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This dissertation, **YOUNG BLACK MEN AND MATHEMATICS: EXPLORING CHANGES, INFLUENCES, AND PERCEPTIONS OF SOCIAL JUSTICE PEDAGOGY**, by **DEAN WILFRED POTTS**, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education & Human Development, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty.

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YOUNG BLACK MEN AND MATHEMATICS: EXPLORING CHANGES, INFLUENCES,
AND PERCEPTIONS OF SOCIAL JUSTICE PEDAGOGY

by

DEAN WILFRED POTTS

Under the direction of Dr. David W. Stinson

ABSTRACT

When it comes to “traditional” mathematics teaching and learning, teachers and students are often at odds about the purposes of mathematics. Teachers often think, “How do I get my students to value mathematics and become lifelong learners?”; whereas, students often think, “When will I ever use this?” Given that mathematics serves as a gatekeeper for admittance to postsecondary institutions and well-paying jobs (Stinson, 2004), the discrepancy between how teachers and students think about mathematics teaching and learning cannot be ignored. The purpose of this study, therefore, was to explore the effects (if any) of a social justice mathematics pedagogy (see, e.g., Gutstein & Peterson, 2006; Wager & Stinson, 2012) experienced by a group of six young African American male students who had experienced limited success in traditional mathematics classrooms.

The project was grounded in qualitative research methodology, rooted in an eclectic theoretical frame (Stinson, 2009) that included critical theory (e.g., Horkheimer, 1987) and critical race theory (e.g., Bell, 1992). Retrospectively, the participants were asked to reflect on their previous traditional mathematics courses and a mathematics course that was framed by social justice pedagogy. Critical theory provided a frame for describing how the participants understand culture and how they negotiate the oppressive forces they face. Critical race theory provided a frame to analyze how the discourses and discursive practices of race and racism

influence the participants' perceptions of social justice verses traditional mathematics pedagogy. An analysis of the findings suggest that teachers should reconsider the ways in which they approach mathematics instruction, specifically the relationship-building benefits of a social justice oriented mathematics curriculum. This study takes a glimpse into the daily lives and thoughts of six young African American men who share and reflect on relationships in their lives. These relationships shared and reflected on include family dynamics, institutional experiences, employment struggles, and mathematics engagement. Implications for mathematics and teaching and learning are discussed.

INDEX WORDS: African American male students, Critical race theory, Critical theory, Teaching mathematics for social justice

YOUNG BLACK MEN AND MATHEMATICS: EXPLORING CHANGES, INFLUENCES,
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DEAN WILFRED POTTS

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Degree of

Doctor of Philosophy

in

Teaching and Learning

in

the Department of Middle and Secondary Education

in

the College of Education and Human Development

Georgia State University

ATLANTA, GEORGIA
2020

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DEDICATION

I dedicate this dissertation to my loving and amazing wife, Leigh, and my children, Aidan and Ellie. Thank you all for the lasting support, patience, kindness, and taking this journey alongside with me. I would also like to dedicate this dissertation to Joanne, my mother in law. Thank you for your belief in me and your never ending trust that I would complete this journey. To my mother, June, who has been an example of what it means to be a lifelong learner and for suggesting 30 years ago that I should consider becoming an educator. And, finally to my father Wilfred. I hope I would have made you proud.

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I am truly grateful for the participants of this study who collaborated with me by sharing their thoughts, struggles, and dreams for their futures: Dwayne, Tony, Jeff, Calvin, George, and Nick, I learned a great deal from all of you and you continue to amaze me and remind me of the important role of being an educator.

I wish to thank the members of my doctoral committee, Dr. David Stinson, Dr. Deron Boyles, Dr. Stephanie Behm Cross, and Dr. Jay Wamsted for their encouragement, support, and scholarship. Furthermore, their critical readings and suggestions made this dissertation, I believe, a sound product of scholarship.

