I just give it to them. Put wimp down, W-I-M-P." For him, his partnerships with his students are characterized most by both emotion and resource sharing. His own classification of himself as a "wimp" does not show weakness, but rather shows his strength as a caring, culturally responsive teacher.

While Robert described, in his interview, the characteristics of his relationships with his students, Emily, Eric, and Amanda, on the other hand, shared the methods by which they work to build those partnerships with their students. Emily mentioned the informal conversations she has with students about topics that interest them, whether it is music or sports. Further, she added that it is important for a teacher to listen to the thoughts and feelings of their students, and try their best to be understanding. Similarly, Eric said, "I think you have to try your best, obviously

to know your students, and kinda try and see things from their eyes" (Interview, December 15, 2009). Amanda , seemed to have a strong grasp of each of her students' personal lives in only the few months she has been teaching at her school. In her case, in order to develop partnerships with her students, Amanda mentioned having informal conversations with students to get to know their likes and dislikes, and the use of a calendar to help her remember to celebrate each student's birthday. In the interview, Amanda confidently demonstrated her familiarity with the students by the way in which she recounted to me many of their stories just by pointing around the room to where they usually sat. As many of these teachers have discovered, getting to know your students is the first step in developing, with them, a partnership for teaching and learning.

**Responsibility.** Not only must teachers develop partnerships with their students, as Gay says, but in order to be culturally responsive and exhibit the element of caring, they also must see caring as a moral imperative, social responsibility, and a pedagogical necessity. As Caelin said, for her, "part of the job is teaching kids who really need your help" (Interview, January 20, 2010). To many, it may seem like common sense, and the language in Eric's statement clearly implies that being a teacher means being responsible for the success of your students. As he said, "If somebody's struggling, you gotta go over and help them, even if there's that language barrier, you just have to over there and take your time and try and help them" (Interview, December 15, 2009).

**Action.** In addition to seeing themselves as responsible partners in students' academic achievement, caring, culturally responsive teachers must also see teaching as action-oriented. Like in the case of Robert, who always keeps a drawer full of snacks for students who are hungry, again, sharing his resources. Similarly, Caelin, in one specific incident, used the sharing of her hand cream to purposefully build relationships with her students. In these two cases, teachers took purposeful action in their classrooms to show students they care about them. In Emily's case, while she did not necessarily share a specific incident with me in which she took direct action to benefit her students or her relationship with them, she did discuss the lack of a focus on

action during a particular professional development experience related to issues of poverty in education. She said, "The talked about poverty and showed us the videos, but they never got to what are we going to do about this poverty... they give us all of these statistics... so what do we do with this? What do we do about it, then? Yes, we have a lot of poverty in this county. How do we help these kids?" (Interview, December 9, 2009). For Emily, it was obvious that while she may not have shared specific instances in which she took action in her classroom, she was concerned that she, and others around her, were not guided into action by the individuals with all the statistics about poverty in their area. As a culturally responsive teacher should, she realized the importance not only of having that knowledge and information, but of doing something with it.

*Community building.* Another element of caring which teachers discusses a great deal in their interviews is community building in schools. Here, Gay (2002) encourages educators to "remember that many students of color grow up in cultural environments where the welfare of the group takes precedence over the individual, and that these ethics and styles of working are quite different from the typical ones used in schools, which give priority to the individual and working independently" (p. 110). For Caelin and Jack, this element translated directly into practice. Jack mentioned that this is one element of his own practice which he felt has improved over time, "I've given them more opportunities to work collaboratively... I have learned as time goes on how to structure activities like that better" (Interview, December 16, 2009). Caelin, a teacher who had quite a few years of experience from which to learn how to successfully structure collaborative work experiences, described a particular assignment she had recently conducted in her classroom in which she allowed students to work together as they shared orders with each other off actual menus, then calculated the tax and tip from their bills. While these two teachers explained this element in a very practical sense, Robert and Eric had much more broad notions of the concept. Eric mentioned the way in which he encourages his classes to see themselves as a cohesive unit with a common goal, like a team:

I played sports all the way through. So I think that helped, kind of building a team. And when I came in, I said, that's what it's all about, working together. And I put some quotes up there about some sports people and what they said, and how failure isn't an option, and how to work together. And I think they really bought into that... I say we're a team, we work together, ya know, we're only as strong as our weakest link... so they know I'm gonna help 'em. (Interview, December 15, 2009)

In his interview, Robert addresses the concept of not only building community among students, but among teachers and parents as well. As he said, "I think that this whole educative process is a community. Education, I just don't think it's one teacher trying to do it all by herself. We have to team up" (Interview, December 14, 2009).

*Holistic learning.* The final element classified in Gay's caring piece of culturally responsive teaching is the notion of holistic learning. Although most teachers did not explicitly address this element in any of their interviews, it was mentioned in one case implicitly in a comment Caelin made about what it means to be a culturally responsive teacher. In her (2002) article, Gay challenges teachers to "help students understand that knowledge has political and moral elements and consequences, which obligate them to take social action to promote freedom, equality, and justice for everyone" (p. 110). Just as teaching must be action oriented, so too much student behavior. In her interview, Caelin mentioned how she felt it was important for teachers to be conscious of and take a stand against students' use of derogatory terms about sexuality, in particular, by addressing this issue with students. Caelin exemplifies Gay's notion of holistic learning in that she makes a conscious effort to interrupt the cycle of inequity often perpetuated in schools by reminding herself to always be aware of this language among students, and by addressing this issue directly in her classroom. Most important, however, in doing so, she obligates her student "to take social action to promote freedom, equality, and justice for everyone."

Even though this element of caring did seem to appear within one interview, it seemed to be generally missing from teacher practice. As I will discuss later, because of gaps like this one

in teachers' practices, I would argue that these are directions in which teacher educators should shift their focus in order to better prepare more culturally responsive educators.

### **Communication.**

Much of educators' decision-making on the potential and *realized* achievement of students of color is dependent on communication abilities (their own and the students'). If students are not very proficient in school communication, and teachers do not understand or accept the students' cultural communication styles, then their academic performance may be misdiagnosed or trapped in communicative mismatches. (Gay, 2000, p. 78)

The quotation above demonstrates both the undeniably profound influence of culture on communication, and the necessity of cultural connections in communication between teachers and students in schools. In this section, I will demonstrate how participants' responses correspond to the three elements that make up culturally responsive communication, the second main tenet of culturally responsive teaching: (a) decoding students' language; (b) knowledge of relationships between culture, communication, and learning; and (c) knowledge of ethnic groups' communication styles. Interestingly, the three elements varied in the amount and degree to which they were mentioned throughout the interviews.

