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Retired African American Female Urban Middle SchoolScience Teachers Beliefs and Practices

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RETIRED AFRICAN AMERICAN FEMALE URBAN MIDDLE SCHOOL SCIENCE TEACHERS' BELIEFS AND PRACTICES

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Copyright Statement

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ABSTRACT

The purpose of this paper is to give a voice to a dedicated group of professionals who unselfishly labored twenty-five plus years educating the children of America's poorest taxpaying citizens. These retired African American female urban middle school science teachers (RAAFUMSST) explain the experiences that gave them the fortitude to stay in the urban school system until their retirement. The goal is to give you a glimpse into the distractions, challenges, and victories the teachers encountered as they strove to teach science in an overcrowded, underserviced, and depressed urban school district of a major city. Most times sacrificing self for service, the participants of this study held fast to their beliefs that all of America's children, regardless of their parents' socioeconomic status, deserve a quality education. It is through individual interviews that the five retired science teachers of this project share their reflections on the events and circumstances that altered their labor of love. Critical Race Theory (CRT) serves as the theoretical frame for this study.

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CHAPTER ONE: INTRODUCTION

GOD, grant me the serenity to accept the things I cannot change, the courage to change the things I can, and the wisdom to know the difference.

--Reinhold Niebuhr, "Serenity Prayer"

The participants in this project have one hundred twenty-five plus years of combined dedicated service among them. Individually, each made a commitment to do the very best she could to bring the wonders of education to children. These participants wanted to enlighten the children, but first they wanted them to learn and become good citizens. Valiantly they entered into the field of education with one mindset: to bring knowledge to the poorest of America's children. Unfortunately, once inside they were met with unimagined obstacles and hindrances that brought them to the "Serenity Prayer" time and time and time again. I present to you five Black female retired science teachers and their reflections on surviving the journey through the trenches of classroom teaching to bring science to some of this country's poorest elementary school children.

Background

In 1896, the United States Supreme Court case of *Plessy v. Ferguson* held that as long as the separate facilities for the separate races were equal, segregation did not violate the Fourteenth Amendment of the United States Constitution. *Brown v. Board of Education*, 347 U.S. 483 (1954), was a landmark United States Supreme Court case in which the Court declared all state laws establishing separate public schools for Black and White students unconstitutional. The Equal Protection clause of the Fourteenth Amendment required each state to provide equal protection under the law to all people

within the state's jurisdiction. This clause gave credence to the decision of *Brown v. Board of Education.* The plaintiffs in Brown asserted that the system of racial separation, while masked as a positive disposition for the newly freed Black American students, providing separate but equal treatment of both White and Black American citizens, instead perpetuated inferior accommodations, services, and treatment for Blacks. Handed down on May 17, 1954, the Warren Court's unanimous (nine to zero) decision stated unequivocally that any deliberate separation of educational facilities based solely on race was inherently unequal.

Blacks heralded the Brown decision as a victory for all of America. However, years later, New York University Professor Derrick Bell, who at one time served as an attorney for the National Association for the Advancement of Colored People (NAACP) in their quest to end racial separation, had this to say about the supposed victory of Brown:

> "From the standpoint of education, we would have been better served had the court in Brown rejected the petitioners' arguments to overrule *Plessy v. Ferguson*," Bell said, referring to the 1896 Supreme Court ruling that enforced a "separate but equal" standard for Blacks and Whites. While acknowledging the deep injustices done to Black children in segregated schools, Bell argued the court should have determined to enforce the generally ignored "equal" part of the "separate but equal" doctrine. (as cited in Trei, 2004)

The Brown decision failed to produce the changes the NAACP sought so desperately (Patterson, 2001).

Brown caused the loss of jobs for many Black educators, including principals. In

1954 school districts across the country notified thousands of Black educators that regardless of tenure or contract they would no longer be employed. Fultz (2004) wrote that the Board of Trustees at the University of Louisville voted to end segregation under their watch by closing the Louisville Municipal College, their all-Black counterpart established in 1931. The closing of Louisville Municipal College meant their Black student body was now allowed to attend the all-White University of Louisville, but it also meant the career end for fourteen highly trained and effective Black educators.

Cox (1951) published an article in the *Journal of Negro Education* voicing his outrage with the events occurring in Louisville by calling them violations of "an inchoate right of Negro students, a vested interest of the Negro faculties, and a cultural interest of the Negro people" (Cox, 1951, p. 112). He went on to say that merely accepting Black students into a White institution does not constitute rectification of the social injustices that beleaguer the Black students. Most certainly not, if the institution fails to acknowledge and embrace their social and cultural differences.

In 1953, before the landmark decision of Brown, Wendell Godwin, the superintendent of schools for Topeka, Kansas, sent a letter to all the Black elementary school teachers in the district politely informing them that if the Court ruled in favor of desegregation they would be fired. In the letter Superintendent Godwin wrote, "Our Board will proceed on the assumption that the majority of people in Topeka will not want to employ Negro teachers next year for White children" (as cited in Kansas Historical Society, 2004). There was no recourse or further consideration for these loyal and efficient teachers.

In 1953 Topeka had four segregated elementary schools with twenty-seven

educators, who serviced seven hundred twenty-nine students. There are no records of what became of the twenty-seven Black teachers, except for Dorothy Scott. According to *kansapedia*, the Web site of the Kansas Historical Society (2004): "In a January 1992 oral history interview, Scott indicated that she believed she was the third African American teacher to be assigned to a white elementary school" in Topeka. Scott told the interviewer that

> after she started teaching there, the principal told her he had gone around the neighborhood and asked all of the white families if they minded a black teacher coming to their school. He reported to Dorothy Scott that only one person was against her teaching at Parkdale. (Kansas Historical Society, 2004)

The Brown "victory" failed Black American children. Following Brown, Black achievement suffered considerably as a result of the loss of so many Black teachers all at once. Greg Toppo of *USA Today* published a 2004 article about the unfortunate reality of highly qualified Black teachers having their careers abruptly ended by the decision of Brown. In the article he wrote that in "1954 about 82,000 black teachers were responsible for teaching 2 million black children. In the 11 years immediately following Brown, more than 38,000 black teachers and administrators in 17 Southern and border states lost their jobs" (Toppo, 2004).

Removing Black educators as a result of integration set the precedent that Black teachers were somehow inept, unfit, and ill equipped to teach Black and/or White students. According to Siddle-Walker (1996), the true culture of Black teaching died with Brown. Author and educator Ladson-Billings (2009) wrote that name-calling was an effective strategy of humiliation and domination used by many White people. Black

female teachers—Black females period—were referred to derogatively, often called Jezebel, Mammy, and Sapphire. These vile names were more than insulting as they were used to undermine the validity of the teachers and diminish the humanity of Black women in general.

Although the teachers in this study came into the field of education some twenty years after *Brown v. Board of Education*, segregation in the nation's public schools still prevailed upon their arrival. Whether by accident or with tacit intentionality, America's poor and Black children are still paying the price for supposed educational freedom. Could this possibly be an example of the silent covenant that Bell (2005) referred to?

Urban Experiences

Working as a Black science/laboratory teacher in an urban school district has allowed me to witness many disappointments in the teaching profession. Many teachers (White and Black) came into the educational profession and left before the school year got started. Teachers who fail to engage students, parents, and the administrators in the educational process help increase tough classroom behaviors. Teachers, administrators, and parents are dedicated to the success of students. But classrooms in many urban school districts are overcrowded. Students are in and out of their seats disturbing other students, and parents feel the need to tell the teacher how to teach. Constant interference from the principal and other personnel interrupts class instruction, and there are constant outbursts over the intercom from the secretary and administrators. These interruptions interfere with the teacher's ability to teach effectively (Preble, 2014).

Many changes in education have taken place over the years. There have been changes in the way teachers teach, the way children learn, and the way parents interact

with those who educate their children. Over time the educational strategies that teachers use to improve learning and to motivate students have changed (Gibbs, 2013). The process of teaching our children is continuously under reform. Schools, teachers, and students are being assessed and evaluated more closely than ever. There are changes in the school culture, classroom climate, role of the teacher, and role of the learner. The varied strategies that teachers use to improve the day-to-day school program and increase learning, according to Borg and Al-Busaidi (2012), have caused continuous revamping of the teachers' beliefs and practices. Many teachers have historically used programs that were one-size-fits-all approaches to student learning and development. Currently, teachers use differentiated instruction to attempt to meet the needs of all students (Fullan, 2001).

When I first started teaching, teachers were the focus of the educational process. They were well respected in the schools and in the community. The parents left the teaching to the teachers, and there was no interference in the day-to-day program (Darling-Hammond & Youngs, 2002). Today, education is a team effort to facilitate learning. District heads and division leaders are responsible for coordinating the curriculum and articulating it through all the grade levels and subject areas to ensure continuity of learning (National Center for Education Statistics, 2000-2001).

Every year brand new, highly qualified teachers embark on new careers to educate America's children. Most dream of walking into a classroom the first day of school and being greeted by fifteen to twenty well-behaved, healthy, motivated, and appreciative students. Unfortunately, the reality is that such classrooms are very few. Instead, what the majority of those newly graduated, highly qualified educators will

encounter is overcrowded classrooms populated with children left behind by an education system that is inadequate and outdated (Earthman, 2002).

School districts are plagued with overcrowding, according to the United States Department of Education, with increased class sizes, especially in the urban districts where construction is beyond meager budgets. In these districts, the only option for overcrowded schools is to increase class sizes by placing more students into already existing classrooms. This solution may seem cost free in dollar terms; however the quality of the educational experience is diminished. The effect of overcrowding and large class sizes is critical to student outcome (Ready, Lee, & Welner, 2004).

Almost immediately the teachers in some urban schools come face to face with poverty, inequality, injustice, and students who have already given up and have been placed on the fast track for failure. These teachers encounter students whose names have already been assigned to the disgracefully silent covenant of many education policy makers: a discriminatory cohort known as the School-to-Prison Pipeline (American Civil Liberties Union, 2008). Bell (2005) has taught that a silent covenant is an unspoken agreement between those with the power to discriminate against and oppress and those with no power. The School-to-Prison Pipeline is a perfect example. On June 6, 2008, the American Civil Liberties Union (ACLU) published "School-to-Prison Pipeline," an article addressing the deliberate funneling of American children that the educational system deems unteachable out of the school system and straight into the bowels of the juvenile and criminal justice systems. The majority of those students are from poor families with practically no financial means of fighting for their children or no knowledge of their rights to fight back.

Teachers who dare to accept the challenge of educating America's children born to parents whose socioeconomic status is below the poverty line are often met by "the digital divide" (Milheim, 2006). The "digital divide" is another name for the educational achievement gap as both represent the difference and the inequality of the education a child in an affluent public school district will receive as opposed to the substandard education a child born to poor American citizens will receive.

This situation dictates teacher strategies because these disadvantaged children are the ones who make up the classes that the average teacher is required to teach. Teachers are expected to walk into the classroom and influence their young students to internalize the knowledge they are trying to impart, even though the educators know in their hearts that the students before them do not have a fighting chance. According to Gehrke (2005), most of the children sitting before the teacher have already learned hard lessons from the education system that their worth is miniscule. As a result, the students are both defensive and suspicious of the teacher without even being able to articulate or understand why.

Many of the urban school districts have large class sizes and minimal equipment (microscopes, scales, and heating blocks) and supplies (paper, markers, colored pencils, rulers filter, and gauze) (Gehrke, 2005). Some students have to share or wait until other students are finished using the equipment in the science laboratory. Very seldom are there enough materials for all the students to participate in the same activity at the same time, which causes interference in the teacher's plan for the day.

In the teaching profession, I have observed that it is common practice for teachers to use their own finances to buy supplies and equipment so that their students are able to

engage in class activities. Many teachers during their years of teaching have become pack rats according to Comeau (2012) because they have learned to see the use for something in the future. These teachers collect empty baby food jars, plastic fruit cups, and thread spools to make up for the lack of materials in the laboratory. Typically these materials that retired teachers have accumulated are left for other teachers. For example, when I retired I left my entire stock of collected items that I had found useful in many of the laboratory activities for the teacher who took my place.

As an experienced teacher, I believe that the trials and tribulations of retired African American female urban middle school science teachers will contribute to the systematic reform of urban education. When retired science teachers share their beliefs, practices and experiences, others may benefit by enhancing their success in the classroom. The strategies of retired teachers may enable the next generation of teachers to be more effective and may make students' learning much more enjoyable. These experiences and stories of retired teachers can help novice teachers to engage their students and handle the irregularities that take place during the school day.

In my view, the classroom teacher generally has little or no support from others in the school building. Teachers are not allowed to leave the class unattended, and there is often no one to relieve the teacher. He or she is isolated with twenty to thirty students in the classroom. At the end of the day no one has the energy to be friendly and share professional insights; everyone wants to leave the scene immediately. Meanwhile, many beginning teachers embark on their teaching careers looking forward to working with well-behaved and motivated children; however, they quickly lose their positive attitude when faced with the reality of the classroom. These new teachers need encouragement

and support. They need to know that the longer teachers remain in the educational profession, the more they learn how to handle those difficult situations that cause ineffectiveness in the classroom.

Researchers have conducted studies of Black teachers that represent a strong knowledge base regarding the characteristics and qualities that these teachers bring to the classroom. But Black teachers are often portrayed as a negative influence in the education of Black students. Black teachers have been described as "outsiders" and as individuals who are unable to deal with Black students (Foster, 1997). If the current situation does not improve, if the reputation of Black teachers is not restored, if the system does not begin to care about America's poor children, the gap in the knowledge between the haves and the have-nots will continue to grow. It is no secret that the education system is unfair and biased toward poor children (Sawchuk, 2014). Standardized testing, policy making, and the rules that govern the education system of any society are formulated by the most powerful class at the time, and they consistently apply the beliefs and practices of their particular customs as the measurement for acceptable cultural norms, with no regard for the culture of others. In fact, noted education policy-making administrator Gillborn (2008) wrote that the education system was never designed to promote education equality. It is his contention that the ultimate goal has always been to maintain the gap in knowledge between White and minority students.

Although student behavior causes much conflict in the classroom and challenges the ability of teachers to do their jobs, educators continue to build relationships that give students the opportunity to learn. The students' achievement and success are the driving

forces that teachers use to require and inspire students to give all they can to their learning. Instilling hope in the students is the first objective for developing a healthy attitude on their part toward learning and education in general.

Urban Schoolteachers

Research has voiced concern about the quality of middle school science teaching and teachers, some of whom have reported feeling unprepared to teach and not sufficiently prepared to handle the large student population, classroom engagement, and student assessments (Darling-Hammond & Youngs, 2002). The teacher's knowledge of science alone does not make her a teacher. The teacher needs to be able to translate what she knows so well into understanding for the students. Teaching science in urban middle schools, the teacher needs to have patience and a good sense of humor, and must not take things personally when working with students. The teacher must also learn to orchestrate effective teaching and learning strategies in an urban school setting (Jeanpierre, 2007).

Implementing appropriate teaching strategies has a powerful influence on the learning outcome. The teacher should ask thought-provoking questions to help students articulate their observations, their inferences, and their explanations to connect these with science concepts they know and with the concepts of experts. This is an important yet challenging task for a teacher (Driver, 1995). Teachers should allow the proper wait time for student responses to a particular question without expressing judgment. Kohn (1997) asserted that the more we manage student behavior and try to make students do what we say, the more difficult it is for them to become morally sophisticated people who think for themselves and care about others.

Teachers need to try and achieve the most effective balance between control and student self-governance. Teaching is not effective if classroom engagement and motivation is not provided (Lewis, 1999). Classroom motivation must be viewed as part of the learning process if educators want to have a positive effect on the classroom environment. Educators must view the concept of classroom management and motivation as a process of developing internal control where the students are aware of the behaviors expected from them by the teacher. Dollas (1992) stated the biggest challenge teachers face is establishing and maintaining order in the learning environment. According to Doyle (1986), classroom management and motivation result in the coupling of order and engagement in the learning process. The strategies teachers use to promote learning and classroom engagement are what Doyle labeled as "classroom management." With Doyle in mind, I interviewed for this study five retired African American female urban middle school science teachers who had spent twenty to thirty years teaching science. During the interview process I looked at successful and non-successful classroom engagement strategies that could assist in implementing intervention strategies for attitude and behavioral adjustments in science instruction. I examined the strategies, skills, and practices that these retired teachers had used to aid in their teaching, and I evaluated how they had gained success through experience.

The role of a teacher must include being a classroom motivator who has a significant concern for all parties interested in the education of their children. The classroom is an ever-changing paradigm with a vast amount of diversity. The teacher assumes many roles outside of educator or instructor in the urban educational setting. Lewis (1999) asserted that the role of the teacher as classroom motivator is one of the

most significant concerns of many parents, administrators and teachers. The teacher's ability to organize the classroom and motivate the students is critical to achieving positive educational outcomes (Brophy, 2006).

There are several strategies for classroom engagement that teachers could use to enhance positive student behavior and motivate student learning. Teachers and staff could utilize positive and negative reinforcement, and they can be role models for students to imitate the behaviors they see (Kohn, 1997). Teachers who have problems with wise classroom management or motivation are more than likely ineffective in the classroom, and will experience symptoms of burnout (Browers & Tomic, 2000). More time spent on wise classroom engagement and motivation has in the long run improved the efficiency of student learning.

Students spend approximately twenty thousand hours in the classroom on completion of their formal education; therefore, their reactions to their teacher-guided learning experiences are of considerable importance (Fraser, 2001). Teachers need to allow students to have a stake in their education. This strategy will foster better management skills and make the classroom environment more conducive to learning.

Problem Statement

More than fifty years after the hollow victory of *Brown v. Board of Education*, children of poor and indigent taxpaying American citizens are still suffering from the oppression of segregation and are denied a quality education. These children are being punished for circumstances they did not create and are unable to correct. It has been documented that without proper intervention, poverty breeds crime, breeds ignorance, and breeds more poverty (Gorski, 2008).

The risk-taking classroom behaviors that teachers have to deal with in the period of a regular school day are overwhelming. In urban districts, close to fifty percent of teachers leave the profession during their first five years (Mansour, 2009). There are many frustrating situations teachers encounter within a regular school day. Retired teachers' years of experience have prepared them to deal with the day-to-day frustrations. These teachers can provide effective examples and model practices as to what should be done to be successful in the science classroom and laboratory.

It is far better to retain a savable teacher than to train new ones year after year (Ingersoll, 2001). When retired teachers leave, years of knowledge, teaching experiences, and classroom skills are lost. Most teachers with twenty-five years of experience or more are likely to retire during the following two years (Borman & Dowling, 2008). Most retired teachers have had years and years of working with the students, parents, teachers, and administration in many different capacities. The seasoned teachers are familiar with the who's who in the building and can understand the situations and problems in the school.

This research has looked at the beliefs of retired female urban science teachers (what they hold to be true or real) and practices (skills gained by experience or exercise). The current research does not provide information on how hearing about the experiences and practices of retired teachers through their stories may be instrumental in providing awareness and directions for beginning teachers. Kagan (1992) referred to beliefs as a particularly provocative form of personal knowledge and argued that most of a teacher's professional knowledge can be regarded more accurately as beliefs. According to Kagan (1992), as a teacher's experience in the classroom grows, his or her knowledge grows

richer and more coherent and thus forms a highly personalized pedagogy or belief system that actually controls the teacher's perceptions, judgment, and behavior. This study of retired African American female science teachers has explored their beliefs and their practices in the urban classroom. The strategies these teachers used to engage their students made their jobs less difficult. The study has given these science teachers a voice and the opportunity to tell their stories about how they were able to remain in the urban school district and retire from it.