More specifically, I wish to thank Dr. David Stinson, my committee chair, for providing me the space to learn and grow as a human and as a novice education scholar. It was his teachings 10 years ago that opened my eyes to social justice education and thus helped me begin my journey to becoming a more reflective, caring, and engaging educator. He pushed me to write, re-write, and then write some more to produce a work of scholarship that fully expresses my passion toward education, the students I engage with, and social justice mathematics. Thank you David for not letting me “settle” and for helping me create a dissertation that I am most proud of—proud to share with my son and daughter.

I also wish to thank my friend and editor Doug Munro. Your endless editing (at times last minute), your willingness to meet in the early hours of the morning, your amazing memory, and your suggestions all helped me produce this work of scholarship. Dr. Stinson told me at the start of this journey that a dissertation is written not in isolation but rather with the support of family and friends; he was right, and I thank you for all your support and for your friendship.

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PREFACE

As I engage readers in this research study, I begin with the preface in context by sharing a personal experience I had in U.S. federal court years earlier. Next, I briefly explain my positionality and the contents of this research that focused on the implications of teaching mathematics through a social justice pedagogy. I continue with a detailed explanation of the different critical readers who reviewed and critiqued specific chapters presented here. I conclude the preface with an explicit closing explanation of the purpose of this research study.

Preface in Context

Fifteen years before beginning this study, I found myself standing in a U.S. federal courtroom facing a judge who was to decide if I would spend the next 5 years in jail and be fined up to \$30,000. It was when the bailiff said “All rise” that I realized I should have hired a lawyer. Listening to the two cases before mine, I soon understood that I was in over my head. Traffic court it was not:

Case 1: The attempted smuggling of endangered species pelts from Africa into the United States. A man was caught at a major airport trying to bring in two suitcases containing animal pelts that were on the endangered species list.

Case 2: Murder in the first degree. A man, who was shackled, dressed in an orange jumpsuit, and escorted by three police officers, was accused of killing his cell mate.

Case 3: Digging for/or the removal of U.S. Civil War relics from a national federal forest. A mathematics teacher was caught with a shovel in a national federal forest after burying his dog that was, earlier in the afternoon, sadly hit by a passing car.

Several months prior to this court meeting, I had been running with my dog in a national federal forest. A terrible accident happened during this particular run; my dog took off after a squirrel. After a short chase into the woods he wandered onto a nearby road and was struck by a car and killed instantly. I made a terrible decision during this emotional time. I went home, got a shovel, and buried my dog of 10 years in the forest that he loved.

After burying my dog, I was stopped by a park ranger who questioned why I was walking out of the forest with a shovel in my hand. I explained what happened and he said that he would need to confiscate my shovel, and that I would have to explain to his supervisor what I had done. One month later, I received a summons in the mail that landed me in U.S. federal court.

Although I was untrained and unprepared for federal court, the result of my case was significantly aided by a federal judge and a prosecutor who did not have the facts straight. The judge explained to the prosecutor that the charges filed against me were incorrect as there was no evidence that I was digging for civil war relics and, therefore, the charges were dismissed. I was considerably relieved, thanked the judge, and left the courtroom agreeing to never again bury anything in a federal forest. This case came down to my ignorance of federal law and a prosecutor who was not properly prepared for court.

.....

Similar to my day in court years earlier, following my dissertation defense presentation, I found myself unprepared for some of the initial questions that were posed to me that day. Let me, therefore, begin by defining my positionality. I am a White, male teacher in a nearly all African American/Black¹ urban high school in the southeastern United States. My research study

¹ The terms *African American* and *Black* are used interchangeably throughout this study to describe an individual of African descent who claims the “cultural identity” of the United States. Black is the more inclusive term, as it includes all Black people from the African diaspora.

focused on the effects that a social justice mathematics pedagogy had on a group of former Black male students. Because the student population I engage with at school is nearly all Black, the participants of this study were also all Black.