***Decoding students' language.*** Gay (2002) indicates that, "the intellectual thought of students from different ethnic groups is culturally encoded in that its expressive forms and substance are strongly influenced by cultural socialization" (p. 110-111). For this reason, it is imperative that teachers are able to decode ethnically diverse students' language in order to teach them more effectively. In his interview, Eric admitted that this process of "decoding" is a quite a challenge for him, saying,

Language is a huge thing, huge thing. I can't understand what a lot of the kids are saying a lot. I have to say, "Excuse me, what did ya say, what did ya say?" And I'm from the North, so there's a different dialect, and putting words together and not using, like, proper English, it sounds bad but I'm like, "What?" I just don't get it. And then obviously with the Hispanic population I have no idea what they're saying." (Interview, December 15, 2009)

Eric also, however, identified his willingness to learn the characteristics of communicative styles of ethnically diverse students in his class earlier in the interview, "If they say something and I don't know what it is, I'm like, 'What is that?'. And they'll laugh about it, but they tell me, and then I learn more about them" (Interview, December 15, 2009).

For many of the other teachers, "decoding" students language is much more literal. As in almost every interview, teachers expressed their concerns over their inability to communicate effectively with English as a Second Language (ESL) students. Robert, an exception to the rule, displayed his ability to speak Spanish and discussed how he occasionally uses Spanish in his classroom to reinforce his Hispanic students' belief that "español is la segunda lengua de éste país" (Interview, December 14, 2009). Most teachers, on the other hand, were like Emily in that they recognized their inability to communicate effectively with ESL students and discussed how they struggled with how to help students learn middle school mathematical concepts when they and their students can barely understand each other. Jack, a lateral entry teacher, identified a weakness in his preparation noting that he was not prepared to teach the students in classroom who did not speak English. He still wonders, "how am I going to reach these kids that don't even speak English?" (Interview, December 16, 2009).

***Knowledge of relationships between culture, communication, and learning.*** The second element of the communication tenet of culturally responsive teaching involves a critical knowledge of interactive relationships between culture, ethnicity, communication, and learning. In many ways, teachers were able to articulate in their interviews what, exactly, these "interactive relationships" look like in practice. Caelin recognized the connection, saying, "I do speak to them in a way that they understand, and... it makes such a difference" (Interview, January 20, 2010). Jack also recognized that culture may very well be a factor in the way that students are sometimes communicating through silence. In his own practice, he reported that he often checks in with quiet students so as to not simply assume that they understand, recognizing that some

students, due to cultural or personal communicative styles, might not speak up even if they do not understand what is going on in the class.

For Eric and Amanda, knowledge of the interactive relationships between culture, ethnicity, communication and learning comes through in their use of teachers of other races or ethnicities as resources to learn to communicate more effectively with students of races or ethnicities the same as the other teacher, but unlike their own. Both are able to recognize the challenges they face in the classroom regarding these relationships, as well as the limitations to their own communicative devices. Both willing to reach out for help and to learn from others, Eric and Amanda described their methods of soliciting other teachers for advice. Eric said,

I have another teacher who is from Georgia, and he's a basketball coach and football coach, and he's Black as well, and he relates to the kids great. And he has all these Black terms that they know, so I always have to go to him and say, "Hey, how are you teaching this so they get it?" And I'll do it my way, and they'll be like, "Mr. C, you don't know jack." And then I'll go talk to him, and I'll come back the next day, if they didn't get it, and I'll say, "Well, let's think about it this way." It's just like different key words that they use..." (Interview, December 15, 2009)

Amanda liked to think of her probing other teachers for tips as research, and considered her willingness to learn from others as a strength. For her, it was to the benefit of both her and her students if she continuously, as she said, "asked teachers of different ethnicities, 'How did *you* do this?'. That way when I am teaching a kid of their ethnicity, I can put it together" (Interview, December 14, 2009).

***Knowledge of ethnic groups' communication styles.*** Both Eric and Amanda's practices mentioned above also directly relate to the third element of the communication tenet of culturally responsive teaching which underlines the importance of teachers' knowledge of the various components and traits of ethnic groups' communication styles. This third element of the tenet of communication, however, was sparsely mentioned in teachers' interviews. Often, Gay asserts, teachers ignore the existence of cultural influences on students' behavior for fear of stereotyping or over-generalizing. Perhaps this was also the case with some of the teachers in this study.

Although both of the last two elements of culturally responsive communication were not distinctly evident in most of the teachers' interviews, through Caelin's interview, it did become apparent that she was capable of both. Not only did she demonstrate an awareness of differences between the communicative styles of the ethnic groups in her classroom and those traditionally valued in schools, but she also indicated that she worked toward emphasizing and giving value to the communicative styles of her students within the context of her mathematics classroom. As evidence of this, Caelin explained several details of a mathematics lesson of which the subject was decimals and percents. In order to master this concept, students were asked to work in groups to calculate tax and tip amounts for orders they were placing with each other from actual menus that Caelin had brought into the classroom.

Within this one lesson, Caelin implemented several culturally responsive teaching techniques regarding communication. First, Caelin acknowledged that she was trying, on a regular basis, to get her students to discuss more, allowing the use of more active-participatory protocols for participation in discourse, rather than simply passive-receptive participation, in her classroom. Further, by encouraging students to work together at tables on the tax and tip exercise, Caelin was supporting the development of her students' mathematical language by requiring that they use mathematical terms as they learn to implement knowledge of decimals and percents in practical situations. Her goal of strengthening her students' mathematics vocabulary and helping them develop multicultural communication competency was also revealed through a comment she made during her interview about her thoughts on requiring students' use of academic vocabulary during class discussions,

There's a tendency... to speak the language that kids speak because you want to get them on your side. But the problem with that is then they never get the vocabulary that they need to be successful... I try to tell them, when we're having a class discussion, I give them discussion rules, and I do tell them things like, "When we write essays, there's a way that you text and there's a way that you write, and in this class we're going to write and that's different than texting because..." And so that sort of helps them understand that this is going to be more professional in nature. And so it's sort of the same thing with when we're speaking to each other. When they're in a class sometimes I say, "We're going to use our professional language to explain this"... And I think they appreciate that

statement 'cause they understand that I'm not judging the way that they're speaking, but I'm saying, "This is the way that you talk to friends, and this is the way that you talk when you're at a job." (Interview, January 20, 2010)

I would argue that, just as Gay proposes in her theory of culturally responsive teaching, Caelin is acting in a culturally responsive way by acknowledging to the students that she respects and values their natural ways of communicating, and also by recognizing the importance of their ability to "code-switch" and to comfortably use professional and mathematical language in the appropriate settings. As a teacher of many ethnically diverse students, Caelin is certainly on the right track. As Gay says in her (2000) book, teachers like Caelin are taking a step in the right direction by contextualizing their knowledge of ethnic groups' communication patterns in practice. However, in addition to the contextualization illustrated by Caelin in the scenario above, Gay provides yet another example of how teachers can use their knowledge of communication patterns to begin implementing changes in practice in their classrooms in order to ultimately improve the learning outcomes of the ethnically diverse students they teach:

Knowledge about general communication patterns among ethnic groups is helpful, but it alone is not enough. Teachers need to translate it into their own particular instructional situations. This contextualization might begin with some self-study exercises in which teachers examine their preferred discourse modes and dynamics, and determine how students from different ethnic groups respond to them... The results can be used to pinpoint and prioritize specific places to begin interventions for change. (pp. 109-110)

In concluding my analysis of the communication element of culturally responsive teaching within participant interviews, next I turn to ways in which participants in this study embodied the curricular tenet of culturally responsive teaching, and a discussion of ways in which teachers could be better prepared to challenge problematic curricula in their schools.