Research Question

My research question for this study was the following: How do retired African American female urban middle school science teachers' beliefs and practices change over the course of their careers? In this study I used a qualitative research design with a grounded theory approach. I used a snowball sampling to identify participants and adopted a Critical Race Theory framework to unpack the insights of science teachers in urban classrooms. I interviewed five retired science teachers, all of whom have taught in an urban school district, to determine how their beliefs and practices have changed over their careers.

The teaching experiences of the retired teachers ranged from twenty to thirty years of service in the same urban school district, but not necessarily at the same school. Through this research question, I found out how these retired teachers' beliefs and practices had changed. Moreover, the way the teachers engaged students of color in the science learning process gave insight into some of the social and cultural barriers that both teachers and students brought to the classroom.

Purpose and Scope of Study

This research recorded retired science teachers' beliefs and teaching practices that had allowed them to succeed and to retire from the profession as successful science teachers. These teachers had few opportunities to share their knowledge and experiences with other teachers during their teaching careers. The experiences of retired teachers can be beneficial to the teaching process (Gordon & Maxey, 2000). According to Mansour (2009), the teaching procedure can be stabilized by the consistencies of retired teacher practices. This research adds to the body of knowledge that could help science teachers enhance students' academic learning and behavioral engagement in the classroom, and could make teachers' careers in the educational system more rewarding.

My interest in this research question stems from years working in science and from the many teachers who have come into the laboratory and could not handle the stress of the day-to-day classroom. Teachers have been identified as having the most significant effect on the achievement of students in science education. In the science laboratory there are many variables that have to be controlled that do not apply to the regular classroom, such as group size, selective instrumentations, and ways of managing student behavior in the laboratory (Hofstein & Lunetta, 1982). The teacher has to address all variables in order for student learning to take place.

According to Barton (2002), interest in urban science education studies has been growing. This research looks at the intersections among students, their families, their teachers, science schooling, and the historical, physical, environmental, social, economic, and political aspects of urban life. In science education there are no rules that all teachers follow, no beliefs that everyone shares, and no findings that everyone agrees on

in the classroom. Students learning science can be supported through positive attitudes, which will encourage an increased interest in science. Students who often reflect on their findings with peers and teachers, and consult books and other resources usually develop a keener sense for learning science. According to Tobin (1990), science laboratory activities appeal as a way of allowing students to learn with understanding and at the same time, engage in the process of constructing knowledge by doing science. When students are engaged in science activities, they learn how things are tied together and can facilitate their own ability to learn and develop a clear understanding of inquiry. Barton and Tobin (2001) remarked on how "doing science made it real." Looking at female retired science teachers' beliefs and practices can be a valuable addition to education studies. The stories of experienced science teachers can be used to improve classroom performance and give a voice to the experiences of retired teachers.

Rationale

As part of my experiences in the science classroom, I have tracked my own learning in science and have self-regulated my learning. I believe that retired teachers rely on their previous experiences to direct them in the teaching environment. The teachers have to teach science laboratory skills but also science concepts to the same twenty to thirty students both in the science classroom and in the laboratory. Teachers need to allow students to feel that they have a stake in their education. The learning environment is more favorable when teachers encourage students to be active participants in distinguishing their learning environment. Retired teachers can assist students in being responsible for their learning through their proper organization of curriculum material that helps engage the students. Not only could retired teachers support student

relationships in the classroom, but also they could share other factors that influence the school environment. The psychosocial learning environment has been incorporated as one factor in a multifactor psychological model of educational productivity (Walberg, 1981). The student's home peer group and mass media could affect learning if students participate in any of these areas. Retired teachers who engaged the students in classroom learning from the beginning to the end of the class time were associated with a strong learning environment and a positive predictor of achievement.

Teachers have to give a grade for science knowledge and laboratory skills, which causes their workload to double. They have to engage students for the entire time they are in the classroom, and they receive no additional help as far as engaging those twenty to thirty students in the laboratory. Science teachers should be able to teach and give students a quality education without being frustrated at the end of the day because of too many students moving about trying to do science activities. They need to be able to control all variables that represent the laboratory experiences. Retired teachers have the knowledge and experience that can be beneficial to those novice teachers who have difficulty balancing the instructional strategies of the classroom and laboratory.

The retired teachers can help to improve the novice teachers' struggles around student learning: they understand concepts concerning student achievement across racial and socioeconomic gaps; they are familiar with student behaviors that are unacceptable and know how to avoid sending students to the office. Their wise classroom management/motivation practices can establish a procedure that brings order to chaotic classrooms through positive and negative reinforcement (Kohn, 1997). These retired

teachers' beliefs and practices can help to motivate positive student behavior that permits student learning.

Critical Race Theory

As a theoretical framework, Critical Race Theory (CRT) explores the ways in which power and privilege operate in society and impact race, class, gender, ethnicity, and sexuality (Bell, 1995). CRT can be referred to as a set of historical and contemporary theories that emerged in the late 1980s; the theories describe the lived experiences and realities of racial and ethnic minorities who are considered marginalized groups and individuals in society. CRT is concerned with the social experiences that determine how different groups of people (White/Black) understand those who are different. According to Ladson-Billings (1998), the philosophy of CRT explains how the experiences of people of the White race and people of color are in conflict with one another. Ladson-Billings (1998) has developed a conceptual whiteness and a conceptual blackness. She feels that conceptual categories such as school achievement, maleness, beauty, and intelligence are related to whiteness while conceptual categories like gangs, welfare recipients, and under class are related to blackness. These latter categories produce some of the labels used to identify Blacks.

Annette Henry (2007) in "There's Salt-Water in Our Blood" suggested that many CRT theorists "envision oral history and interviewing [as] an important research method for participants from marginalized groups who are rarely invited to name and define their realities" (p.333). In my research, I used interviewing as my primary method for gathering data. I used CRT to lay the foundation for a discussion of differences among science teachers' beliefs and practices. Some of the more privileged Whites see Blacks

as inferior teachers for African American children and believe that Whites have the right to be in control of Blacks and do a better job of teaching them.

The stories of Black female science teachers, obtained from the interviews, were used to examine the retired teachers' perspectives in the light of CRT. These retired African American urban science teachers identified how they engaged their students and helped them advance to the next level and how they handled challenging situations from their students.

This study has identified and describes precepts held by retired African American science teachers about their practices and their relationships with Black students. In "Culturally Responsive Classroom Management: Awareness into Action," Weinstein, Curran, and Tomlinson-Clarke (2003) indicated that definition and expectations of appropriate behavior are culturally influenced, and conflicts are likely to occur when teachers and students come from different cultural backgrounds. Further, in the article "White Women Speak, Black Women Write," Pillay (2011) explained how White teachers in African American schools do not try to teach Black students but only want Blacks to mimic the attitudes and behaviors of Whites.

Culturally influenced scholars have illuminated many negative labels used to refer to Black students and teachers in the educational community. According to Ladson-Billings (2009) such names as Jezebel, Mammy, and Sapphire were given to African American teachers. I believe that these types of labels used to identify African American teachers give teachers a poor self-image and may be reasons for lack of learning in the classroom. Also, when people use negative labels such as "at risk," "special needs," and such statements as "Benny can't learn," those labels can cause the students to shrink

instead of reaching their potential. Tragically, students allow those labels to define who they are. Students have the tendency to accept what they hear from adults and internalize it as the truth. The stereotypical names given to teachers and their teaching practices and to students of color could cause academic failure for people of color.

Are you struggling with the old names people called you and the old images you have of yourself? Nothing will change in your life until changes happen in your mind. The language that we use can be damaging to others. We should consider the words we use and make sure they do not hurt others. We should allow our speech to be graceful and reasoned. As in all generations before us, we still seem to be plagued by misunderstandings, poorly chosen or hasty words, gossip, and untruths. Patterns of incorrect speech were problems centuries ago and are still problems in schools today. Perhaps we need a certain type of device that would be small enough to carry everywhere we go. This device would be wireless and connected to our hearts, which would give us an electric shock when our speech is not appropriate.

As life moves forward and the world is in a hurry to handle life's struggles, everyone should stop and look back at our educational, political, and social situations. We should think about how our educational systems are geared to advance Whites. Leonardo (2009) referred to the work of Hurtado (1996) when he observed, "The study of white privilege has pushed critical pedagogy into directions that account for the experience of the oppressors' identity" (p. 261). Our social situations should be looked at from a neutral standpoint where every race can benefit and no one is oppressed. Our educational system surely should benefit all children instead of one particular set of children. According to Gillborn (2005), the policies and practices for education have not

changed; the intent of policies is the same and will continue to reinforce White supremacy even though some policies claim to benefit the minority race. Gillborn (2005) said, "Whiteness is not an insult on white people, but on the power of white identification." Whites with their power and dominance make policies and practices to keep Blacks black and Whites white.

Leonardo (2009) noted that White privilege must be complemented by an equally rigorous examination of White supremacy, or the analysis of White racial dominance perpetrated on people of color. Racial privilege that White subjects accrue is because of skin color, hair texture, nose shapes, culture, and language, which multiply the privileges of whites (Hunter, 2005). CRT explains how racial privileges are greater for the Whites than for people of color.

The American Educational Research Association of 1998 imagines that, by virtue of their race, Whites have unearned advantages over people of color (Leonardo, 2002). This means that Whites have more resources than people of color, which makes them the more dominant and the people of color the weaker race or those with fewer resources. The standards and resources are enforced by the stronger race. There is no equality when it comes to education, according to CRT philosophy. CRT continues to probe more deeply into the hearts and minds of Whites, who seem to believe they are still in slavery times. African Americans cannot move forward because they are held in the past by the beliefs of the dominant race. CRT tells us that racism in the U.S. is much more endemic than an isolated one-on-one occurrence. Racism is rooted in American institutions, education, politics, culture, and concepts of self-identity and group identity. Guiner and Torris (2003) say that CRT and the color-blind debate are struggling to bring to the

forefront the many ways in which racial assumptions continue to operate in our society today.

Definition of Terms

According to Pajarees (1992), "Beliefs have been described as the most valuable psychological construct for teacher education; they are one of the most difficult to define since a belief does not lend itself to empirical investigation" (p. 308). The following definitions were found on the World Wide Web using Cambridge Dictionaries Online:

1. Beliefs: When you believe that something is true or real.
2. Practices: Action rather than thoughts or ideas.
3. Experiences: The process of getting knowledge or skill that is obtained from doing, seeing, or feeling things, or something that happens which has an effect on you.
4. Critical Race Theory: How power and privilege operate in society and the impact they can have on race, class, ethnicity, and sexuality (Bell, 1995).
5. Significant changes in the educational structure: Happen when different stakeholders in the educational community are the main persons who can make changes in educational strategies in the classroom.
6. Systematic barriers in education: A barrier to learning is anything that stands in the way of a child's being able to learn effectively.
7. Myths about Black students and Black science teachers: Happen where academic performance is based on factors that Blacks have very little power to control.
8. Motivational factors/influences: Ways teachers use to motivate their students in order for them to achieve academically and have success in school.

9. Administrative support or lack thereof: The role the administrator/principal in the school plays in providing support for the teacher.

Teachers' beliefs and practices guide the ideals, behaviors, and actions of teachers in the classroom. In the case of these five retired African American female urban middle school science teachers, their beliefs and practices allowed learning to take place.

Delimitations

The boundaries and scope of this study were defined through a Critical Race Theory perspective on female retired urban science teachers' beliefs and practices. According to Roberts (2010), the researcher controls the delimitations. I decided to use qualitative research including phenomenological stories of retired female science teachers about their beliefs and practices while working in an urban school district (Merriam, 2009). I used a semi-structured interview to format a series of questions recording the reactions and responses given by the respondents (Merriam, 2009). Another delimitation was that each participant in the study had taught science in a large urban school district in grades six, seven or eight. The participants' students were from mostly Black schools. Some students had English as their second language. Some had free and reduced lunch, and some were labeled "behavior problems," "special education," and "at-risk" by the schools they attended. The teachers were African American retired teachers. As the researcher, I chose to interview each participant at home. The sample size was five retired science teachers who had taught science in an urban school district for the majority of their teaching careers.

Reason of the Study

It is mandatory that teachers are able to motivate and engage students in the learning process. It is just as important that teachers can manage all the variables that may arise in their classrooms and can control the students' learning in the classroom. In my years of teaching I have seen many teachers come and go in the urban school system. The teachers come into the schools thinking that their training as a teacher will be sufficient for them to deal with the classroom demands. They do not receive training on how to deal with irate parents, students whose behaviors are not acceptable in the classroom, teachers that want to talk with them as if they were one of the students, and principals who think that the schoolhouse is the only life and house that they have. It would be nice if teachers came into the system with the experience that is needed to direct and guide them through the challenges in the teaching profession. This study could be significant for urban school districts and individual schools that want to hold onto teachers with potential. The teaching profession is constantly failing and loosing quality teachers. Allowing retired female science teachers to tell their stories about their beliefs and practices and share them with others in the profession could provide the knowledge base to help struggling teachers to turn around their practice into successful teaching that motivates student learning and improves the educational profession as a whole.

From a CRT perspective the policies and laws that are set up in the educational system that we think will benefit poor Black children are structured for failure in an urban school district although they may be beneficial for Whites or the upper echelon. Some of the research concerning Black retired female teachers can be seen in a different light when these women tell their stories about how they handled their classroom

challenges. Knowing about their beliefs and practices could make science classroom experiences in education significant and rewarding, even if we cannot influence the principles of CRT.

CHAPTER TWO: REVIEW OF LITERATURE

Introduction

What do teachers know about the effect racism has had on the educational system? Teachers have seen how racism impacts the lives of every American daily, whether they choose to acknowledge it or not. Teachers know that many in polite society would rather suffer in silence than speak of their suffering publicly. Racism is a scourge of epidemic proportions: a living and breathing plague so nasty that it should offend the consciousness of every human being it touches. Teachers know that racism permeates the society of this country and shows no sign of easing up (Delgado, 1995).

To date there has been little research on the knowledge of Black retired female science teachers concerning how their teaching careers were affected by racism in the aftermath of *Brown v. Board of Education* and the fight for free and equitable education for Black and poor children in America. Brown was a farce to appease the public. We know that immediately following Brown, the courts placed seven hundred plus school districts directly under desegregation orders. The public record reveals that many of those court-ordered school districts have not been monitored or held to compliance. Despite the lack of empirical evidence about whether or not the subjects of this study were affected by the repercussions following Brown, there is sufficient evidence from public record to point to the possibility of their victimization.

Advantages of Experienced Teachers

Experienced teachers offer years of institutional knowledge, teaching experience, and classroom skills that are beneficial to staff and students. Successful teachers develop

working relationships with everyone in the school building and the community. They learn how to motivate the students; they get to know parents of students and other siblings that might attend the school. They become a bridge between the student and educational objectives, and they can carry much responsibility that could keep the school operating efficiently. According to a 2004 staff report of a large urban city, over seventy percent of the most experienced teachers (those with twenty-five or more years of teaching experience) were likely to retire over the following few years (National Center for Education Statistics, 2005). This will provide a huge shortage in the education profession. Learning the factors that motivated African American teachers interested in science education and contributed to their success in the science classroom can be very useful. What are the characteristics of these retired teachers who persisted in the urban school setting in spite of the odds? How did they motivate their students? How did they deal with the conundrum of failures in the school environment?

In the field of science education it is important to understand the reasons that teachers remain teaching in the urban setting and the elements related to their success and persistence (Barton & Tobin, 2001). The interviews with the African American retired urban science/laboratory teachers supply this information. The teachers were deeply committed to their students' success, which motivated them to manage their classrooms. The teachers were receptive to the training, knowledge, and skills they developed during their teaching careers. Haberman (2011) pointed out that psychologists refer to beliefs as a personal disposition to act; sociologists refer to them as core values. Haberman believed that selection, not training was paramount. Pick the right people and they would

learn to implement successful strategies; pick the wrong people and any pre-service or in-service professional development would fall on an educational wasteland.

Social Experiences of the Retired Science Teachers

The science teachers in this study used many different strategies to communicate new knowledge to their students in order for learning to take place. The teachers' interactions with the students and the way the learners came to retain and develop some of the concepts depended on the teachers' explanations of the lessons and the time spent and tactics the teachers used in disbursing the information to the students. With time and the right mentor, the learner becomes linked with the ideas of science and interacts and connects with scientific phenomena. The science laboratory is a unique resource. It can enhance student interest in and knowledge of science concepts and procedures and can help students gain cognitive skills in order to develop new understandings (Lunetta 1988).

This study uncovered some of the beliefs held by the retired African American female science teachers about their work and some of the difficulties that they encountered throughout their careers. The most significant problem teachers mentioned was the constant disruptions in their classrooms, and the many attempts they made to modify classroom behavior, an issue that Lewis (1999) addresses. The teachers also discussed relationships with parents, administrators, and staff. These issues have been used as criteria in research aimed at identifying the nature of the classroom environment, the school-level environment, and types of schools (Fraser, 1994). Disruptions from the adults and the children at school can become a chain reaction that can make the teaching and learning environment impossible. From my own experience, I can remember times

when my class was quiet and we were concentrating on our lesson when one of the other teachers would come into my room and interrupt my class by walking across the room and giving one of the students a paper, or wanting to know if it was all right to pass out lunch checks. The class would be interrupted, and I would have to try and regain order and get students on task again after the disruption. The principal would come into the classroom without addressing me, pull one or more students out of the room with no regard to what I was teaching or how much this disturbed my class, and then I would have to get the students focused back on the assignment. Parents had the tendency to come into the classroom without an appointment, wanting to meet with the teacher. This behavior caused major distractions for the teacher and students.

Knowledge of the subject matter, of ways to motivate students, interactions with the building community, and involvement with parents are some of the strategies that teachers must utilize in order to achieve success in the classroom (Rutherford, 1964).

Strategies Used in Student Engagement

Effective science instruction has the potential to improve attitudes toward science and heighten the motivation to learn science (Koballa, 1992). Urban teachers need to develop strategies that will help their students to be successful in spite of the limitations. The teacher needs to be compassionate because the students have so many issues to deal with and sometimes the teacher is the only adult that a child can talk with. Teachers need to have high expectations for their students as this can help to motivate some students to do their best. Students need consistency and structure; just knowing that the teacher is there for them is a major factor in their development. The teacher's presence and attention give students that added stability of knowing that they can accomplish the

success intended for them. All students need to know that their teachers love them and want only the best for them.

Regarding engagement of students to get the highest academic achievement, Tobin (2001) wrote that laboratory activities appeal as a way of allowing students to learn with understanding and at the same time to engage in the process of developing constructive knowledge by doing science. To reach the students, the teacher should provide the opportunity in the laboratory for the student to reflect on findings, to clarify understandings and misunderstandings with peers, and to consult with the teacher.

Wise classroom management/motivational factors that successful retired teachers display are patience, understanding of students' needs, and knowledge of how to help students advance to the next level (Nieto, 2003). Science needs to be relevant to a child's experience for the child to be successful (Haberman, 1995). Teachers must be able to understand the child's specific learning aptitude and experimental ability, and must be willing to listen and be flexible concerning a student's needs in order to foster success in the science classroom/laboratory. Urban science/laboratory teachers must be organized, creative, resourceful, and willing to look for help outside of their schools.

Observation of achievement in science education over time, according to a recent report from the National Assessment of Educational Progress (2006), indicates students' performance in urban schools was not only poor but far short of science scores in the nation as a whole. At least half of eighth graders tested in science failed to demonstrate a basic understanding of the subject. This lack of student achievement in science points out the overwhelming need for qualified teachers of excellence (cited in Strawn, Fox, & Duck, 2008).