By birth, I am, and remain today, a Canadian citizen. I was raised in Toronto, Canada. My educational experiences leading up to post-secondary, were for the most part, entirely White experiences in both private and public school settings. I attended college on an athletic swimming scholarship (discussed in Chapter 4) in Cleveland, Ohio. This experience was the first time in my life I lived within a diverse (racial) population.

Upon completion of my university degree in the United States, I moved back to Canada and began my teaching career in Mississauga, Ontario, which was, and remains today, largely populated with immigrant families from India. After just a year of teaching in Canada, I moved to the southeastern United States where I began working in the school system that I continue to work today. The urban school system where I work is a predominantly Black school system with some racially mixed schools throughout the district. The school where I teach, however, tends to be more racially homogenous—nearly all students self-identifying as Black.

Although I understand the importance of research on White teachers of Black students it was never my intention to add to this body of research. Therefore, this study does not examine, attempt to explain, or analyze the teaching effectiveness (or lack thereof) of a White teacher. Instead, it examined the effectiveness and changes in agency of a group of young Black men who all experienced/participated in at least two social justice mathematics lessons (SJML).

That being said, it would be imprudent of me to pretend that “race” played no part in my research. My committee and I therefore took several steps to ensure that this research was sound and less blinded by the whiteness of me, the researcher, and the dissertation advisory committee.

The issues of an all-White committee were discussed at the prospectus defense (2 years earlier). At that point, there were three White members on the committee, one woman and two men. The plan was to bring a fourth member to the committee, preferably a Black man. Two different Black male professors were approached; both were not able to commit to joining the committee. To somewhat offset the limitation of an all-White committee, several steps were then taken to ensure a critical critique of the dissertation.

There were four critical readers of the dissertation who self-identified as Black/African American. Comments and critiques for the data representation and analysis chapter (Chapter 5) were collected from a Black male doctoral student (who is also advised by Dr. Stinson, the chair of my dissertation committee). Given that former Black male students were the participants of this study, it was important to have critical input from another Black male educator to ensure that I (nor the committee) was not unintentionally marginalizing or dehumanizing the participants' narratives through my (our) whiteness.

Additionally, two Black female secondary school counselors, both holding doctoral degrees, read and critiqued Chapter 5. One of the counselors also read and critiqued Chapter 6 in which I summarize and discuss the results of this study. Both counselors returned the chapters with their comments and critical critique. Having both school counselors at my school read over the selected chapters was another step in the review process that checked for positionality biases and to ensure that I was not marginalizing/dehumanizing the participants' narratives. Both counselors knew some of the participants, and before they engaged in their critical readings we discussed the importance of anonymity. Therefore, they both read through the fifth chapter with the descriptions of the participants omitted.

Finally, a third Black female teacher of Language Arts who also works at my school, read Chapters 1, 5, and 6. In addition to being a fourth critical reader, this teacher also assisted with the vernacular of the participants. Throughout the transcriptions of the participants' recorded interviews, I often consulted with her to ensure I was correctly capturing their "voices"—their language.

All the above critical readers were briefly mentioned at the defense yet perhaps each step that I took to provide a diverse critical read of the study was not explained in depth at that time. I was not fully prepared for the discussion of how my whiteness affected the analysis of this study. This study, as noted earlier, was about the effects of a social justice pedagogy and not a study of how to effectively teach a particular racial or ethnic group. Perhaps, the positive results from this study could spur further research into social justice mathematics and the effective teaching of minority or oppressed groups of students. As outlined in Chapter 6, I suggest further research to include other groups besides the current participants, such as African American girls/women, Latinxs/Hispanics, Asians, Indigenous people, Whites, poor/middle/wealthy economic classes, and so forth. This study was not a blueprint of how a White teacher could more effectively teach Black children. It is, however, about the reactions and reflections of a social justice mathematics pedagogy that six young Black men all participated in and reflected on.