**Curriculum.** The curricular element of culturally responsive teaching was one which surfaced relatively infrequently throughout participant interviews. In her theory of culturally responsive teaching, Gay acknowledges three distinct types of curriculum present in schools:

formal, symbolic, and societal, and identifies how teachers need to be aware and critical of all three elements simultaneously.

Throughout the interviews, it became apparent that teachers were able to, on some level, be critical of the formal curriculum in schools, by and large as it related to standardized testing. However, a lack of discussion, analysis, and critique of both the symbolic and societal curricula in schools leads me to believe that teacher educators need to help teachers become more aware of these types of curricula and help them understand how they can begin to change the courses of these curricula in their schools.

***Formal curriculum.*** With regard to the formal curriculum which includes things like plans for instruction approved by governing bodies of educational system, standards, and textbooks, culturally responsive teaching calls for educators to know how to determine the multicultural strengths and weaknesses of, and make necessary changes to, the formal curriculum. Robert, Emily, and Eric all touched on elements of this obligation of culturally responsive teachers, as Robert and Eric expressed their frustrations with the limitations of and time spent on standardized tests in their school. Both Robert and Emily, however, moved in a direction toward change as Robert mentioned that, " I'm not so much into the high test scores... as I am to composite growth" (Interview, December 14, 2009), and Emily shared her belief that "a culturally responsive teacher should use a lot of different assessments, not always just the tests" (Interview, December 9, 2009). While both mention ways in which the formal curriculum in their schools *could* be changed, I believe it is the responsibility of teacher educators to ensure that not only are teachers able to recognize the weaknesses of the formal curricula implemented in their schools, but that they also are aware of routes they can take in order to move forward in the process of transforming the formal curriculum into something much more culturally responsive.

***Symbolic curriculum.*** As for the symbolic curriculum which includes images, symbols, mottoes, awards, and celebrations implemented in schools, only Robert mentioned the symbolic curriculum during an interview. Culturally responsive teaching encourages teachers to be

critically aware of the power of the symbolic curriculum and use it to help convey important information, values, and actions about ethnic and cultural diversity. Robert exhibited his knowledge of the power of the symbolic curriculum, and mentioned his use of a cultural day every month in his classes in an effort to convey the value he gives to cultural diversity in his classroom and to represent the wide variety of diversity that is reflected in the population of students that he teaches.

***Societal curriculum.*** In addition to an awareness and appropriate usage of symbolic curriculum, culturally responsive teachers are also encouraged to reflect on the societal curriculum present in schools. Of the three elements of the tenet of culturally responsive curriculum in Gay's (2000) theory, this element appeared not to have been addressed at all. I realize that simply because a discussion of the societal curriculum, for example, did not arise during the interviews, that does not mean that teachers are not aware of it or acting on it. However, because it did not appear to be a priority in our conversations, I would argue, as I will later on in the Discussion section, that teacher educators and professional development facilitators need to take this lack of priority into consideration as we think about how to improve teacher education and professional development to more successfully train culturally responsive teachers of ethnically diverse populations. Next, I turn to the final tenet of culturally responsive teaching, the actual delivery of instruction, and how the participants in this study demonstrated evidence of this tenet in practice.

**Instruction.** According to Gay's (2002) article, teaching must be "multiculturalized" in order to successfully promote the academic achievement of ethnically diverse students. In other words, culturally responsive teaching means "matching instructional techniques to the learning styles of diverse students, or establishing continuity between the operating methods of ethnic groups and school cultures in teaching and learning" (p. 112). Further, culturally responsive

teaching means regularly integrating ethnic and cultural diversity into the most fundamental and high-status aspects of the instructional process.

*Matching instructional techniques to students' learning styles.* Teachers in this study exhibited the practice of establishing continuity between their instructional practices and the ways in which their students of diverse backgrounds learn in a variety of ways: Caelin encouraged her students to work together, putting communal learning styles in effect for the benefit of her students who favor collaboration in the execution of academic tasks; Amanda recognized that, to her, an ideal culturally responsive teacher is one that takes his or her students' preferences for styles of learning into account, rather than consistently favoring the learning style that he or she prefers, or that of one particular student; and Amanda, Caelin, and Jack all discussed the ways that they encourage a variety of approaches to problem solving in their classroom contexts. Amanda also discussed the way in which she tries to teach concepts in a variety of ways, "I'm very creative so if they say they don't get it one way, I will try another way and so on until they can get it" (Interview, December 14, 2009).

In a similar way, Caelin and Jack both talked about multiple strategies for problem solving, but rather than simply discussing the ways in which they teach multiple solutions, each of them also focused on students' formations of various methods for solving problems. As Caelin said, "my biggest strength is that I try to do things in lots of different ways. So I give the kids different options for solving things and I also give them the freedom to show me a different way" (Interview, January 20, 2010). Along similar lines, Jack stated, "I think that you need to allow for different approaches to problem solving... I have been a big fan of students finding their own way to solve the problem that they understand what works for them.. It's like allowing them to be creative in a Math class and allowing them to solve problems their own way" (Interview, December 16, 2009).

*Pedagogical bridges: Connecting new information to prior knowledge or experience.*  
In addition to matching instructional techniques to the learning styles of ethnically diverse

students, Gay also challenges teachers to develop a rich repertoire of pedagogical bridges, such as examples, scenarios, and vignettes, to use while teaching which demonstrate how information and concepts operate in practice and help students connect new knowledge to prior knowledge, in order to integrate ethnic and cultural diversity into the most fundamental and high-status aspects on a regular basis. Here again, most teachers, in the course of their interview, mentioned at least one lesson they have taught or technique they have used in which they were able to help students make sense of mathematical concepts by connecting new mathematical knowledge with a prior experience or piece of information, and by allowing the students to see how the mathematical concept could operate in a real-world situation.