Science teachers' beliefs and practices have become an ever-growing influence on learning, and learning is taking place all of the time, whether students realize it or not. Teachers must also be students, with the need to learn and grow along with the students. How and what students learn is oriented toward an outcome and a process. Some achievement studies highlighted who is and is not achieving in science, demonstrating that a gap in achievement still exists between ethnic, racial, and socioeconomic groups as well as between high income and low income urban students (Barton, 2002).

Valerie Janesick (2007) said, "Oral history is very valuable to qualitative research" (p. 113). Oral history and qualitative research use multiple histories to tell the story. This study has given African American retired female science teachers a voice as to how their beliefs and practices changed over their careers and how they achieved the best control of students' behavior in an urban school setting and how learning took place.

Critical Race Theory (CRT)

When African American retired science/laboratory teachers tell their stories, will it really make an impact or eliminate the behaviors of discrimination in the educational system? Will the voices of the oppressed be heard? Will telling the stories really heal the years and years of oppression? What needs to take place is that all people should be treated with dignity and learn how to treat others the way they want to be treated. According to Ladson-Billings (1998), CRT begins with the notion that racism is normal in American society. CRT critiques liberalism and argues that Whites have been the primary beneficiaries of educational policies.

Race is an organizing principle that cuts across class, gender and other imaginable social barriers. Leonardo (2009) said that dominance does not happen out of random acts

of hatred. But when dominance causes harm to other groups of people, it generates acts of hatred and unfair treatment to others that could be prevented if the dominant group wanted to prevent the unfair treatment. The group that is oppressed by the dominator has no choice but to endure the oppression and unfair social treatment. This treatment is transparent to the racial minority and should be transparent to the person inflicting the oppression on others.

Educational policies and practices have not changed; their intent is the same, which is to continue to benefit White supremacy even though some policies and practices claim to benefit the minority race. Gillborn (2005) stated, "Whiteness is not an assault on white people but on the power of white identification." Blackness includes characteristics that Whites assume about Blacks. Whites make policies and practices to keep Blacks in inferior positions and keep Whites powerful and dominant.

CHAPTER THREE: METHODOLOGY

Introduction

The qualitative researcher tries to understand how the world is constructed and to interpret the meaning of experiences (Merriam, 2009). For my own research project I tried to gain a deeper understanding of how retired African American female urban science teachers' beliefs and practices have changed over their careers. Using formal interviews, I gathered data from African American retired female science teachers from the beginning, middle and the end of their teaching careers. I asked the following questions: What did they perceive as the most critical problem while teaching? What deficiencies did they have in their training that would have helped in their profession as a teacher? I also asked these teachers to recall how they motivated students of color and how they handled some of the challenging behaviors of the students that they used to teach? I chose a basic qualitative research design using an element of a grounded theory approach. I focused on the way people make sense of their experiences and on the coping mechanisms they use in a science laboratory setting (Merriam, 2009).

This study has given a voice to retired science teachers through narratives. I wanted to know their stories. I wanted to know the challenges these retired African American teachers had while teaching science skills. My goal was to document the insights and practices of career urban science teachers and to capture their experiences and stories for future study. I used the interview process to collect the data, which I coded by using some of the assumptions and codes that are fundamental to CRT as well as using open and axial coding that employed grounded theory analysis to identify

emergent themes as well. I implemented semi-structured interviews designed in different educational areas of instruction. The questions were open ended and general to allow the interviewee to control the conversation. All the interviews were from retired African American females who had taught for twenty to thirty years or more in a middle school (grades six through eight). These teachers all taught general science, which includes life, earth, and physical science content and laboratory skills. I interviewed five middle school teachers, giving attention to their beliefs, practices, and social experiences with parents, administrators, science engagement in the classroom and changes that took place over their teaching careers.

Research Question

The research question used in this study was as follows: How did retired African American female science teachers' beliefs and practices change over their careers? There were a set of sub-questions that followed: How did you motivate students of color in the learning process? How did you handle challenging behavioral situations with students in the classroom? How did you negotiate the politics of administration and interface with parents and community members to support student learning?

Population and Sample

The retired African American science teachers used for the study were teachers that I had associated with at science curriculum writing workshops during the summers, as well as at professional development workshops and trips to National Science Teacher Association (NSTA) meetings. I used a convenient and snowball sample. I asked these retired teachers to recommend other retired science teachers to be included in this study.

This qualitative research study used grounded theory and purposeful sampling as a part of the selection process to gain insight and understanding of information from the participants involved in the study. According to Merriam (2009) purposeful sampling lies in selecting information for study which teaches one a great deal about an issue, directly reflects on the purpose of the study, and allows one to be guided by the participants in the identification of rich information. This study used semi-structured interviews (Flick 2006) for data collection because they are more flexible and show a great deal of variance. I implemented a series of structured questions, recording the reactions and responses given by the particular respondent. The interview question template is in Appendix A. Topics hit upon the various research questions but left room for additional topics to be addressed. The interviews were in person, recorded, and transcribed for coding. The interview protocol and interjection of questions initiated deeper responses from the interviewees. Questions focused on retired science teachers' personal experiences in the classroom that allowed them to complete their careers as teachers.

The interviews took place in the interviewees' homes for comfort and with minimal distractions. I scheduled the interviews in the morning because I am at my best in the morning. The morning interview time was acceptable for all the participants. All participants in the interview process signed a consent form, and the interview was recorded.

The letter of consent template is in Appendix C. I explained to each participant that her real name would not be used and that a pseudonym would be used for the study. Each interview lasted no more than forty-eighty minutes. Each participant was asked to

reflect on her professional experiences as an African American female in the science classroom. What was the teacher's highest educational level attained? What is her highest educational degree? What challenges surrounded retired science teachers' success and what caused them to persist to achieve the goal they attained in science education? How long had they taught science? What area had they taught before teaching science? How did they use their beliefs and practices to gain insight into the students learning or not learning science concepts? What was their strongest or lowest point in their teaching experience? This information can be found in Appendices D-H.

I was very interested in what the teachers said about their successful and non-successful strategies and interventions that they used for attitude and behavioral adjustments of students in the science setting. Since I knew some of the participants, I made a concerted effort to be as consistent as possible with all the participants, to stay focused throughout the study and concentrate on the advantages of experienced teachers. I tried to determine the factors that motivated African American teachers' interest in science and laboratory education, what factors contributed to their success in science education, and what ways they used to evaluate their beliefs and practices in science. How did they engage the students to get the highest academic achievement? What strategies did they use to motivate the students? What were some of the changing views of science education over time that affected students' learning or teachers' teaching strategies?

Ethical Considerations

This study did not cause any threat to its participants. I identified myself as a doctoral student seeking to give retired African American science teachers a voice

concerning their beliefs and practices and the ways their teaching strategies changed over their careers. I changed the names of participants in all transcribed materials. I conducted the research with consistency and used multiple changes to interpret the data. To interpret the participants' understanding of the questions, I repeated the answers for clarity and listened to tape recordings of the interviews. Since I knew some of the participants, I knew that the data yielded a holistic interpretation of the answers to the questions asked. All participants were asked the same basic questions, but I included other questions that stemmed from their responses to the original questions. The understanding of reality is the researcher's interpretation of participants' understanding of the phenomenon of interest (Merriam, 2002). I was very careful in collecting and analyzing the data. According to Firestone (1987), qualitative research may not provide the reader with a step-by-step description of the entire process; we must give enough evidence to establish trust with our readers that the procedures were carried out faithfully.

As the researcher I checked the responses received from each interviewee by repeating what was said to verify that I had understood correctly what the participant said. Merriam (2009) paraphrased Maxwell (2005), who said that for ensuring internal validity, credibility member checks, called respondent validation, could be used where the interviewer solicits feedback from the people she interviewed (cited in Merriam, 2009, p. 217).

Reliability refers to the research findings being replicated. Merriam's (2009) paraphrase of Wolcott (2005) underscores the inappropriateness of considering reliability in studying human behavior. In order to achieve reliability, a researcher must manipulate conditions so that replication can be assessed (cited in Merriam, 2009, p. 220); this is not

the goal of qualitative studies. However, trustworthiness was achieved through the personal relationships and trust between respondents and the researcher. These teachers served as guides to sort out the meaning of their words and experiences. Access to informal dialogue as follow up enhanced trustworthiness.

Data Analysis

I recorded all interviews and transcribed the findings using an open coding approach (Corbin & Struss, 1990). The transcription template is in Appendix B. As interviewer, I opened up the data and exposed thoughts and meanings of the text, looking at small pieces of information that stood alone. I looked at the data in each of the interviews, making notes and comparing the findings. I examined the data for similarities and differences, cross checking and looking for consistency. As I saw the codes emerge, I did in-depth, detailed analysis, using axial coding to relate the codes and put them into basic groups to show the relationships of the codes and to organize them into conceptual themes. I continued to inspect the data until I fitted the codes into categories and subcategories of major themes. I considered how the data was captured and how it allowed retired African American science teachers' voices to be heard through their stories, and I became aware of the potential of this research to increase the current body of knowledge.

Limitations

As a retired science teacher myself, I have inside information on some of these retired teachers' working habits and have heard them speak about their relationships with their students, staff, administrators, and parents. My relationship with these retired teachers could be a limitation; even though we never worked in the same building, we

participated in workshops together. Another limitation is using only African American female science teachers, which could cause the data to be one sided because I would not have the viewpoints from any other sex or race. No other ethnic groups' voices were heard in this study. Other limitations are the middle school grade level and the type of district engaged in the study, as well as the number of participants used, even though it was agreed upon that five retired teachers were sufficient. When it comes to science, which is my passion, I did not allow my bias about what I know about science to limit or interfere in this study. These retired science teachers did tell their own stories and experiences in the science classroom.

CHAPTER FOUR: DATA ANALYSIS

Introduction

The philosophy that teachers talk about teaching and learning is central to their ideas about their practices (Pajares, 1992). The teachers' beliefs and practices are important to teachers' knowledge of the subject matter. The purpose of this study was to answer the following question: How have the beliefs and practices of retired African American female urban middle school science teachers (RAAFUMSST) changed over the course of their careers?

Through my analysis I heard RAAFUMSST voices ring out concerning their beliefs and practices that caused them to endure long careers and retire from an urban school district. After interviewing these teachers, I analyzed the influences throughout their teaching careers that were vital to their dealing with students and that allowed them to remain in the education profession. The interviewees' responses were affected by their upbringing and the people who influenced their lives in special ways. The participants explained how family members played an important role in their success in the educational arena. Some of the interviewees' practices and expectations caused them to continue pushing their students to higher and higher heights.

Demographics

For this qualitative research I used grounded theory and purposeful sampling as a part of the process in order to gain a meaning from the observations I made. The participants in this study were RAAFUMSST from a large urban school district. I interviewed five teachers, all of whom had from twenty to thirty years of experience

teaching science in the same district. Each interviewee identified a place of comfort for her interview that provided minimal distractions. The observations recorded in this chapter resulted from the interviews of the five participants, using an open coding approach to transcribe and elicit information in their own words describing their practices and beliefs about teaching. The themes that emerged from the data are discussed using a narrative, descriptive format. I describe the physical environment of each location in which the interview took place to help convey context.

Changes in Educational Strategies

A variety of stakeholders in the educational community can make changes in educational strategies in the classroom. New strategies can change the climate and culture of the classroom and the school, and can even change the people introducing the change. The stakeholders must believe that the change will make a difference that would allow everyone who is involved to develop the skills needed to advance to the next level. The significant changes in educational strategies of the school bring about changes in the people and the relationships among the people. These relationships dictate how work is done or not done. Fullan and Stiegelbauer (1991) believed that creating relationships at all levels supports inquiry, reflection, trust and innovation, which are essential for change and student learning. See Appendix E, Changes in Educational Strategies.

Nelson Mandela said, "Education is the most powerful weapon which you can use to change the world." Education has become an area where all students have the opportunity to be the best that they can be. A teacher comes to class to teach students, and his or her role and responsibility are directed toward the students' role and the learning that the teacher expects from students. The students are expected to come to

class to take in knowledge directly and to interact with the teacher and other students. The quality of the teaching and its effects on students vary among teachers, as do the roles and responsibilities of students.

System Barriers in Science

A barrier to learning is anything that stands in the way of a child's being able to learn efficiently and effectively. A learner may experience one or more barriers to learning throughout his or her education. System barriers to learning are barriers created by the education system itself. Some of the system barriers that impact our children are social, cultural, and economic in nature and can include poverty, single-parent households, lack of parent involvement, and negative labels given to students by the educational community. See Appendix F, System Barriers in Education. A popular assumption is that the families of students of color and socioeconomically disadvantaged students do not value education in the same ways that their middle- and upper-class White counterparts do (Bourdieu, 1997). All of these barriers help shape the dynamics of the school.

Major levels of deficiency have been found within the core subject of science. Students in high-poverty areas have limited access to high-level mathematics and science classes (Oakes, 2005). Sociocultural positioning has created an environment in which there is an absence of science for those in low-track classes in urban schools (Barton & Tobin, 2001). One of the most detrimental impacts is supported by research that suggests that students of color continue to be over represented in special education and in the least academically rigorous, non-college-prep tracks of their schools (Russo & Talbert-Johnson, 1997; Patton, 1998; Coutinho & Oswald, 2000; Noguera, 2001; Oakes,

2005; Conchas, 2006). While interviewing African American female science teachers from an urban school setting, I asked them to identify some of the social and cultural dynamics of the school and the programs geared to benefit students with cultural deficiencies.

Myths about Black Teachers/Students

School performance and achievement are interpreted through the lens of African American students and their parents in the context of "cultural identity" relationships to Whites who control schools, and their upward mobility status (Gibson & Ogbu, 1991). Students' academic performance is based on factors that they may have very little power to control. The decisions that are made with very little input from students affect career decisions, planning, and self-efficacy. See Appendix G, Myths about Black Teachers/Students.

Those who decide what is important for learning are influenced by their own limited background and experience, possibly ignoring the viewpoints of many who could be deprived of aspects of diversity that should be part of their world (Nieto, 2004). There is compelling evidence that these marginalized groups do not realize a direct correlation between acquisition of academic skills and upward mobility in society, as expressed by Gibson and Ogbu (1991).

Some researchers have identified poverty, family dysfunction, transience, and lack of emphasis on academic achievement as possible causes of the achievement disparities (McGinnis & Stefanich, 2007). The factors that affect school performance and achievement shape self-efficacy (Florence, 2010) of students. Self-efficacy is the critical

factor in academic performance and school success for African American youth (Jonson-Reid, Davis, Saunders, Williams, & Williams, 2005).

Motivational Factors/ Influences

It is easy for a teacher to work with students who are self-motivated. However, a lack of student motivation can be frustrating for the teacher. All students bring to the classroom a different array of learning styles. They have different interests and different life experiences. They come from different socioeconomic and ethnic backgrounds. These differences make the teacher's job more challenging when it comes to motivating students and making each class unique. It is the teacher's job to find ways to motivate students in order for them to achieve academically and have success in school. Positive motivation can reduce class tardiness and disruptive behavior, and can increase academic effort. According to Sprick (1985), teachers should encourage and motivate students from the first day in the classroom. See Appendix H, Motivational Factors/Influences

Administrative Support or Lack Thereof

Because of administrators' ineffectiveness in the management of student conduct, teachers spend a large amount of time on classroom management before they have a chance to impart scientific knowledge. See Appendix I, Administrative Support or Lack Thereof. Teachers' abilities to organize the classroom and manage student behavior are critical to achieving positive educational outcomes (Brophy, 2006). Racial inequality in a color-blind world is a problem in our educational system. The administrator/principal in the school should be the lead supporter of the teacher. The principal's relationship with teachers, parents, and staff should create harmony and a positive school climate (Fraser

1994). Many teachers transfer or leave a district altogether because they lack the principal's support.

PARTICIPANT 1: Georgia

Setting:

The walkway of the well-manicured lawn of Georgia's home led to an equally impressive front porch adorned with a double-door entrance. Stepping through the double doors, I followed my hostess down a short hall to an immaculately remodeled kitchen where she served muffins and hot tea. The participant appeared to be a meticulous housekeeper and a well-prepared hostess.

Participant's Background:

Georgia is a retired African American science teacher after twenty-two years of teaching eighth grade science at a historic all Black school that graduated many of the prominent Black people in the city. Her beliefs and practices were established early in her teaching career as she tried to give all her students a sense of pride and respect. Georgia held a strong parental presence in her classroom. Part of her success was due to her systematically visiting the homes of her students at the beginning of the school year to introduce herself and explain her teaching style and expectations to both students and parents. To her benefit, many of her parents were former students. Her past relationships with these former students made the current parents cooperative and supportive, helping out when needed. This is how Georgia describes her life:

> I was born and raised in Fayette County, Tennessee. I was an only child from a two-parent household. My grandparents were responsible for my upbringing because they were the most financially able. My grandfather died when I was eight years old; however, I recall my grandmother always reading to me and

> telling me that I would be someone special and that I could be all that I could be through reading and going through interesting adventures in my readings. On Saturday my grandparents would make sure that I had anywhere from one to two books to read. Looking back on the past and how people helped me when I could not help myself, encouragement from my grandparents, church and community made me feel that I should help someone else. In 1955, I moved to St. Louis, Missouri. I started as a teacher's aide in the kindergarten in 1973 with a large urban school district, moving from kindergarten to third grade and from there to the seventh grade, where I first came in contact with one of the best science teachers in the district. At that time science certification was not a requirement. In 1978 I received my science certification and was introduced to my first science classroom, where my teaching style incorporated the learning centers and inquiry that I had experienced and learned from my mentor. (Georgia, 14-37)

Georgia graduated from Tennessee State University with a Bachelor of Science in Education and a Master's in Social Studies. After graduation she and her grandmother relocated in Saint Louis, Missouri. Georgia took a job as a teacher's aide at an elementary school that served K-8 graders. Fortunately for Georgia, she was assigned to the top teacher in the building. She observed the top teacher on a daily basis. Georgia came to the realization that she too needed to be in a classroom teaching young people. Georgia had found her calling. She wanted to teach and, more importantly, she wanted to model her teaching style after this exemplary teacher. Georgia explains her decision to become an elementary teacher:

> While working under the elementary teacher, I tried to learn as much as I could because I knew that one day I would be the teacher and have my own classroom. I could hardly wait for that day. I admired her style of teaching and her methods of relating to the students and parents. My philosophy was that others had helped me to accomplish my dreams, so I wanted to help my students to be the best they could be. The seventh-grade teacher left for personal reasons, and the principal offered me an eighth-grade science class, even though I had never taught science before and at that time there was no special criteria, no certifications were needed to teach science (self-contained classroom). I accepted the position as the eighth-grade science teacher. I patterned my teaching style after the teacher whose room I had worked in previously. I imitated her method of dealing with the students, parents, and other personnel in the building. (Georgia, 102-111)

Changes in Educational Strategies:

The teacher's role is constantly changing in the educational system. Teachers are role models and confidants to the students while they are at school. They act as parents and only want the best for the child. The students bring to class with them some of the changes that take place at home, and the teacher has to deal with these significant changes that the students go through. The interaction between the teacher and student is the teacher's responsibility. Teachers must get it right so that learning will take place.

Georgia went back to school to get certified in science after the district announced that all science teachers had to be certified to teach science. Her story reflected that her success in science was centered on her training that she had received from the first teacher she worked with. All that time there were no science materials or equipment to

use in science; there were only old, raggedy textbooks. Fortunately, to her credit, Georgia was creative in her teaching of scientific theory.