I began the preface sharing a personal reflection of a prosecutor who entered a courtroom not prepared for the case that was about to be argued. Similarly, I entered my dissertation defense not prepared for the conversation that some members of the committee wanted to discuss. Yes, I am a White, male teacher in a nearly all Black urban school in the southeastern United States who conducted a study that examined the effectiveness of SJML had on a small group of former Black male students. My study, however, is about social justice mathematics

pedagogy and the stories of the six young men who participated in them. My scope may be limited; it is important, nonetheless.

Unlike the prosecutor that day in court, I believe my documentation presented here is in order; I take full responsibility however of wherever or whenever my whiteness blinds me in my retelling of my participants' stories. Nevertheless, I hope readers learn through the important stories I (re)retell here.

CHAPTER 1

THE PROBLEM AND BACKGROUND IN CONTEXT

In this chapter, I begin by contextualizing “the problem” by taking the reader through a personal teaching experience that led me to develop and implement a social justice oriented mathematics lessons. I then state the purpose of this study and the original research questions that guided the study initially. I conclude the chapter by outlining the rationale of the study and briefly discuss an additional research question that emerged, so to speak, once data were collected and analyzed.

The Beginning: It was Truly a Concrete Problem

In my fifth year of teaching at a secondary school in an urban setting, my classes were made up of 90% African American and 10% Hispanic students. Having begun my doctoral studies, I was eager to further develop my teaching skills with the intention to better prepare my students for post-secondary school. The school system’s administrators had instructed me to utilize the prepared problem-solving lesson developed by Carnegie Learning’s *Cognitive Tutor* (2003). The first lesson I tried with my students was titled *Move a Sand Pile*.

You are a materials handler for a sand and concrete firm. There is an enormous pile of sand, estimated to be 2,500 cubic feet (ft^3) that must be loaded onto a barge on the river. You have a bucket loader to transfer the sand to the barge. The bucket loader can pick up 5 cubic feet (ft^3) of sand in its bucket. (3-13)

After this short introduction, the following questions were asked:

1. How big is the pile of sand after:
 - a. 50 buckets have been transferred to the barge?
 - b. 200 buckets have been transferred?
 - c. 400 buckets have been transferred?
 - d. 600 buckets have been transferred? (3-13)

My first period class was already in groups and I had them begin the task while I circulated around the room. The first question a student asked, “What’s a barge?” After describing what a

barge was to blank stares and nods, I moved on to the next group, which asked, “What’s a barge?”

I stopped the class activity, and asked the students if anyone knew what the sand in the question was for? Many students suggested that the sand was going to be used to make a beach. Next, I asked the students what the name of the company in the question was. A student called out “Tom’s Concrete Company.” I then asked, “If the company is called Tom’s Concrete, what do you think the sand is for?” One student spoke up, “You can’t use sand in concrete because it’s too soft.”

In this brief exchange, I quickly realized that my students had no connection to this problem-solving task; they had no prior knowledge, they lacked the necessary vocabulary, and they were culturally and regionally at a disadvantage². Another student did not know what a bucket loader was. When I showed a picture of a bucket loader online another student recognized it immediately as a front-end loader. When I asked how he knew it by that name, he replied, “They used one to tear down our old [housing] projects.”

The students continued to get bogged down with the unfamiliar vocabulary and could not complete the mathematical questions or operations. “Why do they need a boat (barge) to put the sand on?” “Why do they need cement at the beach?” “The sand is going to the beach, right?” “Why does a barge not have a motor?” “Won’t the sand fall off the barge if it does not have sides?” Clearly, the barge and the use for the sand became the focus of the lesson and not the rate at which a 5-cubic-foot bucket would fill the barge.