Two examples of this element of culturally responsive instruction are Jack's use of a budgeting exercise in which students where they chose a particular career and were asked to balance a budget of salary and expenses in a lesson on personal finance; and Caelin's lesson on decimals and percents in which she brought it a actual restaurant menus from which students could place orders with each other, then use their bills to calculate the correct amount of tax to be applied and the appropriate amount of tip. Both lessons demonstrate how students are more able to understand the operation of an abstract mathematical concept once it is applied to a situation in the real world. Further, Eric describes how he enacts a similar practice with the classes that he feels are especially difficult to engage in mathematics:

I know that they don't care about it, or they act like they don't care about it, so I try to relate it to their lives so they can actually learn it... later on, ", I try my best to relate it to how they would use it in their lives. So I would say, what do you wanna do when you grow up, and then they give me something, and I try to base a problem on that, on what they give me. Um, and everyone's a little different, so all the problems are a little different, but if I can incorporate what they want to do I think it will help them, cause they make connections. (Interview, December 15, 2009)

The next and final example, which also comes from Eric, demonstrates how his use of a pedagogical bridge he likes to refer to as "going to the party" encourages his students to willingly engage in mathematical operations. Because the scenario he uses in his pedagogical bridge is personally meaningful, not only does it get the students engaged in the process of solving

mathematics equations, it also allows the students to recall the mathematical operations for solving more effectively. The following quote explains how he simultaneously engages students in mathematics and helps them assign personal meaning to the process of solving equations:

We use certain phrases up here, just the phrases I learn from him [teacher across the hall], but we use certain phrases to say, "Now we do this." Like rather than, "Alright, let's move this term from the left to the right," I say, "Alright, who needs to go to the party?" And, if you say, "Alright, how do you switch from standard form to slope-intercept form," the kids are like, "What? I don't know," but if I said, "Alright, who's gotta go to the party? The boys or the girls?", they could do that problem like that...so that's the relating to their life... so, we're goin' to the party here. (Interview, December 15, 2009)

Eric's example of his use of a pedagogical bridge scenario he calls "going to the party," along with the practical examples of lessons given by Jack and Caelin, incorporate many of the main elements of the tenets culturally responsive teaching, not just instruction. It is important to remember that all four of tenets elements should be put into practice simultaneously, and as with all other types of teaching, culturally responsive teaching should be practiced in constant reflection. Ultimately, we as educators need to always remember the influence of culture of the processes of both teaching and learning, and that, as Gay (2000) maintains, "filtering teaching through the cultural lens of Native, Latino, African, and Asian American students can lead to much greater school success. These students deserve nothing less" (p. 182).

### **Moving Forward with Teacher Education**

Although all four tenets of culturally responsive teaching were represented in some way in teachers' responses during the interviews, they were certainly not equally represented. The fact that most teachers felt that their strengths lied in the tenet of caring tells me that either this is an area that teachers are able to naturally develop due to many of its humanistic elements, or that teacher educators are preparing teachers well for their roles as responsible partners in culturally responsive learning communities. On the other hand, the fact that most teachers' weaknesses fell in any of the other three tenets tells me that culturally responsive communication, curriculum, and instruction are areas in which teachers' knowledge and skills needs to be better developed

through teacher education and professional development programs. Additionally, a lack of focus on the subject area of mathematics in teachers' responses suggests that multicultural teacher education programs must better prepare teachers not simply to function as effective culturally responsive teachers, but to specifically function as culturally responsive *mathematics* teachers. Naturally, the question arises, how can we successfully accomplish those goals?

In this section, I will outline suggestions which surfaced throughout participants' interviews about how middle school mathematics teachers can be better prepared to effectively serve students of all racial, ethnic, and socioeconomic backgrounds in their classrooms. Some of these practices are already being carried out in many teacher education programs across the country, as teachers mentioned most specific practices from personal experience. Others, however, are ideas for practices that are not quite so widespread. In addition to providing suggestions, to my surprise teachers not only addressed the roles of teacher education programs in their suggestions for teacher preparation, but also the role of K-12 schools, and of themselves as well.

As detailed below, suggestions for teacher education programs focused around two topics: meaningful field experiences in a diverse setting, and relevant coursework, while suggestions for K-12 schools spotlighted facilitating collaboration between teachers through the use of other knowledgeable and successful teachers as resources, encouraging teachers to pursue professional certification in area like ESL and Special Education, and providing professional development opportunities that are both action-oriented and effective at producing tangible results. Finally, teachers also willingly implicated themselves in their own preparation to teach culturally diverse students, as a few were able to recognize the importance of taking the initiative to become a better teacher. Some suggestions with regard to teachers' roles in their own development include practices like engaging in community service. This particular practice demonstrates a genuine interest and investment in the community and allows teachers an

opportunity to learn about and appreciate the cultures of the families and neighborhoods in which their students' lives are deeply rooted.

**What teachers learned and did not learn from teacher education.** Throughout teachers' interviews, it became evident that despite the frequent downplaying of the effect of teacher education programs in the preparedness of teachers to teach culturally diverse students, there were, in fact, various elements of teacher preparation which had significant effects on teachers' preparedness. On the other hand, however, it is apparent from responses regarding teachers' practices that there is still room for improvement in many areas of multicultural teacher education.

*The importance of field experience in a diverse setting.* As for teacher education programs, the leading priority in order to make an impact on teachers' preparedness to teach culturally diverse students seems to be a meaningful field experience in a diverse setting, paired with coursework on diversity and learning differences and constant, guided reflection. This priority was demonstrated through almost every teachers' comments regarding the value of field experience in learning to teach culturally diverse students, especially for teachers coming from racial, ethnic, and socioeconomic backgrounds unlike those of their students.

*Lessons from coursework.* As for coursework which teachers recommended from their own programs, Caelin mentioned not only courses on diversity which include assignments such as a critical autobiography, but also classes like the one she took that focused on cognition, allowing her to better understand the cognitive development of her students. Further, Caelin also mentioned an internship-like experience she was required to complete for a Special Education class in which she was paired with the family of a child with autism for an extended period of time to gain a better understanding of how families of children with special needs function outside of school settings. Caelin noted that while she was participating in this internship-like experience, she felt like she was not fulfilling her purpose because, due to the mothers' requests

for help around the house with tasks like cleaning out the garage, Caelin interacted very little with the child in the family. What she came to realize, however, was that "she didn't need help with her son because she had a lot of help with him, but she needed help on her own... In understood after working with her after a while why that was something that she needed done so that she could focus on her son" (Interview, January 20, 2010).

Amanda and Jack also both mentioned the value of specific courses in their teacher education programs, Amanda's at the undergraduate level and Jack's at the graduate level. Amanda mentioned what she considered to be her "best class in college," a class that focused not only on Special Education, but also on general childhood and adolescent behavior. For her, this class allowed Amanda the opportunity to better understand how to communicate with students with different disabilities, and different backgrounds, about behavior. As for Jack, the most valuable classes had two distinct focuses. The first focus was to guide teachers through self-reflection and to help them understand "different approaches to take to teaching, and how your own culture or your experiences will affect the way that you teach" so that you are aware of those influences on your teaching and can, essentially, "alter the way that you teach to be more inclusive of more people" (Interview, December 16, 2009). The second focus was to demonstrate the importance of and support mathematics educators in their development of pedagogical content knowledge. In these classes, Jack said,

We take problems that are from elementary and middle school classrooms, dissect them and really go into depth. What does it really mean when you multiply or divide by a fraction? How do you model it? How do you make up a problem from that and how can you take a meaningless Math problem, like multiplying two decimals together which has not context to it, and make that a more meaningful problem, or reword it to make it a high-level thinking task. (Interview, December 16, 2009)

Not only does a class like this allow mathematics teachers the opportunity to develop their pedagogical content knowledge, it also supports the development of teachers' abilities to critique and transform the formal curricula of their schools, an important goal of culturally responsive

teaching, but one that, as made apparent through participants' interviews, teachers are often not taught how to accomplish.