Georgia started teaching during a time when children went to the school in their own neighborhoods. Many of the students in her class had pets. Georgia was a firm believer that any moment was a teachable moment, and she used pets to teach the children about taking care of living things. She and her students regularly walked the neighborhood streets and alleys to collect rocks and leaves to take back to class for examination. The students visually examined the texture of these objects and recorded the differences in the objects. Students would then exchange objects and repeat the examination with a new object.

Being visible in the neighborhood gave Georgia a close relationship with the students and the parents because her presence encouraged community involvement. A lot of the mothers were homemakers and were more than happy to help by collecting items that could be used for science supplies or equipment. The collaborations between Georgia and the parents were successful because most homework assignments were geared around whatever items could be collected from the parents and the community. This is Georgia's take on significant changes:

> When I started, there were no pacing guides that dictated what lesson the students should be on and how long they had to stay on each lesson. I noticed that the teachers had more classroom responsibility with no afterschool pay or compensation. Attendance, report cards, and lesson plans are now being done on computers, but we used to have to come early and stay late to make sure those items were completed before we left school. Administrative structure was top

> heavy. They now have curriculum specialists or academic administrators and many others in administrative positions with high salaries that offer little or no assistance to struggling teachers. Student test scores are still low. Students must have so many hours of homework each week, and most schools have students wearing uniforms. Most of the academic curriculum has changed to fit the needs of our changing world, but we as educators—are we meeting the changing needs of our students? (Georgia, 118-125)

System Barriers in Science:

When Georgia began teaching, children walked to school, and elementary school included grades K-8. The students who went to school in the neighborhood had basically the same cultural and social background. Georgia said that the family structure consisted of grandparents, a working father, mother, and children. Everything that the family needed was in the community where they lived. Even though many of the families lived below the poverty level, they had strong family ties. The communities were drug infested with lots of violence and corruption running through them. Georgia expounds on her classroom recollections:

> I recall basically a male dominated classroom. There were about 15 boys and 12 girls at the beginning of the school year, all African American. I started the semester by explaining to the students about goals, detailing the meaning of short- and long-term goals. The young girls in the class were quiet, but the boys were quite vocal. They stated that they didn't think they would see five years down the road. In fact, they felt they wouldn't live to see another year, so why set goals? The students voiced their opinion that they could make more money selling drugs than they could earn on a job. By the second semester, my enrollment had

> dropped from 15 boys to 10; the number of girls remained the same. (Georgia, 127-131)

Sadly, Georgia remembered that the students who did not return to school the second semester were generally the boys who did not know their fathers; she sensed a feeling of anger against their absentee fathers. Here is what she had to say on the matter:

> As a classroom manager I basically believed in structured activities from the minute the period began. I can remember having a password, and the password was related to their homework. I gave them the password and it was science related. It might have been something like "give the scientific steps to the scientific method." On the next day they had to relate this to me before entering the classroom. The ones that did not know the answer had to go to the end of the line. The ones that knew the answer to the password were able to go into the class and start their activities, while the others had to find the answer to the password before starting the laboratory activity for the day. I made sure that all my students were engaged from the beginning of the period until the end of the period. This helped to keep down negative behavior and kept the students on task. (Georgia, 134-146)

Myths about Black Teachers/Students:

Georgia stated that in her discipline she had to attend continuing education programs, workshops, in-service, and vocational conferences for professional development. She says time in a school day to analyze data and time in the school year to re-teach are essential to student progress. The myth that test data is a good tool for evaluating teachers is greatly over exaggerated because standardized tests are only one

indicator of student growth. Here is Georgia's analysis on the problem of myths about Black teachers and students:

> The myth that classroom data is for teachers only is untrue because such data can help parents and students. Parents can use this data to work with their child at home. Parents' involvement in their child's education is so important. Sharing this data with students can help them become more involved in their own progress; perhaps this will motivate some student to try harder in science. Poverty in itself does not result in poor student learning, and neither does the single-parent household. However, lack of parent involvement in their child's education can definitely result in students being ill prepared for entry into school and through school. There must be parental involvement in the education of children to optimize their potential to excel. I think what was a really good thing for me as a science teacher is that the parents were my support system, and if I saw them outside of the school setting, it was just like seeing a friend. Toward the end of my teaching career I was teaching science to my former students' children, and that helped with discipline a lot. (Georgia, 185-189)

Motivational Factors/Influences:

While I was interviewing Georgia, she shared that her main reason for staying in the urban school district was to help children of her race and income status as they were growing up. She saw education as a way out of poverty. Georgia recounted an event that happened when she was growing up in the inner city of Saint Louis. As an only child, she did not know she was poor until a teacher told her entire class that they were poor. Georgia did not believe her. So she raced home for lunch and asked her mother. Her mother sadly answered her, "Yes, baby, we are poor." Georgia was devastated, and from

that moment on she decided to embrace education as a way of doing better in life. It was this decision that gave her the drive to spend the next twenty plus years in the teaching profession. Georgia explained her stance:

> I could see myself over and over with each new class of students. Education is empowering to me, and I wanted to share that empowerment with my students. I endured the educational discrepancies by supplementing old textbooks and equipment with outside resources. I attended my professional workshops and conferences, always grabbing examination copies of new textbook materials disks, workbooks, etc. Two government-supported agencies adopted my school (on different occasions) and allowed my students to visit their employment sites and shadow their employees for a day. The Board had a Career Exploration Department that set up visits at workplaces and institutions of higher education. I frequently signed up my classes to participate. It was most disappointing when half of my students did not attend school on the field trip day after parental permission had been given prior to the date. (Georgia, 152-155)

Georgia said that she had very few discrepancies in the science laboratory because her students would check each other about their behavior. When there was a captain of a team, the captain would automatically check the people in the group and say, "We have a problem here," which alerted her to move toward the problem. There was always a parent close by, and at that time parents would not get into trouble for paddling a student.

Administrative Support or Lack Thereof:

When I asked Georgia about the support she received, she explained that she tried to work with administrators (principals, department heads/chairs) and rarely called on the American Federation of Teachers Union for representation. She worked with fellow

colleagues and support staff throughout the school to create a supportive learning environment for her students. She maintained membership in both the St. Louis Teachers Union - Local 420 and Missouri State Teachers Association, while employed by the St. Louis Schools. Membership in those two organizations was in addition to membership in other professional organizations in her discipline. Georgia felt that it was important to have an advocate if one was needed. Georgia said:

> The building principal (African American male) always encouraged me. He gave me positive feedback on my methodology in teaching, and complimented me on the success of the students. The administrators could see my internal interests in the success of the students. I received complimentary output from my building principal. The district office made frequent visits to my classroom because of the work I was doing with my students. Sometimes they were the only students in the school to be recognized by the district officials. My students and I received several certificates from the district administrators and district science supervisor for my work with the students. I remembered them coming to tape my class presentation, and the class responses as a whole were right on target. They aired my class on channel eleven. (Georgia, 240-252)

Even as the years went on and the students changed somewhat, Georgia said that she still enjoyed the teaching process. She still could look to the inside of the child or individual student and see the best, and she was not disappointed.

PARTICIPANT 2: Delores

Setting:

Delores lived in the center house of four homes located on a cul-de-sac. When turning onto to her street off the main street entering her sub-division, I could see a two-

story home with round columns supporting the porch, with green shrubbery surrounding the front of the home. Once inside the house we entered the living room, which was furnished with light blue furniture and matching blue carpet. There was a huge fireplace and mantel; over the mantel was a large mirror. There was a tall white double bookcase filled with books that covered one of the walls in the room. The interviewee and I sat on a white couch, and I placed the recorder on the coffee table in front of us. There were some blue and white striped and checkered pillows on the couch behind me, and I asked Dolores if I could move the pillows. I started the interview by explaining the purpose of the interview and getting her to sign the consent form. I asked her to give me a little background about herself.

Participant's Background:

Delores is a retired African American science teacher who taught in an urban district for thirty years in four different schools. Delores had just retired during the past four years. She received her Bachelor of Science degree in Education, a Master's degree in Biology, and an additional thirty hours in Computer Science. Delores realized early in life that she wanted to be a teacher because she found herself always playing school with her siblings and she played the role of the teacher. Delores believed that students should be supervised continuously, from the start of the day to the end of the day, and that the lessons should be well prepared and planned ahead of time. It was important to her that all students be kept on task and engaged in the learning process at all times. Here is Delores's take on her background, in her own words:

> My parents both were strong advocates of education. My mother wanted all her children, but especially her daughters, to be strong, independent women, and having a degree in education would allow for our independence. As a teacher I

> tried to include the use of all the modalities in my lessons. I used art, music, writing, and role-playing in my lessons. I needed all my students to be able to express themselves and understand to the best of their abilities. My classes were always student centered, and their success was most important to me. (Delores, 40-45)

Delores grew up in the City of St. Louis. She had a basic Catholic education from kindergarten through twelfth grade. She had a scholarship from Ursula Academy, where she did two years and did her last two years at St. Alfonso's Rock School. Delores received her Bachelor's degree from a teachers college, earning a Bachelor in Elementary Education, K-8, and a minor in Special Education in the area of Learning Disabilities and the Emotionally Handicapped. She received a Master's in Educational Counseling, and went back and got a plus thirty in Science Education.

Changes in Educational Strategies:

Delores spent fifteen years teaching special education. Then the district wanted all students to be exposed to science education, so she spent the next seventeen years teaching science to learning disabled students. The students were in various grade levels. Some were sixth, seventh, and eighth graders with an academic level of a third grader. These students had short attention spans and were accustomed to doing whatever they wanted, which meant she really had to show tough love in order to convey a lesson to them. She had to be long suffering and very observant with them. Since the lessons were not all on the same level, she had to use differentiated instruction with the students. The same lesson could not be used with all the students, as was the case with the other science teachers in the building. Delores said that her students never stopped trying to please her by trying hard to do their best for her. When she gave them her undivided attention, they

performed like any other student without special needs. Her philosophy was that of a coach. She walked the children through the activities step by step. Delores, in her own words, describes her experiences:

> My older brother had cerebral palsy, and my mother and I used to go around the neighborhood collecting monies for children with birth defects. That's what made me want to work in special education and with special needs children, but not in science. But that was where my career took me. I only had about ten children, but they were very challenging and commanded lots of attention. But my love for the children and my brother caused me to take a lot of classroom management classes that prepared me to have the patience and drive to give my all to these students. At this time in my career I was more student centered because I knew that they needed me. I saw myself as their only means of survival in the educational setting if they were going to be successful. Other than that, they would go throughout their life with a negative label behind their name. (Delores, 49-57)

It was Delores's desire to work with special education children in science that gave her a special fulfillment in life. She was unable to help her brother, so she saw this as a way to help him by helping other students that were caught up in a situation that needed a special person with special training to help. Her brother transitioned from earth to glory about four years after she started working with these students.

Delores shared that she worked hard and long to get through to these students that were physically and mentally disabled. She showed them much love and patience, teaching them behavior modification and very basic science skills. She moved them from

one science skill to the next by constantly using teaching methods designed to cope with their disabilities, change their negative behavior, and get them to believe in themselves. Some of the students eventually were mainstreamed into the regular science classrooms. They went to the next science class with the capability and confidence in themselves that they could do just as well as the other students in science. They always came back to Delores's class if they were having difficulty or misunderstandings. Delores shares her teaching efforts:

> I saw my teacher's role and responsibilities change from being one who teaches methodology of learning to being a teacher who not only provided practice in the various subject areas. I also saw myself as one who modeled and provided examples to students. My role changed from a teacher who directed to a teacher who worked alongside her students, who modeled and provided examples of the behaviors I wanted from my students, using role-playing and storytelling. I would use summarization to evaluate lessons with follow-up activities that moved them a step further with the activity. I became a teacher who provided a service, and students were seen as consumers. (Delores, 60-65)

Delores's class size was always small because she was a special education science teacher. In the beginning she had all Black students, and then transitioned into an international study school, where she had a couple of White students along with students from different countries. Funding was given to schools with lower income students and for the purpose of increasing test scores. These monies were later broken down to various areas in the schools. At the international study school the resource teacher would come in the special education room to sit in on the science class. This process was called,

"class within a class," where the resource teacher would individually assist the student that was a part of the resource program.

System Barriers in Science:

Most of the programs in Delores's school were geared toward increasing achievement, especially in test scores. No Child Left Behind produced afterschool programs to help students who were scoring below level. Delores was under the leadership of a Black principal who had high expectations for all students. She was also under the leadership of two White principals who had lower expectations for Black students. One of the White principals even questioned the qualifications of a Black teacher with a doctorate degree. However all the principals had a heavy focus on differentiated instruction, as compared to teaching all students the same lesson in the earlier years.

Delores stated that the dynamics of the school were quite diversified in the beginning, but there was a definite trend to get rid of older Black teachers who had twenty-five plus years or more of service in the system. She attributed fewer students in the district and less funding to the district's firing policies. Here is what Delores had to say about system barriers in education:

> I believe social barriers included children not being exposed to other people and other students outside of their families or other neighborhoods. Income limited our students. Education was geared toward what jobs the schools and educators thought students might possibly get in the society in which students live. I believe Blacks were systematically in the "70" and were taught or geared toward service jobs. As for cultural barriers, students were limited due to poverty and socioeconomic status. I believe children stayed isolated in their neighborhood

> and were later exposed to other races due to the structure and themes of the schools. Also with magnet schools and desegregation, integration students and teachers crossed the racial and economic lines. They went out of the school district through exchange programs, Black teachers going to teach at Southside schools, White teachers going to the schools on the North side, and city teachers exchanged with county teachers. (Delores, 74- 83)

Delores added that she learned her classroom management skills while working as an apprentice. The focus was basically on management issues: being prepared, following the schedule, routine rules, and not about being student centered. The focus was more about getting the lesson plans done, knowing the steps of the lesson, being on duty, or doing what the principal asked. Delores states:

> I started my classroom management by using assertive discipline. That is where I set my rules, had a discussion about the rules, posted them up in my room and followed a system by which I would implement them. The first time it was a warning followed by loss of some kind of privilege, and the next thing might be a visit with the parent, and the principal was the last step. When teaching special education students, I could not give them a lot of leeway. Using this system, I was giving power to the student, knowing that I had control over their behavior and if they chose not to follow the rules or misbehave, then all parties would know what the consequences would be. (Delores, 178-186)
>
> It is always different handling special education students. I might say to one of these students, this is what I need you to do, you can either do it this way… these are your options, I need you to get your work done. Maybe you can do it

> through pictures and words, or like a cartoon, or maybe you want to make a tape for me. They even played games using teams—the girls versus the boys. The end result was to have the assignment completed by the students, and they made the academic achievement. (Delores, 189-192)

Myths about Black Teachers/Students:

Myths about Black science teachers and students described by Delores, focusing on special education, were prefaced by her observation that African American students may not have been taught with high expectation levels. With guided practice, differentiated instruction and more professional development for teachers, accountability and levels of expectation for students and teachers changed. These myths about African American science teachers such as being tardy, being poorly prepared and lacking a strong foundation in science need to be dismissed. Teachers must be evaluated on their performance in the classroom, not on whether administration likes them or not. Delores said, "I believe that administrators are going to have to decide how these various myths are going to affect their schools. Why do teachers have to prove who they are and what they can or cannot do? Evaluation is based on our method of teaching and job/classroom performance." She goes on to say:

> We do not allow students to be the best that they can be if we are constantly pre-judging who they are. Despite single parent households' poverty and a lack of motivation, children can be productive learners. The adults in their lives such as their parents, other role models, and mentors dispel negative myths by encouraging these students to be the best that they can be. (Delores, 193-196)

Delores continues:

> Parents want to be involved in the schools. We must structure each school plan to include parents' involvement. I personally feel that the administrators don't want parents involved in their schools. An exception for parental involvement and single households was not different for any group. The school used creative ways to include all parents in the Parent Teachers Association (PTA) from mothers being room monitors to parents going on field trips or assisting in fundraising activities. I believe that the area of science has been lessened with the focus of testing now more on communication arts and mathematics. (Delores, 209-213)

Motivational Factors/Influences:

Delores viewed teaching not as a job but as a career. Teaching was a reward that brought out the goodness in her. She cared for people and felt that in teaching there was an intrinsic reward that no one could take away from her. Teaching gave her a status in the community; she was valued as an educated person, and teaching allowed her to be needed by someone and to have a positive effect on her students. Delores believed that teachers stayed in the profession for a steady income in an unstable economy. In the case of females, the stereotypical jobs at that time were teaching and nursing. This is her stance on motivational factors/influences:

> When it came to educational discrepancies, I did not see a devaluing of my worth as a human being in my role as teacher or in the role of my students. Teaching gave me a passion to do well, in disclosing knowledge to my students. Imparting knowledge is a daily good that no one can take away from you. The end results are going to be positive. Even though I taught science to students labeled as special education, I had to get other key components across to students, such as

> how to get along with others, relationships…not just with the students getting along with each other but how to get along with family members, and people in authority, and the last thing was the needed skills to achieve…study habits, how to improve academic achievement. The curriculum was different, but it was getting science skills across in shorter periods of time due to their short attention span and the constant change in curriculum. (Delores, 240-257)

Administrative Support or Lack Thereof:

The administrators' support was very stiff and stern near the end of Delores' career. She felt that it was due to economic times, and to the fact that the district was trying to cut costs at the expense of the staff. They wanted the more seasoned and tenured teachers out and the beginning teachers in for fewer benefits and less pay. Delores believed that the administrators had been told to carry out that task no matter how it hurt the system, and teachers who had spent a lifetime of building up the school climate and who could discipline their classes were being pushed out the door.

Teachers had strong advocates, depending on how strong the union representative was in their building. The union representative was the buffer that sometimes stopped them from being treated as less than human. Delores believed that many of the things that teachers were asked to do sometimes were simply the result of the principal showing what power he or she had. She said that certainly her principal was lacking in people skills; however, educationally the principal was a smart woman. She was not an advocate for teachers and was extremely adversarial in a lot of situations. Delores said:

> Professional development was different. The principal, I believed, felt the more information she gave her teachers, the better teachers they became. I thought this was a strong point in her favor. The principal was about giving the teachers

> access to information to carry out the curriculum and resources to students. But my principal ran a quiet school, and there were times when she did not understand why the science laboratory was noisy. There were several occasions that she wrote me up because the students were making too much noise while working on their laboratory activities, even though they were on task and actively working. There were times also when she would ban one or two of the students from the class activities because of something they may have done to another student in the hall or outside. The principal and I used to fall out about this. (Delores, 265-280)

Delores was offered a position as the special education supervisor over all of the special education teachers in the district, but she turned it down due to the love for her students and her need to help the students in her building.

PARTICIPANT 3: Shirley

Setting:

This participant lived in a senior living facility in the inner city. The large six-story brick building had a wrought iron gate around the front parking lot. I drove to the gate opening and rang a bell, and someone on the other end of the speaker asked the name of the person I was there to see. I told him, and he opened the gate. I drove in and parked on the parking lot.

I went in through the automatic doors into an extremely large sitting area with about four plush chairs with a table beside each chair and a lamp on each table. There was a circular staircase in the center of the room. On the walls behind the stairs were two sets of elevators. I went to the desk where a security guard was sitting. I had to sign in. When I finished signing my name, Shirley was getting off the elevator. I walked towards her, and she walked me around the corner to another set of elevators, where we rode to

the fifth floor. We got off the elevator and then went to her room, and she opened the door. Once we were inside the small apartment, the kitchen, living, room, and bathroom were visible from the door. The apartment was neatly furnished, and everything appeared to be neatly arranged. We had a seat at the kitchen table where the interview was recorded.