²I am a white teacher who has been working at predominantly Black schools for the majority of my teaching career. I understand that my life experiences differ greatly from the students I teach, and I continue to self-evaluate my positionality in the classroom daily. This research study, as discussed in the preface, focused on the effects that a social justice mathematics pedagogy had on a group of former Black male students. Because the student population I engage with at school is nearly all Black, the participants of this study were also all Black. Although I understand the importance of research on White teachers of Black students, it is not my intention to add to that body of research with this research study.

The Middle: It's Snack Time!

The following day, I decided to engage the students in a similar task but took a different route to get there. I had the students read an article about the fast food industry being linked to the growing rate of obesity in the United States. After reading the article, the students had a short discussion about their reaction and how they felt it might affect their lives. This exchange was a lively discussion with nearly every student contributing to the discussion.

As a class, we took an informal survey to see which fast food restaurant they visited the most; a large national (and international) chain was selected as the most popular. Next, as a class we determined the average amount of money that was spent on each visit to the restaurant and the average number of visits per week. Our class spent on average \$6.35 per visit and ate at the fast food restaurant on average three times a week. The students then worked in groups to chart the number of visits over a 3-month period and the amount spent.

Each group created a linear graph showing the number of visits and the amount spent at the fast food chain, which mirrored the number of bucket loads (5 cubic feet each) being dropped on the barge. I mirrored the shrinking and eventually negative sand pile by having the students record their different income sources to afford to eat at the fast food chain. Then I changed the parameters of the question by restricting their income and increasing their visits. The groups soon discovered that their cash flow was going in the negative. I asked for solutions to their dwindling assets. I was impressed by some of their responses “Go with a friend and then you got them next time when you have been paid”; “You have to hit your friends up because grandma is not going to pay for no (fast food restaurant name).”

The End: Finally, Dessert

The students took this lesson and then extended it to the entire school. Surveys were developed, distributed, collected, and the data were analyzed. School wide charts and graphs were displayed showing the amount the student body spent at this popular fast food chain and the number of visits growing at a linear rate each week. To extend the lesson, linking back to the growing obesity rate in America to fast food visits article, I brought in a five-pound bag of sugar and asked the students to calculate how many visits to the fast food restaurant it would take to consume the entire bag. I also asked the students to calculate the amount of calories and fat found in the average meal, including dessert, at the fast food chain.

We were all surprised that it took less than six weeks to consume the entire five-pound bag of sugar. The number of calories during the period was in the tens of thousands and the amount of saturated fat was equally surprising. This lesson inspired the students to develop a healthy choice campaign at their school. Former self-proclaimed fast food addicts became the voices of health at their school. This lesson not only taught the students about linear regression, slope, and negative rate of change but also it taught the students about their own eating habits and their health.

The 2-day lesson that spread out like a big family picnic into a 2-month health project ended with the viewing of a documentary about healthy eating (Offman, Cross & Engfehr, 2010). Instead of popcorn, the students, working in groups, brought in healthy alternative snacks along with the recipes. This social justice lesson, based in mathematics, might not have changed the world but it did motivate a group of students to critically examine the fast food industry and make improvements to their diets.³

³ A brief description of all the social justice mathematics lessons referenced in this study can be found at the end of Chapter 4. A more in-depth description of the lessons can be found in Appendix F.

Paulo Freire (2000) argued, “The solution is not to integrate them [the oppressed] into the structure of oppression, but to transform that structure so that they can become beings for themselves” (p. 55). Looking through the thick rectangular window of my classroom door, would you observe a class of older teenaged students engaged in mathematics? Or, would educational philosophers like John Dewey, Paulo Freire, Gloria Ladson-Billings, and Eric (Rico) Gutstein see a class of oppressed students being led by a teacher who is re-enforcing that oppression? Teaching mathematics through a social justice lens was a concept that I had heard about, but it was not until I began my graduate studies that my eyes were opened, so to speak, to see that I, through my traditional ways of teaching, was part of a structure that was silencing the voices of my students.