*Lack of preparation in culturally responsive communication, curriculum, and instruction.* Generally, not only did data from the interviews confirm an inadequacy of teacher education regarding instruction and practice on how to perform critical analyses and transformation of the formal, symbolic, and societal curricula, but also a need for more instruction on the communication and learning styles unique to various ethnic groups. As Banks (2004) expresses with regard to communication and instruction, it is important for teachers to have a knowledge of the characteristics of groups to which students belong, of the importance of each of these groups to them, and of the extent to which individuals have been socialized within each group, as this knowledge will give the teacher important clues to students' behavior, including communication and learning styles. However, Banks also warns that teachers also need to remember that this knowledge has its limits. While it may help us explain and understand behavior, it cannot enable us to predict students' behavior based on generalizations about group traits.

With regard to instruction specifically, a critical need became evident through analysis of the data for teacher education to include more preparation for teachers regarding the implementation of culturally responsive instruction. As Jack mentioned, some teacher education programs are successfully preparing their teachers for mathematics instruction through the collaborative development of teachers' pedagogical content knowledge, however, what needs to be added to this preparation is a focus on teaching teachers how to apply this pedagogical content knowledge specifically to culturally diverse school contexts. This new focus was addressed by Eric during his interview, indicating one way, among many, in which *K-12 public schools* could further support the development of culturally responsive teachers. As you will see in the next section, positive experiences that participating teachers had within the context of their own K-12 public schools, as well as wishes about future opportunities, provide further knowledge of how

public schools, at all levels, can play their part in continuing to support the development of culturally responsive teachers as they work in the field.

**The role of K-12 schools.** Various suggestions surfaced throughout the course of participants' interviews which strongly implicated K-12 schools in furthering the development of culturally responsive teachers, once they are practicing in the field. Among these suggestions, which will be discussed in depth in this section, are: (a) opportunities for collaboration among teachers, in a variety of ways; (b) encouragement for teachers to pursue a variety of professional certifications; and (c) action-oriented professional development programs.

*Collaboration among teachers: Learning from each other.* As Eric and Jamie both noted, practicing teachers can learn a great deal about cultural diversity and about methods for culturally responsive teaching through the utilization of other, more knowledgeable teachers as resources.

*Sharing content-specific pedagogical bridges.* What Eric suggested, with regard to supporting the development of teachers' pedagogical content knowledge within the specific context of their culturally diverse schools, are professional learning communities in which educators, possibly even from various schools across a county, gather to learn from each other and discuss ways which they have found to be successful to help the culturally diverse students in their particular schools connect some particular piece of new, mathematical information to prior knowledge and experience. As Gay (2002) proposes, teachers need to develop "rich repertoires of multicultural instructional examples, scenarios, and vignettes to use in teaching ethnically diverse students," (p. 113) and what better way to do this than collaboratively, with the support of a professional learning community in which teachers are working toward a common goal of providing more culturally responsive pedagogy to their students.

*Observation.* A similar suggestion, also made by both Eric and Jamie, but one that might be much more difficult to implement logistically than the convening of culturally responsive

professional learning communities, is for schools to allow teachers the opportunity to observe at other culturally diverse schools to learn from model culturally responsive teachers things like how they handle their relationships with students and methods for teaching mathematical content more effectively. Although this practice might be difficult to implement for practicing teachers, it is entirely possible for teacher education programs at the pre-service level to utilize model culturally responsive teachers at their partner schools in university classrooms to help future teachers prepare for the challenges ahead. As also mentioned in the interviews, perhaps this would be best accomplished if it were to happen concurrent with future teachers' field placements in culturally diverse classrooms.

*Mentorship.* The final suggestion regarding the use of other teachers as resources in K-12 public schools in the preparation of culturally responsive teachers is what Eric noted as having provided him with an enormous amount of support during his first year teaching in a high-minority school: a faculty mentor. Through his relationship with his mentor, Eric was able to vent about his struggles as a first-year teacher, garner advice about how to handle various situations, and receive constructive criticism without feeling as though he were being evaluated or was going to be reprimanded from not performing perfectly in the classroom. Especially for first year teachers who come into diverse school settings without a vast amount of preparation for teaching within that specific context, having schools provide this type of resource to teachers, as Eric attested, could significantly impact not only their ability to become culturally responsive teachers, but possibly also their willingness to maintain their employment as teachers in culturally diverse schools by reducing their anxiety and helping them through the challenges of the first year, or few years, of teaching.

*Encouraging teachers' pursuits of professional certification.* Aside from K-12 schools further facilitating collaboration between new and experienced practicing teachers to support the growth and development of *all* teachers toward cultural responsiveness, another suggestion for a way in which K-12 schools can contribute to the future preparation of teachers was by

encouraging teachers' pursuits of various professional certifications. Specific professional certifications mentioned were those which would expand teachers' understanding of learning differences and abilities to teach various groups of students, especially those which would help teachers communicate more effectively with their ESL students.

Throughout the participants' interviews, three teachers mentioned professional certification as ways in which they were able to focus more closely on the education of specific populations in their schools, leading me to suggest that K-12 schools might be able to further support the development of culturally responsive teachers by encouraging them to pursue professional certifications through accredited university programs. Robert, who earned a wide variety of professional certifications over the course of his career as an educator, demonstrated without stating explicitly how his ESL certification helped him to become a more successful teacher of ESL students by improving his ability to communicate with them effectively. As he reiterated throughout his interview, "that's the most important thing, to meet the children where they are" (Interview, December 14, 2009). Even though he did not specifically mention professional certification or an ESL program, Eric also commented on the need for schools to foster the development of educators who are capable of participating in content-related conversations in other languages besides English. Like Eric suggested, perhaps schools could reduce the frequency of regularly scheduled meetings to allow time for the facilitation language classes for teachers, who could, in small groups based on content area, acquire the basic skills of a language and the vocabulary necessary to communicate effectively in their subject. Amanda, who was currently in pursuit of ESL certification, mentioned not only her program focused on the needs of ESL students in her suggestions, but also her experience with a Special Education program. Both she and Caelin, who was also currently pursuing professional certification, but in Special Education rather than ESL, discussed how their programs in Special Education prepared them to better understand the needs and behavior of *all* students. Seemingly, both types of certifications popular among the participants in this study served to help them not only in

educating the specific populations of students on which their programs focused, but all types of other students as well.