Participant's Background:

Shirley was an African American science teacher who had attended Labara High School and then Blackburn College for two years. She then transferred to Harris Stowe State College, majoring in elementary education with a minor in physical education. She retired from a large urban school district. During her teaching career she taught sixth-grade science skills in one of the city public schools in the housing projects. Shirley desired to give back to the students who came from an environment that was like the one where she had grown up as a child. Shirley shared her thoughts about her life's influences:

> I grew up in a housing project as a child with my mother and two younger siblings and three older siblings. My mother told me that I had to get an education so that I would not have to live in a place like a housing project. Times were hard back then. My oldest brother got killed in the projects at an early age, and his killer was never found or maybe not even looked for. The next to the oldest brother got hooked up with a gang and involved in drugs. He is now serving thirty years in the federal penitentiary. When the projects were demolished, we moved in with my grandparents. My grandparents were like a savior. They did what my mother could not do. They gave us positive feedback about life. I had three aunts that were living in the house also. All of them were educators, so I decided to follow

> in their footsteps. At the dinner table, the entire conversation was about what took place in their classrooms that day. I listened to what was happening with the students, and that made me want to be a teacher in order to help the students to achieve and be the best they could be. Besides, teaching was all around me and was a part of my family history, and I wanted to be an educator like my aunts. I felt that I knew everything that happened in a classroom. I had three examples to follow. I knew that I was destined to be a good teacher because I was learning from the best, my aunts. (Shirley, 36-46)

Changes in Educational Strategies:

Shirley is a product of the City of St. Louis public schools and received her first two years at Blackburn College and then transferred to a teacher's college in St. Louis. Her parents expressed to her how important it was for her to stay in school and to get a good job to support herself and a family in the future. Shirley played school with her siblings every day and was always the teacher. She also had three aunts who were educators, and she learned much from listening to them whenever she was in their company. The aunts had a big influence on her career as an educator. Shirley received a Master in Science Education degree, with an emphasis on Environmental Studies. She was an outdoor woman; there was no place she would rather be than outdoors in the fresh air, hot or cold. Shirley's philosophy was that if students would fall in love with the environment, then learning in every area would flourish and they would be successful in any educational field. She encouraged the students to develop a love for the environment. Shirley reflects on her beginnings:

> I started out as a substitute teacher in science for a year and a half and then became a teachers' aid for about a year and a half in science before I became a

> full-time science teacher with my own classroom. I had a sixth-grade class with about twenty-five students. My first year was hard because I started in the middle of the school year. I wanted to quit; my students were uncontrollable. But I established a rapport with my students and the parents. I called my parents, talked to them on the phone when I needed help with their children to try and locate the problems. I also used rewards for good behavior, such as free time if work was completed and the student did not cause problems in class. I would take the class on nature walks to explore different things that we saw, or heard in the community. There was time when the students would measure out one-inch-by-one-inch plots of land in the surrounding grass area around the school and check out what grew in that space provided. They also measured the height of various trees and then would go back to the classroom inside and see if we could identify the types of trees that were in the yard. We would try to identify some of the various animals we came across. Sometimes we would collect insects, butterflies, leaves, etc. and bring them back to the classroom for a thorough investigation. My students enjoyed going outside for class, even when the weather was not suitable for outside activities. I did many hands-on activities with my class, and the students enjoyed their science time. I believe that you have to introduce the students to a subject that they are less familiar with and let them figure out how it is used in their life today. (Shirley, 50-68)

Shirley experienced so many significant changes throughout her twenty-six years of teaching. She went from duty outside with the students to a time when students were no longer allowed to go outside. There were gym classes for girls and boys separately,

then a change to gym once a week to gym with girls and boys together. In the beginning Shirley's teaching skills were in isolation with students sitting in rows. But that changed to teaching skills through whole language and students sitting in small cooperative groups, with group leaders. School funding in her earlier years was more plentiful. The district used to provide reading series for science and would purchase the entire series. The next year they would supply the consumable books that went with that series. During her later years the funds decreased because of budget cuts or mismanagement of monies. Serious problems ensued because of not having materials, equipment and especially consumable science materials that should have come with the program.

System Barriers in Science:

The majority of Shirley's teaching experience in science has been teaching eighty-five to one hundred percent African American students in a building with at least eighty-five percent African American teachers. Shirley was the only sixth grade science teacher for four classrooms of about twenty to twenty-five students each. These sixth graders floated in the science and laboratory classes every other day for ninety minutes. They were not privileged to have science every day like the seventh- and eighth-grade science students because those grades had two teachers to support a smaller number of students. It was tough, but Shirley learned from trial and error. She explained:

> There was a science specialist that would come in the building at least once a week with much encouragement and assistance with helpful tips on dealing with students' undesirable behavior, curriculum, lessons, and ways to report to parents, but with tips on classroom management more than anything else. I called the parents when I needed help with their child. I would invite the parents to come over and spend the day with their child in the science/laboratory. The parents and

> I had a buddy system going on. I would talk with the parents of the students that were not adjusting to the classroom setting almost every day. Some of the parents of those students would follow them from class to class until the children eventually were willing to change their behavior in the different classes and the science laboratory. Those were the students that helped me to keep the other students in check. You have to set the tone at the beginning of the year by letting students know your expectations, encouraging them and showing them that you love them. If you set the tone of the classroom at the beginning of the year, you will have fewer problems with classroom management. (Shirley, 111-123)

Shirley felt that the tone had to be set in order to get respect from the students.

Myths About Black Teachers/Students:

As far as teaching science, Shirley stressed that it was hard trying to be prepared to do experiments with twenty-five to twenty-seven students with no assistants. Trying to do experiments with the few materials that the district provided was very difficult. The science period was ninety minutes long with only a small amount of laboratory equipment to use. But Shirley tried hard to teach laboratory skills to all her students. Back in the day the emphasis was on reading and mathematics, and science was secondary. Shirley speaks of how she became a hands-on science teacher:

> When the Vashon Science Initiative (VSI) was introduced to the urban school district, it was then that I became more of a hands-on science teacher. The VSI provided plenty of hands-on workshops and materials to aid us with teaching science when the VSI came on the scene, but not all urban schools were given this opportunity to be involved with the program. This was one of the obstacles of this district: all schools were not treated equally. Of course lack of parent

> involvement hindered our students when it came to science. During the months for the science fair, our students would not do well because of the lack of science knowledge, materials, and parental support. (Shirley, 169-173)

Motivational Factors/Influences:

As a teacher Shirley felt committed to stay in the educational arena and solve the problems of children who grew up in a situation that was similar to what her early life had been like before she moved to live with her grandparents. Because she was an optimist, her goal was about children learning and enjoying it. She had knowledge to impart, and she knew that she could actually reach her students, show them how to think, how to learn science and how it relates to their everyday lives. Shirley believed that the students needed her, and she expressed her reason for continuing:

> There were numerous educational discrepancies. I had a heart for teaching and a love for the children, so I stayed and toughed it out. I learned how to go with the flow, and I adjusted to the many changes in the science laboratory. It was very hard and depressing at times, but I had to pray, and I knew that I could not turn my back on the students who were so much like me at that age. Looking at the achievement gap, I would use all the information that I had on the students to devise a plan for progress. I started there and built on that. The district had gone back to school fairs, which furnished students with book bags, paper and other supplies to start the school year. I would take advantage of community volunteers and resources. I and several other teachers applied for grants that provided all types of electronic goods and services for my school. I did everything that I could to help my students advance academically. (Shirley, 176-187)

Administrative Support or Lack Thereof:

Shirley explained that she had many advocates that gave encouragement to her during her teaching career. She said that the principal, instructional coordinator, grade level team teacher, and lead teacher would intercede on behalf of the other teachers. New teachers also had mentors, and the mentors were trained by older members who were once successful educators who would rotate from school to school to help teachers that were having difficulty with classroom management. Shirley believed that good classroom management came from years of experiences in the classroom and from continually changing instructional strategies. But she said that the district office dropped the instructional coordinators and the mentoring program due to budget cuts. Shirley elaborates:

> Later on they came up with coaches who did not carry the title as administrators, but classroom teachers that were pulled out of the classroom to assist the classroom teachers that were having difficulty in any area. The coaches worked harder in some cases than they did when they were teaching, and without an increase in pay. The principals back in the day had more power to control the budget and switch funds from one account to another. They even had the authority to select who they wanted to work in their buildings. But the district office took those powers away from them. When the principals lost their tenure and their union was resolved, that's when they lost a lot of their administrative authority. My principal retired, and a younger principal with less experience took over the school. She was younger and more fearful of the district office power figures. The support of the principal fell to an ultimate low. This was about the same time the district started with Teach for America teachers. They had good

strategies but had plenty of difficulty dealing with classroom management, but most of the older teachers' support was gone and replaced with the new Teach for America teachers, and the younger principal could not help retain the older teachers. (Shirley, 247-260)

PARTICIPANT 4: Vivian

Setting:

I arrived at Vivian's home, which was off a busy artery of a North County street, where several beautifully styled houses were located, from ranch to two story homes. Vivian's ranch style home had an attached wooden deck in the back of the house, where the interview took place. Her backyard met up with the surrounding neighborhood to a common ground, with tall oak trees located on the common ground portion of the yard. There were various potted plants of assorted selections.

It was a nice breezy fall day. Vivian had iced tea and cookies waiting for us to enjoy while doing the interview. She invited me to have a seat and asked if I had any difficulty finding the house. I responded that I did make one wrong turn. I sat at the metal table that was placed against the window, which gave me a view into the kitchen. We started the interview process.

Participant's Background:

Vivian is a retired African American female science teacher from a large urban school district and had taught in the school district for thirty years. She holds a Bachelor of Science degree in Elementary Education, a Master's in Educational Strategies and a Master's in Administration. Vivian is a third-generation college graduate. Education was heavily stressed in her family. Her parents preferred one of the Historically Black Colleges and Universities (HBCU) as the place for her to receive her college education.

All of her immediate family members had attended HBCUs. Vivian tells of her parental influences:

> My parents were strong believers in getting an education. My mother was the one who persuaded me in the direction of becoming a teacher. She believed that if I became a teacher, I would always have a respected position, and would be able to provide for a family and be a strong pillar of society. In 1973 I taught primary grades in an urban district. I taught kindergarten to third grade for the first five years of my teaching career. After that I moved to the middle school in the same district. After thirty years of service in the same urban school district, in 2006 I hung up my shingle after I had served my time in the system, and I retired from the school district. To me, learning is a long, non-ending process. For me it is fascinating how young minds can explore things and come up with solutions to problems presented to them. (Vivian, 32-45)

Changes in Educational Strategies:

Vivian saw as fascinating how far one's mind, especially a young child's mind, can go if we permit children the opportunity, provide them with the equipment, and give them the confidence to know that their questions are just as important as the teacher's questions. When we are learning, we are expanding the mind and exploring the possibilities of new findings through experiments, laboratory writing reflections, and discussions. The facilitator supplies the method that the students use to obtain the answer. Students are the ones doing the investigative learning. Every mind and every thought is important. One educated guess or one thought could lead to a new discovery. Vivian speaks of her educational journey:

> I started teaching seventh-grade science in a magnet school where I was grandfathered into the gifted program. I stayed with the gifted program in science for twenty-eight years. There were anywhere from ten to fifteen students in each of my six classes. I believed that we all learn from one another and that there are no silly or stupid questions. All minds have the right to explore deeper and express their findings to the best of their ability. I believe that through knowledge comes exposure and through exposure comes knowledge. I wanted my students to know that learning is a long non-ending process, whether in the classroom or outside the classroom. As the teacher I wanted my students to be responsible for their learning, and I wanted to give them the opportunity to explore and expand their minds. As the teacher, I tried to teach outside the box, to let children be able to elaborate on what ifs and hypothetical thinking, which derives from the creativeness or the curiosity of a child's mind once they have the opportunity to explore. (Vivian, 60-78)

Vivian's gifted students did not use the same textbooks and resources that the regular middle schools used. The principal and faculty had the opportunity of choosing the curriculum they used in the gifted program. Most of the time the material that was presented to these students was on the tenth- to twelfth-grade level. Vivian discusses her approach to teaching science:

> My approach to teaching science was more in the area of physics because my students had a higher IQ than normal. As the teacher I had to step up my game in presenting the lessons because these students were accelerated in their thinking and reasoning process. This kept me on my toes as the teacher. The level of

> presenting the experiments had to hold the gifted students' interest. The students brought with them a greater prior knowledge that the average students may not possess. I did not have a need for any materials or science equipment or supplies. I had a hefty budget that let me have access to the things needed to run a high school laboratory even though I was at a middle school. These funds were provided through the Gifted Program. (Vivian, 83-89)

Vivian considered the teacher's role to be a vital component of the students' success. She considered a teacher as a positive master instructor, the source of information in guiding students to explore and expand the concept of learning. She viewed the student's role as that of a person seeking knowledge through inquiry-based theory and the prior knowledge one brings to the subject being introduced in the lessons; other important elements she mentioned were the purpose for the lesson, the method used in developing the lesson, the way of evaluation in obtaining her goal (ways of measuring her success). Vivian believed that her role and responsibility along with student responses and performances would determine the level of success. Her students did a lot of critical, analytical thinking. They were engaged in hierarchical thinking. She identified an ideal class size:

> I view the ideal class size of measuring success as based on a ratio of one to twelve versus one to fifteen max. Realistically speaking in today's paradigm we have a ratio of one to twenty-five versus one to thirty, making it extremely challenging for the teacher of the latter ratio to achieve favorable results. Even though I teach in an urban school district, the particular program is geared to a multicultural population, African Americans, Asians, Anglo-Saxons, Koreans,

> etc., and this is a gifted program. Funding is allocated through the state under the Gifted Program. (Vivian, 94-98)

System Barriers in Science:

Vivian felt that in the school where she worked social barriers of the students varied based upon the economic level of the families, ranging from families needing government assistance to the privileged. Families needing government assistance could be a family of four with an annual income of forty thousand or less, or it may consist of a single-parent head of household with a family of four making an annual income of fifty thousand or less. Vivian identified privileged families as any family who could economically support their children's educational needs without government funding. Cultural aspects were also diversified because her school was made up of students from several continents, which increased the school dynamics. Some of the programs used included Gear-Up, which prepared students for college courses, and the REACH program (the acronym REACH means Responsibility, Empathy, Appreciation, Courage, and Hope). The fundamental goal of the program is to develop and foster challenging inclusion, thoughtful and risk-taking learning. The REACH program develops skills to help students examine their feelings and motives, seek the perception of others, and select the best solution based on the intended outcome. The REACH program provides social and emotional development for students. Vivian believed:

> There are no wrong or silly questions that could be asked by my students. We all learn from each other as well as explore the possibilities of new findings through laboratory experiments, journal writing, and discussions. As we learn, we expand the mind. All minds have a right to explore deeper; through knowledge comes exposure, and through exposure comes knowledge. We can only find this through

> investigative learning, which means to try to define and explain what you have found in your experimental stages in the laboratory. Learning is a lifelong non-ending process, whether it's in the classroom or outside the classroom. Students must learn to think outside the box. We have to let students be able to elaborate on the "ifs"; the "what ifs" come from the creativeness or the curiosity of the children's minds once they have the opportunity to explore in laboratory science. (Vivian, 103-109)

Myths About Black Teachers/Students:

Dealing with myths about Black students and teachers, Vivian saw them as what they were: untrue. For example it has been said that many minority students can't excel in mathematics and science. Vivian believed that when it came to preparedness, the less preparation the teacher put into a lesson, the lower the level of comprehension the teacher should expect from her students. She believed that being ill prepared increased the possibility of poor student discipline and was a sure sign of the lack of classroom management. Vivian acknowledged that as a teacher she had all the materials she needed before she presented a lesson. She declared that she would perform the laboratory activity before introducing it to her students, carefully making sure that each student understood the steps in the activity, that the safety rules and regulations were understood, and that all the equipment was used properly. According to Vivian:

> Poverty is the silent enemy of every teacher regardless of economic or social class or race. For the lowest level of Maslow's Theory must be applied before learning can take place (food, clothing and shelter). If these things are not provided for the students, learning will not take place. I could tell when my students were hungry or had a bad night. Parents need to be fully aware that they are vital stakeholders

> in their children's education. Each stakeholder, teacher, parent and student must accept their role and fulfill it when necessary. As the saying goes, a chain is only as strong as its weakest link, so we all need to work together toward the common goal of No Child Left Behind. Some may perceive the single parent household as the weakest link; however, some of our greatest and most successful professionals derived from single-parent households. (Vivian, 135-165)

Motivational Factors/ Influences:

As a gifted teacher, Vivian stated that good classroom management would best motivate her students. She said that having control of the classroom was her number one strategy used for motivating her students. Her disciplinary skills had to come into play before she could even start to teach a lesson. As the teacher in a school where students were labeled as gifted, she understood that the students knew on the first day of class that there were high expectations. Vivian expected her students to achieve at a higher rate than normal. She recalls her motivation:

> My motivational factor comes from three generation of college graduates who majored in education, so education was the catalyst for success in my family's beliefs. Besides it was a sure, steady income because there would always be children to teach. I had extremely high expectations for my students; we all had a family relationship where the students would take on the role as teacher and I functioned as a coach. I would explain the lesson and they would take charge from there. The students each handled the day-to-day assignments in their own way; some of the students would ask questions to the other students, who would come up with the solutions to the problem. They each played a role with no or very little help from me. They worked as a group to get the assignment done. My

> motivation was having very high expectations, and they followed through with the assignments. Being flexible also helped me to motivate my students and handle the classroom discrepancies. As a teacher you have to be flexible. There were times when the master schedule called for you to have a science class, but due to the module scheduling you receive a class that has to have a laboratory activity; you must be flexible enough to adapt to immediate changes that may present themselves at any moment. (Vivian, 190-208)

Vivian judged her students' success in science by the way they worked in their groups, and by journal writings. When they did journaling, she could actually monitor the way they were thinking by the content of their writings. She knew immediately if students were getting it or not through their journaling.

Administrative Support or Lack Thereof:

Having an administrative advocate in her corner, Vivian says, was a bonus. She indicated that she always felt appreciated knowing that if there was a problem with students, parents, staff or curriculum, she could always approach her principals, knowing that they would address the issue for the best outcome. Vivian felt that successful administrators provided professional development for their staff, keeping them abreast of the most modern techniques, methods, and curriculum that might be useful to the staff. Vivian said:

> My principal was there to support every means that I might have had in order to accomplish the success of my students, whether it was to make sure that we had the supplies that we needed, be it equipment for the laboratory, instructional materials, or any type of assistance that they could approve of within their budget that would allow the teachers success and improve student achievement. The

> district on the other hand had to work on a larger scale. The larger scale would be making sure that the science department was run successfully by the science supervisor, a person who was extremely knowledgeable, not only of the content matter, but knowledgeable of how we as a district stood within the nation in science, seeing what could be done to bring our ranking up from where we may have been to where we would like to be. (Vivian, 230- 242)

PARTICPANT 5: Dawn

Setting:

As I drove up to Dawn's home, I saw that she lived in a North County ranch style home in a middle-class neighborhood. The neighborhood, now predominately African American, had gone through evolution and had become integrated. The home was modestly decorated and furnished. African art was prominent throughout the house. Dawn's home was comfortable but was definitely feminine in its theme, which was displayed in the rug on the floor and the gadgets that were on the tables, all expressing her love for African art.

We were seated at the dining room table, and we enjoyed soda and peanuts as we talked casually before the actual interview started. The home was cooled by air conditioning, so the area was comfortable. Dawn was dressed in a caftan with a matching wrap around her head and some sandals on her feet. There was the smell of burning candles throughout the house.

Participant's Background:

Dawn, an African American science teacher, has an undergraduate degree in Home Economics, is certified for teaching grades seven to nine in science, and has a double Master's in Counseling and Administration. Dawn said that her passion was

teaching life science because the students appeared to be thrilled by knowing the systems of the body and how it functions. She said:

> I would feed off the enthusiasm of students for their interest in science, especially the hands-on activities. They made a point of completing and doing what was expected of them in order to participate in the laboratory activities to the point where they would ask if they could help the students that were having a little difficulty. So I used those students as my student assistants. The students were anxious about getting their work done in order to help the ones that were having difficulties. In our home my parents told my siblings and me that our job was to go to school every day and behave appropriately because it was a reflection on our home life, and to tell everyday what we learned in school. My parents expected us to be the very best that we could be. We were expected to go to college and set out on a career. I really did not have a lot of role models except in nursing, teaching and social work. I wanted to be a journalist or a fashion designer, but there were not any African American role models in those fields, so I decided to teach where there were plenty of role models. I decided to be a teacher, and my parents were thrilled. My students always knew what they would learn for that day. (Dawn, 26-34; 58-65)

Changes in Educational Strategies:

Dawn began her teaching career at the high school level as a home economics teacher. She spent ten years teaching home economics until the district changed to a middle school configuration, and then she was placed in an eighth-grade science class. This change occurred because desegregation had taken place, and it helped solve the problem of overcrowding in the elementary school. So when Dawn went to the middle

school, a whole new way of teaching began for her with this new level of student. The adjustment to teaching science was smooth sailing for her because it was so similar to teaching home economics in that the students were always engaged. She says:

> My students were very enthusiastic about sciences, and I fed off of my students' enthusiasm. I never let my students feel that they could not learn and would not learn something in my class. I called them my future scientists. I made them all aprons, and when they came in the class, the first thing they had to do was to put on their aprons. So I began every class session with what we were going to learn for that day. I made sure that the students knew the objective and aim for the day. I felt like they had something to work for, and besides when administration came in the class and asked the objective or the aim of the lesson, the students would know it. Every day, every class period was a brand new one in my class, and so I wanted the students to feel at the end of fifty minutes, or when we had a double class period at the end of the ninety minutes, that they could articulate to me what they had learned that day. My students could go home and tell their parents, or they could tell a friend, or they could tell anyone that they met in the hall, that today in science we learned whatever the particular objective was, and not only repeat it but explain what it was they had just learned and how it was going to work in their lives and how they were going to use it in their lives. (Dawn, 87-102)

During Dawn's thirty years as a tenured teacher, the role of teacher changed significantly. Primarily, the change occurred in the instruction of basic academic skills that at the beginning of her career were assumed to have been mastered by students. Those skills

were in the area of reading, writing, and basic mathematical functions. As a result of increased assessment of student skills mastery, all teachers were expected to be teachers of reading, writing and mathematics.

Dawn believed that if students could not read, they could not master skills in any area. To that end there seemed to be less instruction and skill development in the area of science. Those students who were not proficient in areas of reading, writing, and mathematics were often delayed in the instruction within a content area. More advanced or at least on-level courses could not be and were not taught.

In addition, there was more responsibility on the part of the teacher to assume parenting roles. Making sure of the physical and emotional well being of the students became necessary in order to see academic gain. While certainly needed and even welcomed by the teacher, this attention to students' emotional needs reduced the time spent on content area instruction and diminished academic priorities. The emphasis on academic achievement as reflected by test scores was welcomed by teachers in their roles of instructors, but not to allow content area instruction to take place due to other responsibilities was a difficult challenge for the classroom teacher. Dawn explained:

> The students' role has changed in that there seems to be less responsibility for personal learning. This may be necessary considering the level of technology and time required for mastery of selected academic skills or the desired use of technology to achieve those skills. Never before were learning aids such as computers, tablets or even transportation provided to students in order for the students to have access to learning. The current assistance is good when it is used. More importantly it must be accompanied by instruction to the students and

> the home on the proper care and use. Parents should receive assistance as well as students. Teachers must discuss with parents and students the long-term advantages and value of education and the need for persistence by the student. Often, this responsibility is ignored.
>
> Class size has decreased over the years, and this has been a definite advantage. This probably can be associated with research that has proven that smaller class sizes work not only for at risk students, but all students. As funding is denied for education due to a changing political climate, new ways to create smaller learning communities must continue. Neighborhood schools have disappeared, not only in the City of St. Louis, but in many suburban school districts as well. The denial of admittance to magnet schools or schools of emphasis for African American students created the need for admittance of these students to private and parochial schools. (Dawn, 131-156)

The school districts in St. Louis County, impacted by the voluntary desegregation program, were forced to look at academic and extracurricular programs that would now need to include students who did not necessarily live in the neighborhood or school district. Dawn stated:

> I became a teacher during a time when vocational funding was in abundance. The Carl Perkins Vocational Education Act afforded students many choices for careers with and without college degrees. Funding was provided for our school for this purpose. Not only has this funding been reduced or eliminated, but much of the funding upon which schools have depended has been reduced or eliminated. Funding for schools traditionally has been granted locally with

> property taxes. This is an ineffectual method in the state of Missouri as it impacts particularly our urban areas, which are suffering from insufficient assessments of properties for homeowners, properties which are no longer owned by anyone, and a great deal of tax abatement given to businesses and individuals to encourage urban renewal. I also see a lack of faith in the education of our students, so we are seeing a revolt in the passing of tax levies and bond issues by the public. The private sector is sponsoring charter schools, providing funds for selected public school programs and in some case providing supplemental education opportunities for selected students. There are some local programs that are supplementing salaries of teachers in selected content areas. All these variances in educational funding, although welcomed, create a system that may or may not be equitable. (Dawn, 131-156)

System Barriers in Science:

Dawn sensed the most significant barrier both socially and culturally remains economic. There must be a balance in the economic system with available employment at a livable wage for all. Dawn truly believes that there are instances where students and their families may be able to overcome the perils of poverty, but these are exceptions and not the rule. Teachers must be taught and must begin practicing instructional strategies as well as behavioral strategies that will mitigate poverty in our schools. The expectations are that students will achieve and behave in a manner that is congruent with middle-class behaviors and values. Yet many studenets have no exposure to these behaviors and values. Educator Ruby Payne (2003) addressed this challenge in her research that resulted in her controversial work *A Framework for Understanding Poverty*. When it comes to cultural elements, Dawn notes that it must be understood that these

barriers of poverty are not racial. Racial minorities experience these barriers because in the U.S. more racial minorities are poor. The absence of middle-class values and behaviors is experienced by all those who suffer from generational poverty. Dawn shared her classroom management strategies:

> When it came to managing the classroom, I never let the students feel that they could not learn and would not learn something in my classroom. So I began every class session with what we were going to learn that day. Every day, every class period was a brand new one in my class, and so I wanted the students to feel at the end of the fifty minutes that they could articulate to me what they had learned that day. They could go home and tell their parents, or a friend, or anyone they had met in the hall, that today in science we learned whatever the particular objective was and not only just repeat it but explain what they had just learned and how it's going to work and be used in their lives. (Dawn, 87-102)

Dawn interjected that schools in the United States are built and organized around middle-class values and behaviors. If we are to mitigate poverty in education, we must first learn what the values, behaviors, and expectations are in an urban environment framed by poverty, and then we can assist those students to operate in a dual environment or be helpful in the removal of students from that environment completely. We also need to examine our educational system and evaluate the current expectations. We need to determine if these expectations have value, are relevant to current lifestyles, are equitable, and are presented with fidelity.

Programs specifically geared toward Blacks in science (Upward Bound, No Child Left Behind), Dawn felt, should not be specifically geared to Blacks. These are programs

designed to mitigate poverty and to provide a level playing field upon which all can perform. Dawn felt the only reason there seems to be a predominance of Blacks in these programs is that the programs are housed in urban communities particularly in the Midwest. She stated that if we were to examine the same programs in areas where immigration is high or where poor Whites live, there would be a different composition of the programs and thus different perceptions.

Myths About Black Teachers/Students:

One of the myths that Dawn said she heard throughout her teaching career was that African American teachers are poorly prepared to teach science skills. But that is not what she said that she encountered. There were science workshops during the entire school year that were mandatory for everyone teaching science. She had the opportunity to present at National Science Teachers Association (NSTA). Every summer she worked with curriculum writing for science for the upcoming school year. So she asked who was ill prepared—surely not the science teachers in the urban schools. There was no tolerance for a teacher who was ill prepared to teach science in the middle schools. Dawn added:

> For the most part Black parents are involved and participate in their children's education as much as possible. That is, they want their child to be well educated. They may not be participants because they are working or they have responsibilities at home that prevent participation (siblings of said students, extended family members, pursuing their own education, lack of education to be able to assist students, lack of technological/no technological resources to assist students). Single parenthood is usually an issue of lack of resources with the largest resource being time. Single parenthood is not a reason for a lack of student

achievement. Other factors such as the absence of resources influence lack of achievement of students coming from these homes. (Dawn, 197-200)

Motivational Factors/Influences:

The method that Dawn used to motivate the students was to show how the subjects they were learning matter in real life. She believed that relevance is one of the most effective motivational techniques that lend meaning and purpose to academic success. Dawn also had a desire to teach students and prepare them to make a better community for themselves and /or those living in the community, to make productive positive change for all. Dawn spoke about her motivational approaches:

> Well, I motivated my students mostly in the area of careers. I felt like I was limited in the career choices I had, and I never wanted my students to feel limited. So a big part of my teaching was careers and the choices that they might have. And they weren't just science-related careers, but careers in general and then how science had an impact on how they lived, on where they lived, the environment that they lived in, and how their knowledge of science would have an effect on their lives in general. Whether it was the environment or something of the physical science nature, the topic had an impact on my students, an impact that they had the ability to control with some level of knowledge. (Dawn, 105-113)

Administrative Support or Lack Thereof:

Dawn believed teacher advocacy begins with self-advocacy. Teachers must be specific and intentional in the expression of their need to assess student academic improvement. As teachers become more specific and intentional in their beliefs and practices, they will be able to identify the resources that will assist them in supporting the

students. Professional organizations, educational organizations such as colleges and universities, and teacher unions will be of assistance.

Dawn believes that administrators should provide ongoing, verified, and assessed professional development for teachers. It should take on the face of action research and should be provided by practitioners as well as theorists. She believes that professional development should be provided for all and not just new teachers. Tenured and seasoned teachers need professional development too. Dawn reveals:

> I've had support from parents, principals, and district officials. Now there are always examples that I can cite of a parent not supporting you and the way her or his child is behaving in the classroom, whether it be a discipline problem or not completing assignments, or not being a participant in good learning. But those were few and far between because I believe every parent wants their child to learn, every parent wants their child to see, but every parent doesn't know how to help their child. A big part of my job as teacher was to make my expectations known to the parents as well as to the students so that the parents could be participants in their child's learning. So I educated them—I feel like I educated them as well. And then, of course, the principal always wanted to see success. I rarely ran into any issues with supervisors or school administrators. (Dawn, 183-194)

Chapter Summary

The five themes developed from the data analysis answered this research question: What have been the beliefs and practices held by successful retired African American female urban middle school science teachers over the course of their teaching

careers? The most common response among the participants was that teachers needed to be prepared to work with their students from the start to the end of the class period.

These teachers felt the need to give back and help others because someone had helped them during their formative and adolescent years while the teachers were climbing the educational ladder. Each of the interviewees was influenced by her parents, aunts, or some family member to get an education, and teaching was the best career choice at that time for African American females.

Another commonality among the interviewees was that the teacher/parent relationship was most valuable to the student's success. Teachers' knowledge of the subject matter and parental involvement are some of the conditions teachers must have in order to obtain success in the classroom, which agrees with the assessment of Rutherford (1964). While themes varied as to individuals' beliefs and practices about how students were motivated and how parental interaction took place, classroom engagement seemed to be a unifying and necessary condition for all students. Teachers approached classroom engagement using various strategies. If one strategy didn't work, the teacher's job was to keep searching for solutions to handle the classroom inconsistencies until the class was suitable for learning.

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Five retired African American female urban middle school science teachers (RAAFUMSST) were interviewed from five different middle schools in the same urban district. This chapter provides a summary of the findings, highlights the essential conclusions, and offers recommendations for future research. The information discussed in this chapter reflects the data analysis in chapter four. All five RAAFUMSST gave their responses to the interview questions about their beliefs and practices that allowed them to stay in the educational arena until the time of retirement. Each individual teacher, in her own words, offered insight about some of her successes and failures.

Each of the participants gave a description of how she got started in education, the roles her parents played in her education, the level she attained in education, and the academic area she taught before teaching science. The participants explained the significant changes in the educational structure of the schools, their responsibilities as teachers, and their interactions with the students and the role students, parents, and others played in the educational system. Some teachers expressed their educational philosophy and their beliefs and practices. The teachers spoke about segregation, how funding affected different programs and how the funding changed from the beginning of their careers to their retirement from their urban school district.

From the interviews of the retired science teachers I found out what factors motivated these retired teachers to continue to the end of their teaching careers. The data obtained from the interviews did assist me in determining if the beliefs and practices of the retired teachers would be of aid to current teachers and enhance their effectiveness

and sustainability. The interviewees concentrated on their social experiences when it involved their relationships with parents, administrators, and staff. The data obtained from the interviews will hopefully be instrumental in facilitating the teaching of science skills. Each retired teacher's point of view identifies the teacher's experiences in the science classroom and how classroom management consistencies and inconsistencies were handled.

Overview of the Problem

According to Kagan (1992), most of a teacher's professional knowledge can be regarded more accurately as beliefs. As a teacher's experiences in the classroom grow richer and more coherent, the formation of a belief system actually controls the teacher's perceptions, judgment, and behavior (Kagan, 1992). This study was based on the thought that the longer RAAFUMSST remained in the classroom, the greater control they had over inconsistencies in the classroom. These retired female science teachers managed their classrooms in the formal educational arena and engaged their students in the learning process long enough to make it to the end of a successful teaching career. The teachers' experiences, beliefs and practices allowed them to continue their teaching careers until their retirement, and this assumption was the basis for the study.

After having retired from an urban middle school myself, with twenty-five years of experience teaching science/laboratory, I have witnessed many inconsistencies in teachers' classroom management. The literature does not provide information about retired teachers' stories of their beliefs and practices as being instrumental in providing awareness and directions for the educational community. By conducting this qualitative study, I have learned from these teachers how their beliefs and practices were used when

they were in the classroom and how they engaged their students in the classroom and dealt with inconsistencies, thus making their jobs less difficult. My desire is to provide teachers with strategies that will allow them to be successful and make it to retirement in the educational community just as did the participants in this study.

Purpose Statement and Research Question

The purpose of this study was to record retired African American female urban middle school science teachers' beliefs and practices that were used when they were teaching that allowed them to be successful science teachers. The following research question guided the direction of the study: What are the beliefs and practices that allowed retired African American female urban middle school science teachers to successfully complete their teaching careers?

Reflection on Data

The information discussed in this section is a reflection on the data analysis presented in chapter four. The themes emerging from the data analysis answered my research question. The most prominent similarities in participants' responses were how their family members encouraged them regarding their education. The philosophy of education and teaching for Georgia was to give her students a sense of pride and respect. Delores's philosophy was that of a coach; she walked her students through activities step by step. She believed that all students should be kept on task and engaged in the learning process at all times. Shirley's philosophy was to give back to her students to make a difference in the environment in which they lived. Vivian felt that young minds needed to explore their situations and come up with solutions. Dawn fed off of the students' enthusiasm, which motivated her passion for science.

Now I will report on each teacher's definition of her classroom beliefs and practices. Georgia believed that being visible in the neighborhood gave her a close relationship with parents and students and gave them a close bond to the community. Delores believed that the close relationship with her students and the patience that she displayed by using a variety of modalities insured that learning was taking place. Shirley's belief was to keep close contact with the parents on the telephone as they attempted to solve problems together. Vivian believed that her students were responsible for their learning, and she gave them the opportunities to explore and expand their minds. Dawn believed that she must see to it that her students knew what they were going to learn, and then she made sure that they were able to articulate what they had learned.

Next I wanted to know what each teacher saw as her success in science with her students. Georgia said that her success was centered on her training that she had received. She had no materials or equipment, just old, ragged textbooks, so she was creative in her science teaching. She also had a close relationship with the parents, which allowed her to be successful with her students. Delores's success was due to her ability to deal with students who were labeled with negative names that indicated that they could not learn. Her motivation was driven by a family member who had been labeled similarly. She modeled and provided examples to her students by working alongside them. Shirley went from teaching skills in isolation with students sitting in rows to teaching skills through whole language with students in small corporative groups. Vivian allowed the students to explore more deeply and express their findings to the best of their ability. She also believed that students learn from one another and that there are no silly or stupid questions or answers. Dawn's success was influenced by her students'

enthusiasm; she never let her students feel that they could not learn and would not learn something in her class. She called them her future scientists.

The lack of materials and equipment in the urban schools was the most critical problem in science education that was expressed by all of the participants. Many system barriers that the student had to endure were social, cultural and economic insufficiencies. All the families lived below the poverty level. They went to school in their neighborhoods, and lacked contact with others outside their neighborhoods. Teachers had to be taught and to begin practicing instructional and behavior strategies that could mitigate poverty in the schools.

What strategies were used to improve students' behavior? Several of the teachers noted how they attended continuing education classes, workshops, in-services, and educational conferences for professional development that gave them strategies to help them deal with the students' behaviors. Georgia saw every moment as a teachable moment. She made sure that all her students were engaged from the beginning of the period until the end of the period. Her students would also alert her when undesirable behaviors would arise. Delores provided examples of the behavior she expected from the class. She participated with her students in special programs like "class within a class," where the resource teacher followed her students to all their classes, which helped minimize negative behaviors. Delores's main strategies were being prepared, knowing the steps of the lesson, and implementing routine rules that allowed students to know the desired behavior. Shirley stated that she used rewards for good behavior such as free time and nature walks in the community. She also had a buddy system with parents, which allowed them to spend time in the classroom with their students. Vivian wanted

her students to be responsible for their learning. She had high expectations and motivated her students to follow through with their assignments. She tried to teach outside the box, to let students elaborate on "what ifs," and to provide them with the ability to explore. She used investigative learning and enough material and equipment to keep her students engaged. Dawn's students were very enthusiastic about science, and she used this engagement as a springboard for her teaching. Her expectations were that her students would achieve and behave in a manner that was congruent with middle-school student behaviors and values.

What were some of the areas of administrative support/lack of support? Georgia said that her building principal encouraged her and gave her positive feedback. District officers made frequent visits to her class because of the work she was doing with her students. Delores had a strong advocate in her building representative, and her principal provided access to information that provided science resources for her students. Shirley received support from the principal, instructional coordinator, and grade level team teachers who encouraged her during her career. But when younger principals came into the schools, the support for teachers decreased. Vivian said that she always felt appreciated by her administrators because they were always approachable and willing to help and address the issues she was having in her classroom. Dawn said that she received support from parents, principals and district officials.

Research That Supports Thesis

The concerns on which this study is based echo the findings of the National Education Association (NEA) and National Center for Education Statistics (NCES): teachers are leaving the profession because of low salaries, unrealistic demands, little to

no respect, and inadequate administrative support (Kopkowski, 2008). Although retired teachers cannot fix these problems, they can serve as a buffer or alternate support to help bolster the confidence of many struggling teachers. All the participants in this study agreed that retired teachers can offer, among other things, a kinship with the teachers and a strong shoulder. Classroom management is a hard objective to conquer alone, but the retired teachers can help current teachers accomplish this objective.