***Action-oriented professional development.*** Finally, the last suggestion for how K-12 schools might facilitate the development of culturally responsive teachers in their schools is through meaningful, action-oriented professional development programs. As Emily experienced through a professional development experience regarding the issue of poverty within her county, knowledge of an issue can only go so far if teachers are not instructed as to how they might be able to initiate change around the issue within the context of their own communities. One program, which stood out in the interviews as a model program for professional development, was Capturing Kids' Hearts. What teachers seemed to like about this program was that (a) it was action-oriented; (b) it happened over the course of three days, so that teachers could focus deeply on the topic at hand over an extended period of time; and (c) the knowledge taken away from the experience was able to be directly applied to the classroom with nearly immediate, substantial effects on teachers' relationships with their students. Thus I would argue that, based on teachers' comments, in order for other professional development programs to be deemed successful by teachers, regardless of their topic of focus, they should occur over an extended period of time prove to teachers that not only are there specific actions which teachers can take in order to improve the situation at hand, but also that if teachers do, in fact, take action, tangible results will follow.

**What can I do?: The role of teachers in their own education.** The final element of moving forward with teacher education has to do with the role of teachers in their own education. By identifying themselves as responsible parties in their own education, Amanda and Robert, specifically, demonstrate ownership over their own preparation as culturally responsive teachers. For Amanda, for example, the eye-opening experience of volunteering in a homeless shelter had a significant impact on her preconceived notions of students experiencing homelessness, and

subsequently, on her teaching as well. In a more general way, however, volunteering in the community is a perfect opportunity for teachers to listen to and learn from the stories and experiences of individuals in their students' communities. I believe Robert said it best when he said, "the greatest thing, I believe, that teachers can do to help themselves, is to get out of the schools and walk in the communities that they teach" (Interview, December 14, 2009). By becoming active participants in their own preparation, Amanda and Robert demonstrate ownership over their abilities and their willingness to take the initiative to move forward with their own education.

### **Discussion**

The goal of this study was to better understand how a knowledge of how teachers have been prepared to teach culturally diverse students in the past and of their classroom practices in the present can inform multicultural teacher education in the future. Contributing questions asked which helped explore the overarching question included: What are teachers' perceived levels of preparedness to teach culturally diverse students? What experiences have supported teachers in becoming prepared to teach culturally diverse students? What do teachers identify as their strengths and weaknesses in practice regarding the teaching of culturally diverse students? How do teachers feel they could have been better prepared through teacher education and professional development to teach culturally diverse students?

With regard to the first part of the broader research question concerning the past preparation of teachers to teach culturally diverse students, it became clear through this study that relationships existed between teachers' perceptions of preparedness to teach culturally diverse students and factors of their personal and professional lives. These factors were: (a) years of classroom experience in a diverse setting; (b) racial, ethnic, and socioeconomic identity; (c) interactions with individuals of diverse backgrounds as young people and as adults and teachers outside of the classroom; and (d) exposure to coursework in education directly related to student

learning and diversity. As for patterns in the data relating to subgroups of the participants, it became evident that teachers of color, and those who had participated or were currently participating in graduate programs in Education, exhibited higher perceived levels of preparation than others. Also interesting and related to preparedness is the fact that only the teachers at low-performing, high minority schools mentioned positive professional development experiences facilitated by their schools. While those schools should be applauded for their efforts in facilitating professional development programs that proved helpful for their teachers, a lack of similar comments from other teachers suggests a need for the implementation of effective professional development programs at other schools as well.

Further, findings related to the second part of the broader research question exploring teacher practices and the ways in which they map onto the concept of culturally responsive teaching, indicate that while most teachers are capable of carrying out culturally responsive caring as they teach, areas of teaching which need to be strengthened are culturally responsive communication, curriculum, and instruction. Here, it became clear that although no strong patterns were found regarding caring, curriculum, or instruction, with regard to the third tenet communication seemed to be much more of a salient issue for White teachers working in high-minority schools than for any other subgroup of teachers. Implications of this finding are further discussed in one of the next sections. In these sections, I will discuss (a) the gaps evident in my data that indicate weaknesses in teachers' abilities to act as culturally responsive teachers in the three areas mentioned above; and (b) the implications of these gaps for the preparation and professional development of middle school mathematics teachers.

### **Gaps in Data Indicating Weaknesses in Teachers' Practices**

Although teachers responses throughout the interviews mapped onto many of the elements of the four central tenets of Gay's (2000) theory of culturally responsive teaching, multiple gaps remained. While none of these fell under the tenet of caring, at least one gap was

evident in each of the other three tenets. Those gaps, which imply a lack of teacher preparation and weakness in practice in the related areas, are discussed next.

**Communication.** Data gathered and analyzed in this study through teacher interviews reveal that the most obvious gap in teachers' knowledge about and implementation of culturally responsive communication is related to the third element of the tenet regarding a knowledge of various ethnic groups' communication styles. According to Gay (2002), in order to execute culturally responsive teaching successfully, one must possess a knowledge of three components of various ethnic groups' communication styles: (a) the linguistic structures of various ethnic communication styles; (b) the protocols of participation in discourse for various groups, recognizing the differences between a passive-receptive style of communication and an active-participatory one; and (c) the patterns of task engagement and organizing ideas typical of various ethnic groups. Important, also, is the need for teachers to understand the ways in which each of these three components of ethnic groups' communication styles often conflict with communication styles traditionally valued in classroom settings.

With regard to the second component of ethnic groups' communication styles, a passive-receptive style of communication is characterized by didactic communication,

with the speaker playing an active role and the listener being passive. Students are expected to listen quietly while teachers talk and to only talk at prescribed times when granted permission by the teacher. Their participation is usually solicited by teachers' asking convergent questions that are posed to specific individuals and require factual, "right answer" responses. (Gay, 2002, p. 111)

Alternately, an active-participatory communication style, characteristic of many ethnically diverse groups, is one in which "speakers expect listeners to engage with them as they speak by providing prompts, feedback, and commentary. The roles of speaker and listener are fluid and interchangeable" (Gay, 2002, p. 111). As a result of the way that the active-participatory communication styles clashes with that which is expected in a traditional school environment, 'students who are told not to use them may be, in effect, intellectually silenced. Because they are

denied the use of their natural ways of talking, their thinking, intellectual engagement, and academic efforts are diminished as well" (Gay, 2002, p. 111). For this reason and others, Gay argues that "reforms should be directed toward creating better agreement between the communication patterns of ethnically diverse students and those considered 'normal' in schools" (2000, p. 109).