Conclusion

Why the Topic is Important:

Education is a *living thing,* a dependent entity that breathes, grows, demands resources, expands, develops, evolves, uplifts, and declines in the absence of support. Education is a dream maker, an answer to a dilemma, and a way out and up in the face of the challenges of life. To be effective, educators must include sensitivity *to* and appreciation *for* diversity and differences. Education, if it is to be successful, must nurture as well as nourish. Efficient education must be inclusive, creative, and all encompassing if it is to accomplish its ultimate goal of empowering students. Constant research is needed to foster the growth and efficacy of the process of education.

According to the National Education Association (NEA) publication *NEA Today* (Kopkowski, 2008), teachers are leaving the profession hand over fist because of poor salaries, lack of respect, teacher perceived non-existent administrative support, and the suffocating and unrealistic mandates of No Child Left Behind (NCLB). Regardless of how committed a teacher may be in the beginning, if the income is insufficient for supporting a reasonable lifestyle, the teacher will not remain in the classroom. If classroom management is continuously challenged by violence and disruptions, the

teacher will not stay. If teachers feel that their administrators are not supporting them, they will abandon the classroom.

Retired teachers possess a wealth of knowledge that cannot be obtained in a teacher preparation course. Retired teachers have been in the trenches, facing the failures and successes of the day-to-day grind. They have achieved what the new teachers are trying to achieve, and if their warehouse of knowledge is utilized, retired teachers can help new teachers acclimate to the education process and maneuver the treacherous waters of classroom teaching. This topic is worthy of addressing because teacher retention will help to eliminate the current process of what has become a revolving-door profession in urban districts. Retired teachers can play a pivotal role in teacher retention.

Unexpected Findings:

One of the unexpected findings in the qualitative data collected from the participants was the assumption that students from low socioeconomic levels are considered underachievers. They cannot excel in mathematics and science. Teachers who were ill prepared increased the possibility of poor discipline brought on by poor classroom management. Teachers that came to class late had a lack of classroom control. Another unexpected finding in regards to test data was that using test data is a good tool for evaluating a teacher's performance. A standardized test is only one indicator of a student's growth and may have nothing to do with the teacher's ability to teach. Also, lack of parent involvement in the education of African American students was not an issue during the careers of the interviewees. The assumption that these science teachers had was that they did double duty due to their teaching of science theory and supervising laboratory activities, which in their minds was more difficult than teaching core subjects without laboratory activities.

Implications for Practice

Some implications for practice are that teachers should be well prepared for their class when they first enter the room. The teachers' preparation time is the driving force for good classroom management. When one activity is completed, the students should be allowed to start the next activity without any wait time. In addition, teachers should encourage the students to be independent workers and work out the problems on their own.

A lot of the administrators really don't want parents in the building, but if the teacher establishes a relationship with the parents, then the parents will become part of the class. Parents in the classroom can assist the teacher in the science/laboratory by being the teachers' second set of eyes to assist and to help troubleshoot inconsistencies before they get started.

Accessibility to science supplies and equipment will deter negative behaviors if the entire class has the ability to work on the activities at the same time. The availability of equipment and supplies would enhance students' cognitive understanding of topics that were introduced in the theory classes prior to doing the activities.

Recommendations for Future Research

The sampling in this research was small. There is a need for a much larger sampling to include broader racial, cultural, and subject diversity to give a truer picture of the value of the assistance retired teachers can offer to the field of education. After the completion of the study on RAAFUMSST, I have realized that there are other areas of study that could be looked at and added to this body of knowledge. Since I only looked at middle school African American female teachers, other research could examine African

American teachers' beliefs and practices in an elementary or high school science setting and ways that they might be similar or different. Some recommendations for future study could include comparing and contrasting urban and rural science teachers, male versus female science teachers, and members of various ethnic groups.

Personal Implications

From the time I started this research until its completion, I have discovered that teachers have an unusual ability to mold and influence students' success. With love for the students and commitment to the profession, teachers can provide meaningful options for their students that could help students take responsibility for their own learning. The love that teachers give must be tender, tough and supportive. Teachers helping teachers can make a positive contribution to education and can minimize the negative effects.

Appendix A: Interview Questions

Pre-Formulated Question:

You have been identified as an African American retired teacher in the area of science and science laboratory skills.

Could you please tell me about your beliefs and practices in the science/ laboratory, and how they changed over your teaching career?

Ad-hoc questions:

Based on the responses from the pre-formulated question, specific semi-structured questions were generated.

1. When you were a child did your parents express to you anything about education?
2. What subject and grade level did you start off teaching?
3. How did you define your classroom beliefs and practices?
4. How do you feel your success rate with your students went?
5. During your teaching career what was your most important low and high points?
6. What do you perceive as the most critical problem in science education?
7. Were there any strategies that you used in science that you can share with others to improve undesirable behaviors?
8. Do you think that your beliefs and practices were effective for students learning of science? How do you know?
9. What were some of your successes/failures in dealing with consistencies/ inconsistencies in the classroom?
10. What type of support/nonsupport did you receive from parents, principal, and district officials?

11. What would you say is your philosophy of education?

12. What would you say is your philosophy of teaching?

Appendix B: Transcription Symbols

(( ))	Indicates an interjection from interviewer or interviewee
?	Indicates a question
!	Indicates an exclamation
,	Indicates a pause assumed to separate phrase
…	Indicates a pause of at least three (3) seconds
( )	Indicates a description, some action or verbal communication best rendered outside of English words
**	Indicates that a phrase or sound is unintelligible on the audio recording
< >	Indicates some context that clarifies the meaning of the sentence that might have been implied but was not spoken
$	Indicates laughter during the interview
Italics	Indicates a verbal emphasis

Appendix C: Consent Form

Division of Teaching and Learning

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Informed Consent for Participation in Research Activities
African American Retired Female Urban Middle School Science Teachers
Belief and Practices

Participant _____ HSC Approval Number_234875_____

Principal Investigator ___Frances Whitney_____ PI's Phone Number 314-727-4776__

1. You are invited to participate in a research study conducted by Frances Whitney with the supervision of Dr. Matthew Davis. The purpose of this research is to allow urban African American retired female science teachers to tell their stories of their beliefs and practices.

2. a) Your participation will involve
   - Being contacted by the researcher to arrange a convenient time and location to conduct the interview
   - Being interviewed once by the researcher, each interview lasting for approximately 40-80 minutes
   - Having interviews digitally auto recorded and transcribed by the researcher
   - Receiving copies of transcripts and preliminary interpretations of your interview answers for your review, comments and corrections.

   Approximately 6-10 retired science teachers who previously taught in an urban district may be involved in this research.

   b) The amount of time involved in your participation will be approximately forty to eighty minutes for each interview and maybe four- eight hours to review interview transcripts and code.

3. There are no anticipated risks associated with this research.

4. There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about African Americans beliefs and practices in an urban school.

5. Your participation is voluntary and you may choose not to participate in this research study or to withdraw your consent at any time. You may choose not to answer any questions that you do not want to answer. You will NOT be penalized in any way should you choose not to participate or to withdraw.

6. We will do everything we can to protect your privacy. As part of this effort, your identity will not be revealed in any publication or presentation that may result from this study. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection). That agency would be required to maintain the confidentiality of your data.

7. If you have any questions or concerns regarding this study, or if any problems arise, you may call the Investigator, Frances Whitney at 314-727-4776 or Dr. Matthew Davis 314-516-5953. You may also ask questions or state concerns regarding your rights as a research participant to the Office of Research Administration, at 516-5897.

I have read this consent form and have been given the opportunity to ask questions. I will also be given a copy of this consent form for my records. I consent to my participation in the research described above.

Participant's Signature	Date	Participant's Printed Name	
		Frances Whitney	
Signature of Investigator or Designee	Date	Investigator/Designee Printed Name	

Appendix D: Background Information for Participants

Participants	Family	Education	Teaching experience	Teaching Philosophy
Georgia	Born in a two-parent household, but raised by her grandparents in Fayette County, Tennessee; in 1955 she and her grandmother moved to St. Louis, MO.	She earned a B.S in Science Education and a Master in Social Studies from Tennessee State University; she went back to get certified in science after the district announced that everyone had to be certified to teach science.	She started as a teacher's aide in an elementary school that served K-8 in 1973; twenty-two years in eighth grade as a science/laboratory teacher in a large urban district.	She gave her students a sense of pride and respect because this was what she had received; she provided a strong parental presence; and she visited her students' homes at the beginning of the school year.
Delores	She grew up in St. Louis city and had a basic Catholic education. Her parents both were strong advocates of education. Her mother wanted all her children, but especially her daughters, to be strong independent women, and having a degree in education would allow for their independence.	B.S. in Education K-8 with a minor in Special Education (Learning Disabilities & Emotionally Handicapped), M.S. in Educational Counseling; plus 30 in Biology	She taught science in a large urban district for thirty years in four different schools; she has been retired for four years.	She believed that students should be supervised continuously and that the lessons should be well prepared and planned ahead of time from the start of the day to the end of the day. She thought it was important that all students be kept on task and engaged in the learning process at all times. Her classes were always student centered, and their success was most important to her.

Participants	Family	Education	Teaching experience	Teaching Philosophy
Shirley	She grew up in a housing project with her mother and two younger siblings and three older siblings. Her mother wanted her to get an education so she would not have to live in the projects. She and her family moved in with the grandparents and three aunts; all of the aunts were educators, so this motivated her to choose education.	She attended Labara High School, Blackburn College for two years, and then transferred to Harris Stowe State College, majoring in Elementary Education with a minor in Physical Education.	She was a sixth grade science/laboratory skills teacher in one of the public schools in the housing projects for twenty-six years.	Her desire was to give back to the students who came from an environment like the one she grew up in as a child.
Vivian	Her parents preferred Historically Black Colleges and Universities (HBCU) as the place for her to receive her college education. All of her immediate family members attended an HBCU. Her family were strong believers in contributing to the HBCU as an advantage to all students of color.	B. S. in Elementary Education, Master in Educational Strategies and Administration. She is a third-generation college graduate.	Science teacher in a large urban district for thirty years.	To her, learning is a long never-ending process. For her it is fascinating how young minds can explore problems presented to them and come up with solutions.

Participants	Family	Education	Teaching experience	Teaching Philosophy
Dawn	Her parents told her and her siblings that their job was to go to school every day, to behave appropriately because it was a reflection on their home life, and to tell every day what they learned in school.	She has an undergraduate degree in Home Economics, is certified for teaching grades 7-9 in science, and has a double degree of Master in Counseling and Administration.	She began her teaching career at the high school level teaching home economics, where she spent ten years. She then was placed in an eighth-grade science class. She was a tenured teacher in a large urban district for thirty years.	She said that her passion was teaching Life Science because the students appeared to be thrilled by knowing the systems of the body and how they function. She fed off of the students' enthusiasm for science, especially the hands-on activities. Her students made a point of doing what was expected of them in order to participate in the laboratory activities to the point where they would ask if they could help students that were having a little difficulty. So she used those students as her student assistants.

Appendix E: Changes in Educational Strategies

Participants	Beginning	Middle	End
Georgia	**Students:** Her success in science was centered on her training from the first teacher she worked with. She had no materials or equipment, so she was creative in her teaching of science theory. Her students went to the schools in their neighborhoods. Most of her students had pets, so she used this experience to teach children about living things. She and her students regularly walked the neighborhood streets and alleys to collect rocks and leaves to take back to class for examination. The students visually examined the texture of the objects and recorded the differences in the objects. Students would then exchange objects and repeat the examination. Most homework assignments were geared around whatever items could be collected from the parents and the community. No guide dictated what lesson the students should be on and how long they had to stay on each lesson. Teachers had more classroom responsibility with no after-school pay or compensation. Teachers came early and stayed late to make sure attendance, report cards, and lesson plans were completed before they left school. Administrative structure was top heavy. **Parents:** Being visible in the neighborhood gave Georgia a close relationship with the students and parents and encouraged community	She went back to get her science certification when the district said teachers had to be certified to teach science.	Now attendance, report cards and lesson plans are done on computers. Now there are curriculum specialists or academic administrators and many others in administrative positions with high salaries that offer little or no assistance to struggling teachers. Students' test scores are still low; students must have so many hours of homework each week, and most schools have students wearing uniforms. Most of the academic curriculum has changed to fit the needs of our changing world, but are educators meeting the changing needs of our students?

	involvement. Many mothers were homemakers and more than happy to help by collecting items that could be used for science supplies or equipment.		
Participants	Beginning	Middle	End
Delores	She spent fifteen years teaching Special Education. "My older brother had Cerebral Palsy, and my mother and I used to go around the neighborhood collecting monies for children with birth defects. That's what made me want to work in special education and with special needs children, not in science. But that was where my career took me," she said. She had only about ten children in class, but they were challenging and commanded lots of attention. Her love for the children and her brother caused her to take a lot of classroom management classes that prepared her to have the patience and drive to give her all to these students. She saw herself as their only means of survival in the educational setting if they were going to be successful. Other than that they would go through their life with a negative label behind their name. Her class sizes were always small.	She saw her teacher's role change from focusing on the methodology of learning to providing practice in the various subject areas. She also saw herself as one who modeled and provided examples to students. Her role changed from a teacher who directed to a teacher who worked alongside her students, who provided examples of the behaviors she wanted from her	She spent seventeen years teaching science to learning disabled students. The students were in various grade levels; some were sixth, seventh, and eighth graders with an academic level of a third grader. These students had short attention spans and were accustomed to doing whatever they wanted, which meant she had to show tough love in order to get a lesson over to them. She had to use differentiated instruction with the students and could not use the same lesson with all the students as the other science teachers in the building did. She said, "My students

		students by using role-playing and storytelling. She would use summarization to evaluate lessons with follow-up activities that moved them a step further. She transitioned into an International School and had a couple of White students along with students from different countries. At the International School the resource teacher would sit in on the science class. This process was called "Class within a Class." The resource teacher would assist the student as part of the resource program.	never stopped trying to please me by trying hard to do their best for me. When I gave them my undivided attention, they performed like any other student without special needs." Her philosophy was that of a coach. She walked the children through the activities step by step.

Participants	Beginning	Middle	End
Shirley	She started out as a substitute teacher in science for a year and a half, then became a teacher's aid for a year and a half in science before becoming a full-time science teacher with her own classroom. She went from teaching skills in isolation with students sitting in rows to teaching skills through whole language with students sitting in small groups. **Students** She had a sixth grade class with about twenty-five students. Her first year was hard because she started in the middle of the school year. She wanted to quit. Her students were uncontrollable. But she established a rapport with her students and the parents. **Parents** She called the parents, of the students and talked to them on the phone when she needed help with the children or was trying to locate the problem.	**Students** She went from writing lesson plans in a book to typing them in a computer format generated by the Board of Education.	**Students** The district used to provide reading series for science and purchased the entire series. During the later years of her teaching career, funds decreased because of the state's budget cuts or mismanagement of monies.

Participants	Beginning	Middle	End
Vivian	She started teaching seventh grade science in a magnet school where she was grandfathered into the program for gifted students. She stayed with the gifted program in science for twenty-eight years. **Students** There were anywhere from ten to fifteen students in her six classes. She believed that we all learn from one another and that there are no silly or stupid questions. All minds have the right to explore deeper and express their findings to the best of their ability. She wanted her students to know that learning is a long, never-ending process, both in the classroom and outside the classroom. She wanted her students to be responsible for their learning and to explore and expand their minds.	Her approach to teaching science was more in the area of physics because her students had a higher IQ than normal. These students were accelerated in their thinking process. The level of presenting the experiments had to hold the gifted students' interest. The students brought with them a greater prior knowledge than the average students possessed.	She had a hefty budget that let her have access to whatever was needed to run a high-school level science class even though her class was at the middle school. These funds were provided through the Gifted Program.

Participants	Beginning	Middle	End
Dawn	She spent ten years teaching home economics at the high school level until the district went to a middle school configuration and she was placed in an 8th grade science class. **Students** Her students were enthusiastic about science, and she fed off of their enthusiasm. She never let her students feel that they could not learn something in her class and referred to them as her future scientists. She began every class session with what they were going to learn for that day. She made sure that the students knew the objective and aim for the day. **Parents** Her students could go home and tell their parents, or they could tell a friend, that in science they learned whatever the particular objective was, and not only repeat it but explain what it was that they had just learned and how it was going to work and how they were going to use it in their lives.	When Dawn went to the middle school, a whole new way of teaching began for her with middle school students. The adjustment to teaching science was smooth sailing for her because it was so similar to teaching home economics in that the students were always engaged.	**Students** The students' role has changed in that there seems to be less responsibility for personal learning. The level of technology has increased, as well as the time required for mastery of selected academic skills or the desired use of technology to achieve those skills. Never before were learning aids such as computers, tablets or even transportation provided to students. More importantly, the current assistance must be accompanied by instruction to the students and the home on the proper care and use. **Parents** Parents should receive assistance as well as students. Teachers must discuss long-term advantages of an education with parents and students and stress the value of persistence in the education of the student. Often, this responsibility is ignored.

Appendix F: System Barriers in Education

Participants	Social	Cultural	Economic
Georgia	Students attended school in their neighborhoods where they lived, and they all walked to school.	Everything the family needed was in the community.	Families lived below the poverty level. If the father was in the home, he went to work; the mother and grandparents stayed home.

Participants	Social	Cultural	Economic
Delores	Students not exposed to other people outside of their families and neighborhood.	Students stayed in isolation in their neighborhoods until students and teachers crossed racial lines. Through the desegregation program the teachers and students were in the exchange programs; city students went to county schools, and county students went to city schools.	Students were limited by low family income. She believed that students were geared toward service jobs.

Participants	Social	Cultural	Economic
Shirley	She taught eighty-five to one hundred percent African American students, and there were eighty-five percent African American teachers.		

Participants	Social	Cultural	Economic
Vivian			The economic level varied from families needing government assistance to the privileged.

Participants	Social	Cultural	Economic
Dawn	The most significant barrier socially and culturally is economic. Poverty is not racial but is experienced by racial minorities because more of the racial minorities are poor.	Programs like No Child Left Behind should not be geared to Blacks, but are designed to mitigate poverty and are housed in urban communities.	There must be a balance with available employment for all at a livable wage. She believes that families and students may be able to overcome the perils of poverty. Teachers must be taught and begin practicing instructional strategies as well as behavior strategies that will mitigate poverty in the schools.

Appendix G: Myths about Black Teachers/Students

Participants	Myths about Students	Myths about Teachers
Georgia	Standardized test data is good for teachers only. Poverty alone does not cause poor student learning; neither do single-parent households.	The idea that test data is a good tool for evaluating teachers is greatly over exaggerated. Classroom data is for teachers only.
Delores	Despite single-parent households, poverty, and lack of motivation, children can be productive learners. The area of science has become less important with the increased focus on testing.	Teachers are tardy and ill prepared and lack a strong foundation in science. Administration evaluates teachers on their performance in the classroom.
Shirley	Felt that lack of parental involvement hindered students in science.	All schools are not treated the same when it comes to science.
Vivian	Students' basic needs have to be supplied if learning is to take place. Some perceive single-parent households as the weakest link in students' learning.	
Dawn	Parents may have little participation in students' education. Students lack technological equipment at home. Single parents lack resources at home.	Teachers are not prepared to teach science/laboratory skills.

Appendix H: Motivational Factors/Influences

Participants	Motivational factors	Motivational influences
Georgia	Main reason for staying in the urban school district was to help children of her race and income status as they were growing up. She embraced education as a way of doing better in life. She attended professional workshops and conferences to get examination copies of new textbooks and materials to supplement old textbooks and equipment. She had very few discrepancies in the science/laboratory because students monitored each other's behavior	Education is empowering, and she wanted to share that empowerment with her students. The school board had a Career Exploration Department that set up visits at workplaces and institutions of higher education. She signed her students up for many of the field trips.

Participants	Motivational factors	Motivational influences
Delores	Teaching was a reward that brought out the goodness in her career; caring for and showing compassion for people offered an intrinsic reward that no one could take away from her. She continued teaching for a steady income in an unstable economy.	Teaching gave her a status in the community. She was valued as an educated person, was needed by someone, and had a positive effect on her students. Teaching science to special education students gave her a passion to do well in disclosing knowledge to her students.

Participants	Motivational factors	Motivational influences
Shirley	She felt committed to stay in the educational arena and solve the problems of children who were growing up in situations that were similar to what her early life had been like.	She had a heart for teaching and a love for children, so she stayed and toughed it out. She had knowledge to impart, and she could reach her students, teach them how to think, how to learn science and relate it to their everyday lives.

Participants	Motivational factors	Motivational influences
Vivian	Comes from three generations of college graduates who majored in education. Teaching provided a steady income because there would always be students to teach. She had extremely high expectations and flexibility; the students took on the role of teacher, and she functioned as a coach.	Having control of the classroom was her number one strategy for motivating her students. The students and she had a family relationship. They would explain the problem in the lesson, and they would work to come up with the solution.

Participants	Motivational factors	Motivational influences
Dawn	The method she used to motivate the students was to show that what they learned in science mattered in real life. She believed that relevance is one of the most effective motivational techniques that lend meaning and purpose to students' success.	She felt limited in the career choices she had, and she never wanted her students to feel limited. So a big part of her teaching was in the area of career choices that they might have.

Appendix I: Administrative Support or Lack Thereof

Participants	Support	Lack thereof
Georgia	The building principal (African American male) always encouraged her; he gave her positive feedback on her methodology in teaching, and complimented her on the success of the students. The administrators could see her internal interests in the success of the students. She received complimentary output from her building principal. The district office made frequent visits to her classroom because of the work she was doing with the students. Sometimes they were the only students in the school to be recognized by the district officials. She received several certificates from the district administrators and district science supervisor for her work with the students. She remembered them coming to tape her class presentation; they aired her class on television.	

Participants	Support	Lack thereof
Delores	Teachers had a strong advocate depending on how strong their union representative was in their building. The union representative was the buffer that sometimes prevented teachers from being treated as less than human. The principal was about giving the teachers access to information to carry out the curriculum; the principal provided science resources to students.	Due to economic times, and the fact that the district was trying to cut costs at the teachers' expense, the administrators' support was very stiff and stern near the end of her career. She believed that many of the things that teachers were asked to do sometimes were simply the principals showing their power. She said that her principal was lacking in people skills and was not an advocate for teachers, and was extremely adversarial in a lot of situations.

Participants	Support	Lack thereof
Shirley	There were many advocates that gave encouragement to her during her teaching career. She said that the principal, instructional coordinator, grade level team teacher and lead teacher would intercede on behalf of the teachers. New teachers also had mentors, and the mentors were trained by older members who were once successful educators who would rotate from school to school to help teachers having difficulty with classroom management.	Her principal retired, and a younger principal with less experience took over the school. She was fearful of the district office power figures. The support of the principal fell to an ultimate low. The older teachers' support was gone when the younger principal took over; they could not help retain the older teachers.

Participants	Support	Lack thereof
Vivian	An administrative advocate in her corner was a bonus. She always felt appreciated knowing that if there was a problem with students, parents, staff, or curriculum, she could always approach her principals and know that they would address the issue for the best outcome. Her principals were there to support every means of achieving the success of the students, whether it was to make sure they had the supplies they needed, or equipment for the laboratory, instructional materials, or any type of assistance that they could approve of within their budget that would allow the teachers to improve student achievement.	

Participants	Support	Lack thereof
Dawn	Administrators should provide ongoing, verified, and assessed professional development for teachers. She had support from parents, principals, and district officials.	She could cite a parent's not supporting a teacher and the way her or his child was behaving in the classroom, whether it was discipline or not completing assignments or not participating in good learning. But those instances were few. She believes all parents want their child to learn.

REFERENCES

American Civil Liberties Union. (2008). School to prison pipeline: Fact sheet (PDF). Retrieved from https://www.aclu.org/racial-justice/school-prison-pipeline-fact-sheet-pdf

Anderson, C. W., & Gallagher, J. J. (2001). Urban science education. *Journal of Research Science in Teaching,* 38(8), 843-980.

Barton, A. C. (2002). Urban science education studies: A commitment to equity, social justice and a sense of place. *Studies in Science Education*, 38(1), 1-37.

Barton, A. C., & Tobin, K. (2001). Urban science education. *Journal of Research in Science Teaching*, 38(8), 337-354.

Bell, D. A. (1995). David C. Baum Memorial Lecture: Who's afraid of critical race theory? *University of Illinois Law Review,* 4, 893-910.

Bell, D. A. (2005). *Silent covenants: Brown v. Board of Education and the unfulfilled hopes for racial reform.* New York, NY: Oxford University Press.

Borg, S., & Al-Busaidi, S. (2012). Teachers' beliefs and practices regarding learner autonomy. *ELT Journal,* 66(3), 283-292.

Borman, G. D., & Dowling, N. M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research*, 78(3), 367-409.

Bourdieu, P. (1997). The forms of capital. In A. H. Halsey, H. Lauder, P. Brown, & A. S. Wells (Eds.), *Education: Culture, economy, and society* (pp. 40-58). Oxford: Oxford University Press.

Brophy, J. (1982). *Classroom organization and management.* East Lansing, MI: Institute for Research on Teaching, Michigan State University.

Brophy, J. (2006). History of research in classroom management. In C. Evertson & C. Weinstein (Eds.), *Handbook of classroom management: Research, practice and contemporary issues* (pp. 17-43). Mahwah, NJ: Erlbaum.

Browers, A., & Tomic, W. (2000). A longitudinal study of teacher burnout and perceived self-efficacy in classroom management. *Teaching and Teacher Education*, 16(2), 239-253.

Brown v. Board of Education, 347 U. S. 483 (1954).

Burnett, G. (1995). *Overcrowding in urban schools*. New York, NY: ERIC Clearinghouse on Urban Education.

Collins, P. H. (1998). *Fighting words: Black women and the search for justice.* Minneapolis, MN: University of Minnesota Press.

Comeau, E. T. (2012). Five steps to becoming the most organized teacher in your school. Retrieved from http://www.easydaysies.com/uploads/7/1/4/1/7141280/5stepsebook-rev2.pdf

Conchas, G. Q. (2006). *The color of school success: Race and high-achieving urban youth.* New York, NY: Teachers College Press.

Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*, 13(1), 3-21.

Coutinho, M. J., & Oswald, D. P. (2000). Disproportionate representation in special education: A synthesis and recommendations. *Journal of Child and Family Studies*, 9(2), 135-156.

Cox, O. (1951). Vested interests involved in the integration of schools for Negroes. *Journal of Negro Education,* 20(1), 112-114.

Darling-Hammond, L., & Youngs, P. (2002). Defining "highly qualified teachers": What does "scientifically-based research" actually tell us? *Educational Researcher*, 31(9), 13-25.

Delgado, R. (1995). *Critical race theory: The cutting edge*. Philadelphia, PA: Temple University Press.

Dollas, R. (1992). *Voices of beginning teachers: Visions and realities*. New York, NY: Teachers College Press.

Doyle, W. (1986). Classroom organization and management. In M. Wittrock (Ed.), *Handbook of research on technology* (3rd ed.). New York, NY: McMillan.

Driver, R. (1995). Constructivist approach in science teaching. In L. P. Steffe & J. Gale (Eds.), *Constructivism in education* (pp. 385-400). Hillsdale, NJ: Lawrence Erlbaum Associates.

Earthman, G. I. (2002). *School facility conditions and student academic achievement.* Los Angeles, CA: UCLA's Institute for Democracy, Education, & Access (IDEA).

Firestone, W. A. (1987). Meaning in method: The rhetoric of quantitative and qualitative research. *Educational Researcher*, 16(7), 16-21.

Flick, U. (2006). *An introduction to qualitative research* (3rd ed.). London: SAGE.

Florence, N. (2010). *Multiculturalism 101*. New York, NY: McGraw-Hill.

Foster, M. (1997). *Black Teachers on Teaching*. New York, NY: New Press.

Fraser, B. J. (1994). Research on classroom and school climate. In D. Gabel (Ed.), *Handbook of research on science teaching and learning* (pp. 493-541). New York, NY: McMillan.

Fraser, B. J. (2001). Twenty thousand hours: Editor's introduction. *Learning Environments Research*, 4(1), 1-5.

Fullan, M. (2001). *The new meaning of educational change* (3rd ed.). New York, NY: Teachers College Press.

Fullan, M. G., & Stiegelbauer, S. (1991). *The new meaning of educational change* (2nd ed.). New York, NY: Teachers College Press.

Fultz, M. (2004). The displacement of black educators post-Brown: An overview and analysis. *History of Education Quarterly,* 44(1), 11-45.

Gehrke, R. S. (2005). Poor schools, poor students, successful teachers. *Kappa Delta Pi Record* 42(1), 14-17.

Gibbs, G. (2013). Reflection on the changing nature of educational development. *International Journal for Academic Development*, 18(1), 4-14.

Gibson, M. A., & Ogbu, J. U. (1991). *Minority status and schooling: A comparative study of immigrant and involuntary minorities.* New York, NY: Garland.

Gillborn, D. (2005). Education policy as an act of white supremacy: Whiteness, critical race theory and education reform. *Journal of Education Policy*, 20(4), 485-505.

Gillborn, D. (2008). *Racism and education: Coincidence or conspiracy?* New York, NY: Routledge.

Gordon, S. P., & Maxey, S. (2000). *How to help beginning teachers succeed* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Gorski, P. (2008). The myth of the culture of poverty. *Educational Leadership*, 65(7), 32-37.

Guinier, L., & Torres, G. (2003). *The miner's canary: Enlisting race, resisting power, transforming democracy.* Cambridge, MA: Harvard University Press.

Haberman, M. (1995). *Star teachers of children in poverty.* West Lafayette, IN: Kappa Delta Pi.

Haberman, M. (2011). The Beliefs and Behaviors of Star Teachers by Martin Haberman. Teachers.Net News Desk. Reprinted from http://educationviews.org, where it appeared on December 8, 2011. Retrieved from http://gazette.teachers.net/gazette/wordpress/editor/star-teachers

Henry, Annette, (2007). There's salt-water in our blood: The "Middle Passage" epistemology of two black mothers regarding the spiritual education of their daughters. *International Journal Of Qualitative Studies in Education,* 19(3), 329-345.

Hofstein, A., & Lunetta, V. N. (1982). The role of the laboratory in science teaching: Neglected aspects of research. *Review of Educational Research*, 52, 201-217.

Hunter, M. (2005). *Race, Gender, and the Politics of Skin Tone*. New York, NY: Rutledge.

Hurtado, A. (1996). *The color of privilege: Three blasphemies on race and feminism.* Ann Arbor, MI: University of Michigan Press.

Ingersoll, R. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499-534.

Janesick, V. J. (2007). Oral history as a social justice project: Issues for the qualitative researcher. *The Qualitative Report*, 12(1), 111-121. Retrieved from http://www.nova.edu/ssss/QR/QR12-1/janesick.pdf

Jeanpierre, B. **(**2007**).** Becoming an urban school middle-level science teacher. *The Journal of Elementary Science Education,* 19(1), 45-56.

Jonson-Reid, M., Davis, L., Saunders, J., Williams, T., & Williams, J. H. (2005). Academic self-efficacy among African American youths: Implications for school social work practice. *Children & School,* 27(1), 5-14.

Kagan, D. M. (1992). Implication of research on teacher belief. *Educational Psychologist*, 27(1), 65- 90.

Kansas Historical Society. (2004). *African American Teachers in Kansas.* Retrieved from https://www.kshs.org/kansapedia/african-american-teachers-in-kansas/11995

Koballa, T. R. (1992). Persuasion and attitude change in science education. *Journal of Research in Science Teaching,* 29(1), 63-80.

Kohn, A. (1997). Beyond discipline: From compliance to community. *Harvard Educational Review*, 67(3), 611.

Kopkowski, C. (2008). Why they leave: Lack of respect, NCLB, and underfunding—in a topsy-turvy profession, what can make today's teachers stay? *NEA Today.* National Education Association. Retrieved from http://www.nea.org/home/12630.htm

Ladson-Billings, G. (1998). Just what is critical race theory and what's it doing in a nice field like education? *International Journal of Qualitative Studies in Education,* 11(1), 7-24.

Ladson-Billings, G. (2009). "Who you callin' nappy-headed?" A critical race theory look at the construction of black women. *Race, Ethnicity and Education*, 12(1), 87-99.

Lewis, R. (1999). Teachers coping with the stress of classroom discipline. *Social Psychology Of Education*, 3(3), 155-171.

Leonardo, Z. (2002). The souls of white folk: Critical pedagogy, whiteness studies, and globalization discourse. *Race, Ethnicity and Education*, 5(1), 29-50.

Leonardo, Z. (2009). The color of supremacy: Beyond the discourse of "white privilege." In E. Taylor, D. Gillborn, & G. Ladson-Billings (Eds.), *Foundations of critical race theory in education* (pp. 261-276). New York, NY: Routledge.

Lunetta, V. N. (1988). The school science laboratory: Historical perspectives and centers for contemporary teaching. In P. Fensham (Ed.), *Development and Dilemmas in science education* (pp. 169-188). London: Falmer Press.

Mandella, Nelson. (n.d.). Quotation retrieved from United Nations, Education for all (EFA), at http://www.un.org/en/globalissues/briefingpapers/efa/quotes.shtml

Mansour, N. (2009). Science teachers' beliefs and practices: Issues, implications and research agenda. *International Journal of Environmental and Science Education*, 4(1), 25-48.

Maxwell, J. A. (2005). *Qualitative research design: An interactive approach* (2nd ed.). Thousand Oaks, CA: Sage.

McGinnis, J. R., & Stefanich, G. P. (2007). Special needs and talents in science learning. In S. K. Abell & N. G. Lederman (Eds.), *Handbook of research on science education* (pp. 287-318). Mahwah, NJ: Lawrence Erlbaum Associates.

Merriam, S. B. (2002). *Qualitative research in practice: Examples for discussion and analysis.* San Francisco, CA: Jossey-Bass.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: Jossey-Bass.

Mertens, S. B., & Flowers, N. (2003). Middle school practices improve student achievement in high poverty schools. *Middle School Journal*, 35(1), 33-43.

Milheim, K. L. (2006). Not just an access issue: Further analysis of the digital divide from a socioeconomic perspective. Retrieved from http://files.eric.ed.gov/fulltext/ED493474.pdf

National Center for Education Statistics. (2000-2001). Common core of data (CCD): Public Elementary/secondary school universe survey data (information on public schools and school districts in the United States). Retrieved June 24, 2003, from http://nces.ed.gov/ccd/pubschuniv.asp

National Center for Education Statistics. (2005). Common core of data (CCD): Public Elementary/secondary school universe survey data. Retrieved from http://nces.ed.gov/ccd/pubschuniv.asp

National Park Service. (2014). Brown v. Board of Education: National Historic Site, Kansas. Retrieved from http://www.nps.gov/brvb/index.htm

Nieto, S. (2003). *What keeps teachers going?* New York, NY: Teachers College Press.

Noguera, P. (2001). Racial politics and the elusive quest for excellence and equity in education. *Education and Urban Society,* 34(1), 18-41.

Oakes, J. (2005). *Keeping track: How schools structure inequality* (2nd ed.). New Haven, CT: Yale University Press.

Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307-332.

Patterson, J. T. (2001). *Brown v. Board of Education: A civil rights milestone and its troubled legacy*. New York, NY: Oxford University Press.

Patton, J. M. (1998). The disproportionate representation of African Americans in special education: Looking behind the curtain for understanding and solutions. *Journal of Special Education,* 32(1), 25-31.

Payne, R. K. (2003). *A framework for understanding poverty* (3rd ed.). Highlands, TX: aha! Process.

Pillay, V. (2011). White women speak, black women write: The politics of locution and location in the other researching the not other. *International Journal of Qualitative Studies in Education*, 24(6), 657-672.

Portner, H. (2005). Success for new teachers: Five reasons your school board should support induction and mentoring programs—plus three decisive actions you can take. *The American School Board Journal*, 192(10), 30-33.

Preble, L. (2014). Classroom overcrowding: It's not just a numbers game. Retrieved from http://www.teachhub.com/classroom-overcrowding

Public Agenda (2008). A mission of the heart: What does it take to transform a school? Prepared for the Wallace Foundation by Public Agenda. New York, NY: Public Agenda. Retrieved from www.publicagenda.org/files/missionheart.pdf.

Ready, D. D., Lee, V. E., & Welner, K. G. (2004). Educational equity and school structure: School size, overcrowding, and schools-within-schools. *Teachers College Record*, 106(10), 1989-2014.

Roberts, C. M. (2010). *The dissertation journey: A practical and comprehensive guide to planning, writing, and defending your dissertation* (2nd ed.). Thousand Oaks, CA: Corwin Press.

Russo, C. J., & Talbert-Johnson, C. (1997). The overrepresentation of African American children in special education: The resegregation of educational programming? *Education and Urban Society,* 29(2), 136-148.

Rutherford, F. J. (1964). The role of inquiry in science teaching. *Journal of Research in Science Teaching,* 2(2), 80-84. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/tea.3660020204/abstract

Saint Louis Board of Education. (1999). Missouri School Improvement Program Standards 6.1. Retrieved from http://sab.slps.org/Board_Education/policies/6140.htm

Sawchuk, S. (2014). Research detects bias in classroom observations. *Education Week*, 33(32), 1, 10-11. Retrieved from http://www.edweek.org/ew/articles/2014/05/13/32observe.h33.html

Siddle-Walker, V. (1996). *Their highest potential: An African American school community in the segregated south.* Chapel Hill, NC: University of North Carolina Press.

Sprick, R. S. (1985). *Discipline in the secondary classroom: A problem-by-problem survival guide.* West Nyack, NY: Center for Applied Research in Education.

Strawn, C. A., Fox, R. K., & Duck, L. (2008). Preventing teacher failure: Six keys to success in moving beyond the "sink or swim" mentality. *Clearing House: A Journal of Educational Strategies, Issues and Ideas,* 81(6), 271-277.

Tobin, K. (1990). Research on science laboratory activities: In pursuit of better questions and answers to improve learning. *School Science and Mathematics* 90(5), 403-418.

Tobin, K. (2001). Learning/knowing how to teach science in urban high schools. *Educational Horizons*, 80(1), 41-45.

Toppo, G. (2004, April 28). Thousands of Black teachers lost jobs. *USA Today*. Retrieved from *http://usatoday30.usatoday.com/news/nation/2004-04-28-brown-side2_x.htm*

Trei, L. (2004, April 21). Black children might have been better off without Brown v. Board, Bell says. *Stanford Report*, Stanford University. Retrieved from http://news.stanford.edu/news/2004/april21/brownbell-421.html

Walberg, J. (1981). A psychological theory of educational productivity. In F. H. Farley & N. J. Gordon (Eds.), *Psychology in education: The state of the union* (pp. 81-108). Berkeley CA: McCutchan.

Weinstein, C., Curran, M., & Tomlinson-Clarke, S. (2003). Culturally responsive classroom management: Awareness into action. *Theory into Practice*, 42(4), 269-276.

Wolcott, H. F. (2005). *The art of fieldwork* (2nd ed.). Walnut Creek, CA: AltaMira Press.