Additionally, with regard to the third component of ethnic communication styles in which Gay emphasizes an understanding of students' patterns of task engagement and organizing ideas, this understanding is crucial, she says, in order to accurately assess students and to teach them "code-switching" as they develop multicultural communication competency which allows them to communicate "in different ways with different people in different settings for different purposes" (Gay, 2002, p. 112). Included in this statement is the notion that teachers must be aware not only of differences in communicative styles of various groups, but also of the repercussions of these communicative styles coming into conflict with traditionally accepted communicative styles in schools. With regard to various ethnic groups' patterns of task engagement and the ways in which they organize ideas, the distinction should be made between topic-centered communication and topic-chaining communication. Here, the former simply means that communication is direct, precise, deductive, and linear, and that information is to be presented in a objective, dispassionate, and explicit manner, while the latter signifies that communication is highly contextual, rich with background information and feeling, conversational, and often circular in nature. Understanding these differences, says Gay, "is necessary to avoid violating the cultural values of ethnically diverse students in instructional communities; to better decipher their intellectual abilities, needs, and competencies; and to teach them style of code-shifting skills" (2002, p. 112).

Interestingly, teachers most concerned with issues of communication in their classrooms were White teachers in high-minority schools. This finding suggests that we must pay particular attention to this tenet in multicultural teacher education for White teachers preparing to teach in

culturally diverse schools, as it is evident in teachers' responses that they are searching for more knowledge and skill in this area. Additionally, however, a lack of other teachers' responses regarding the tenet of communication, namely the responses of teachers whose racial identities matched those of the majority of students at their school, indicated that more attention must be paid to communication for these teachers as well. Just because these teachers communicate in ways like their students because of their similar patterns of socialization, seemingly not creating any issues in communication, does not mean that there are not students in the classroom struggling to communicate effectively with their teacher. We must consider both of these cases as we move forward with the preparation of culturally responsive teachers for today's diverse schools.

In addition to a gap in teacher knowledge of and attention to differences in ethnic groups' communication styles and the implications these differences have on students' learning, another gap became evident which takes issues in communication to be much more literal. Although this is not explicitly addressed by Gay's (2000) theory, challenges surrounding the education of ESL students surfaced in nearly every interview, indicating a critical need for better preparation of teachers to effectively serve the populations of ESL students in their mathematics classrooms. Further, as noted earlier, achievement rates of Hispanic students in mathematics continue to remain low. In order to change this, this area of weakness in teacher knowledge and practice, along with the other weakness mentioned above, must be addressed.

**Curriculum.** In terms of developing a more culturally responsive curriculum, teachers need to know: (a) how to determine the strengths and weaknesses of their school's formal curriculum and how to make the changes necessary to improve its overall quality; (b) how to be critically aware of the power of the symbolic curriculum as an instrument of teaching and how to ensure that the images displayed in classrooms represent a wide variety of diversity; and (c) how

to conduct thorough and critical analysis of how ethnic groups and experiences are represented in mass media and popular culture.

In this study, a gap was found which indicated a weakness in teachers' abilities to critique the societal curriculum which affect both them and their students. With regard to implementing a culturally responsive societal curriculum, teachers are encouraged to "conduct thorough and critical analyses of how ethnic groups and experiences are presented in mass media and other popular culture" (Gay, 2002, p. 109). This task, says Gay, should be done in an effort to recognize that students are exposed to a great deal of this presentation in the media and that they remember it, even though it is often inaccurate and prejudicial. Further, Gay says, teachers need to understand how media images of ethnically diverse individuals are manipulated; "what formal school curricula and instruction can do to counteract their influences; and how to teach students to be discerning consumers of and resisters to ethnic information disseminated through societal curriculum" (2002, p. 109). As evidenced through the lack of attention to the societal curriculum in participants' interviews, there exists an obvious need for further teacher preparation regarding the development and implementation of a culturally responsive curriculum. As noted in Gay's theory, this includes an ability to recognize the power of and effectively critique the ever-present societal curriculum in schools.

**Instruction.** Finally, with regard to implementing culturally responsive instruction, teachers, Gay says, need to accomplish two tasks. First, teachers need to integrate culture into the most fundamental aspects of the instruction process on a regular basis and match their instructional techniques to the learning styles of diverse students, establishing continuity between the operating methods of ethnic groups and school cultures. Second, teachers must develop a rich repertoire of pedagogical bridges to use while teaching which demonstrate how information and concepts operate in practice and help students connect new knowledge with prior knowledge. Although multiple teachers seemed to be able to recognize the importance of pedagogical bridges

in their instruction and even name at least one example which they have used in their own teaching, a glaring gap still seems to exist regarding teachers acknowledgement of differences in students' learning styles and the implications these differences have for their instruction. Because of this gap in teachers' knowledge and practice of culturally responsive instruction, I contend that this is one very significant area in which middle school teachers of culturally diverse students need to be much better prepared.

All of these tenets, including communication, curriculum, and instruction, must be more explicitly addressed in the preparation of teachers for culturally diverse schools if the achievement of culturally diverse students in mathematics is to be raised. In the final section of this paper, I will demonstrate that there are many ways for us to successfully accomplish these important goals.

### **Implication of the Gaps for the Future Preparation of Teachers**

In answering the final piece of the broader research question regarding how this knowledge of past preparation and present practice will inform the future of multicultural teacher education, it appears as though many are responsible in the education and development of culturally responsive teachers.

**Teacher Education programs.** First and foremost, suggestions which surfaced during participant interviews indicate that teacher education programs could be improved by consistently offering opportunities for student teachers to engage in sustained, meaningful field experiences in diverse settings. Of course, as the literature *and* the teachers of this study suggest, these field experiences should be accompanied by related coursework and constant reflection with experienced practitioners who, themselves, have been identified as effective culturally responsive teachers. Further, participants suggested coursework which they found to be particularly helpful in their experience as a teacher of culturally diverse students which they believe could help

improve other teacher education programs. These included courses on diversity, cognition, special education, child and adolescent behavior, and pedagogical content knowledge.

**K-12 Schools.** As for the next responsible party in the development of culturally responsive teachers, findings in this study indicate that K-12 public schools could further support teachers' development as culturally responsive educators by providing opportunities for members of the faculty to use other knowledgeable and successful teachers of culturally diverse students as resources through collaboration, observation, and mentorship. Additionally, it was implied during the interviews that K-12 schools could help facilitate teachers' development by encouraging pursuits of professional certifications such as ESL and Special Education. Teachers who had obtained these certifications, or were working toward obtaining them, noted the positive effects the programs had on their knowledge of issues in education and their ability to reach those students in their classroom that they had previously been unable to effectively reach. The final suggestion that teachers in this study had for K-12 schools was regarding professional development. While some noted frustration over previous professional development experiences, others noted positive experiences. In analyzing teachers' responses, it became evident that what was important in a professional development program was that it was action-oriented, and that teachers would be able to, within a relatively short period of time, observe tangible effects from the implementation of lessons learned during the professional development experience. One particular positive example, *Capturing Kids' Hearts*, in many ways serves as a model for what teachers have found to be a worthwhile use of their time that brought success not only to them as teachers, but to their students as well.

**Role of Individual Teachers.** Finally, teachers in this study remarked on their own role in their preparation noting opportunities such as community service that have the potential to make a significant impact on a teacher's ability to be culturally responsive. In my opinion, it is

important to remember that as educators, there are always things we can learn to better ourselves and our practice.

Overall, a number of valuable pieces of information were gathered through just seven individual interviews with middle school mathematics teachers about their preparation to teach culturally diverse students. As teacher educators, it is important for us not only to listen to the voices of practicing teachers and hear what they are saying, but to act on them as well, and to continue to make an effort to educate teachers in the best way possible so that they can, in turn, provide nothing but a high-quality education for *all* students in our nation's public schools.

### **Directions for Future Research**

As mentioned previously, clearly additional data besides the seven individual interviews conducted in this study need to be gathered to illustrate a fuller picture of the perceptions that in-service middle school mathematics teachers have about their preparedness to teach culturally diverse students. For example, observations of teachers in action would allow us an opportunity to better understand how the practices they mentioned in the interviews are enacted in the contexts of their classrooms. Further, we would be able realize through observation if, in fact, there were practices that teachers were using in their classrooms that did not surface during the course of the interviews, and vice versa.

Also, particularly fruitful in supporting interview data, I believe, would be data gathered from students themselves about what it means to be a culturally responsive teacher of mathematics, and what characteristics are associated with teachers that students identify as successful teachers of culturally diverse students. Cook-Sather (2006) acknowledges the power of "student voice" in education research by stating three convictions which she believes about students' role in research leading to reform: "that young people have unique perspectives on learning, teaching, and schooling; that their insights warrant not only the attention but also the responses of adults; and that they should be afforded opportunities to actively shape their

education" (p. 359). I agree, and look forward to learning from research in the future about culturally responsive mathematics teachers which includes not only the voices of teachers, but of their students as well.

In addition to gathering supplemental data, future research related to the findings of this study should certainly include research about the knowledge of and practices related to students whose home language is anything other than English. Just as previous researchers have studied how to better prepare teachers to face other issues in education as they became more prevalent in schools such as issues of race and ethnicity, socioeconomic status, gender, sexual orientation, and disability, further investigation of the preparation of teachers for linguistically diverse classrooms would presently be both useful and timely. As the results of this study suggest, not only is further preparation necessary for both pre-service and in-service teachers on culturally responsive communication, but it is also clear that explicit efforts need to be made to call attention to the both the needs of linguistically diverse learners, ESL students in particular, and the methods by which teachers can be better prepared to serve this population of learners.

Another topic which would be useful to explore in the future relates culturally responsive teaching to the subject of mathematics specifically. Due to the lack of focus on the subject of mathematics within teachers' discussions of cultural responsiveness, it is imperative that multicultural teacher education programs address this issue directly. One way of doing this is through courses such as those mentioned by Jack, where teachers work collaboratively with other teachers of their subject area to critically examine the content and instruction for their subject. This, however, is just one example of way to address this problem, and teacher education programs should work toward developing other ways to strengthen this type of knowledge and skills in mathematics teachers in the future.

Another resulting question for further exploration that arises from the data of this study is particularly regarding one teacher's supposed position of colorblindness and another's clear recognition of color differences in the classroom. Considering the contrast between these two

teachers' views begs the question, how can teacher educators and professional development facilitators guide teachers' development along Bennett's (1993) continuum of stages of intercultural sensitivity? This matter, it seems, is especially significant for teachers who begin their career at the ethnocentric end of the continuum and are either unwilling or unable to recognize differences in learning related to racial, ethnic, or socioeconomic diversity. What types of knowledge and experiences are necessary for completing this progression from ethnocentric to ethnorelative, as Bennett describes? As this progression seems closely related to the development of teachers' competence in cultural responsiveness, I think it would be an excellent question to ask that could potentially provide further insightful evidence as to how future teacher education and professional development programs can improve the preparation of successful middle school mathematics teachers of students of *all* backgrounds.

## APPENDIX

### Semi-Structured Interview Protocol

#### *Introduction of Researcher*

##### *Ethics disclaimer:*

*Remember that, as stated in the Consent Form, you may choose not to answer any question for any reason or may discontinue participation in this study at any time, for any reason, without penalty.*

##### *Purpose:*

*Please also remember that the questions in this interview are in no way meant to be evaluative of your work. You are not being judged in any way about your abilities to teach. This study is simply to understand teachers' perceptions of their preparation, not ability, to work with culturally diverse students. For this reason, your reflection and honesty are greatly appreciated.*

*Do you have any questions for me before we get started?*

To begin, would you mind telling me about your own education background, including any teacher education experience you may have had?

How about your teaching experience?

When searching for a job, what were your thoughts about teaching in a high-minority school?

Can you describe the composition of your math classes in terms of race or ethnicity and socioeconomic background?

When you first got into the classroom, how prepared did you feel to teach the students in your classroom of diverse racial, ethnic, and socioeconomic backgrounds?

Do you feel any more or less prepared now? How so?

How would you describe the ways in which you became prepared to teach students of diverse racial, ethnic, and socioeconomic backgrounds?

- How do you feel that your own racial or ethnic and socioeconomic background affected your feelings of preparedness to teach students of diverse racial, ethnic, and socioeconomic backgrounds? Did you ever feel that your own background served as an asset or a drawback?
- What aspects of your teacher education program helped you to prepare to teach students of diverse racial, ethnic, and socioeconomic backgrounds? How so?
- What experiences in or out of the classroom have affected your feelings of preparedness to teach students of diverse racial, ethnic, and socioeconomic backgrounds? What did you learn from these experiences?

*\*\* In the following questions, I will ask you about what you see as your strengths and weaknesses with regard to teaching culturally diverse students in mathematics. Please remember that I am in no way evaluating your ability to teach. In fact, for the purposes of this study, even identifying certain areas of your practice which you feel could be improved is a good sign, as it shows that you are thinking about these practices and about how you may be able to strengthen your teaching.*

What would you identify as your own strengths with regard to teaching mathematics to middle school students of diverse racial, ethnic, and socioeconomic backgrounds?

Could you walk me through a lesson in which you think you effectively reached those students in your classroom of diverse backgrounds?

(If not...) Or can you think of any examples of specific practices in which your strengths in teaching culturally diverse students were exhibited?

Can you identify any weaknesses you have with regard to teaching mathematics to middle school students of diverse racial, ethnic, and socioeconomic backgrounds?

Can you walk me through a lesson in which you were able to realize that in some way you struggled with effectively teaching diverse students?

(If not...) Can you describe any instances in which your weaknesses played out in the classroom?

Overall, how would you describe a “culturally responsive” teacher of mathematics?

What practices would he/she use in a math classroom? What beliefs might he or she have about teaching mathematics and his or her students? How might he or she interact with his or her students?

Finally, what do you think would allow you to further develop your knowledge and skills for facilitating student learning of mathematics for students of diverse racial, ethnic, and socioeconomic backgrounds? In other words, what do you think professionals in the fields of teacher education and professional development could do, or have done, to help you become an even more effective mathematics teacher of *all* students?

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