Similar to many mathematics educators, my teaching practices reflected the teaching styles of my previous mathematics educators (Stingler & Heibert, 1999). Attending a private school in Canada for a significant portion of my education molded me into a math teacher who reinforced the teaching methods of the test-driven era that we find ourselves in currently. Drill and practice, teacher-lead lectures, and teacher demonstration followed by students repeating the same steps was my contribution, through a lack of knowledge, to the same traditional and oppressive mathematics pedagogy that I had endured (Stinson, 2009).

I was mistakenly thinking that these teaching methods were empowering my students with the knowledge of mathematics when, in reality, they were reinforcing oppressive forces of conformity, encouraging rote memory, and non-authentic learning. As a mathematics instructor, I never considered that I was employing what Freire (2000) strongly criticized as “the banking method of teaching” (p. 71). My teaching methods reflected those of my 10th and 11th grade mathematics teacher, Mr. Smith (pseudonym). Mr. Smith would put two or three different

mathematics problem examples on the board that the class would copy down verbatim. Then he would assign twenty to thirty problems for the students to solve on our own. The class was then expected to sit quietly and solve the numerous repetitive mathematics problems from the textbook. Thus, we, the students, became “receptacles to be filled” (Freire, 2000, p. 72) by the teacher, and the textbook.

This banking style of education is what impedes the intellectual growth of students by turning them into “collectors” and “receptors” of information that is passed out in narration style by the teacher. There is no true interaction between the teacher and student. The student is “merely in the world, not with the world or with others” (Freire, 2000, p. 247). After two consecutive years with Mr. Smith as my mathematics teacher I knew nothing of his experiences, struggles with mathematics, or personal journeys. He never once shared any personal narratives with his students or any injustices affecting the students or the world in which we lived. I never saw Mr. Smith as a person but instead as a person who I must comply with and please in order to pass the class.

This dichotomy between teacher and student does not lead to authentic learning. The narration model of teaching does not connect the student to the material being taught and does not create a bridge between the teacher and student. The student instead is “a person merely in the world” (Freire, 2000, p. 247) more of a spectator and not in control of their world or in a position to make effective changes to oppressive forces that act upon them. This perceived empty minded student is not considered a conscious person but instead a compliant person who does not question authority or institutional norms.

Never in my 20 years of teaching have I had a student return to my classroom and express their fond memories of the method in which I had taught completing the square or my

method to remember the quadratic formula through song. Yet, 2 and 3 years after I taught my first social justice mathematics lesson on the amount of sugar in fast food, many of my former students continued to return to my classroom to talk about the project. What was it that sparked the interest of that lesson in my students? Why do they recall that lesson and the mathematics taught along with it? What made that lesson different for these students?

Purpose of the Study

The purpose of this study was to explore the effects (if any) of a social justice mathematics pedagogy experienced by a group of six young African American/Black⁴ men. Specifically, six Black male high school graduates who participated in two or more social justice mathematics lessons were interviewed; their responses were analyzed through critical and critical race theoretical lenses.

Research Questions

The following three research questions were developed at the beginning of the research process:

1. What effects (if any) did social justice mathematics lessons have on the short- and long-term attitudes and agency⁵ of young Black men high school graduates?
2. How might a mathematics lesson taught with a social justice lens alter the environmental and world perceptions of young Black men?

⁴ The terms *African American* and *Black* are used interchangeably throughout this study to describe an individual of African descent who claims the “cultural identity” of the United States. Black is the more inclusive term, as it includes all Black people from the African diaspora.

⁵ Agency defined here means the participants ability to act independently and to make their own “free” choices. Choices that are somewhat free from limiting structures such as normalizing ethnic stereotypes, racism, gender, family, social standing, and so forth.

3. What reactions (if any) will young Black men, who experienced social justice mathematics pedagogy, have regarding their environment and agency after reading a social justice article addressing a present-day injustice?

Rationale of the Study

I developed each of the aforementioned research questions early on in the research process, believing that they would guide the project. I believed that the first research question, inquiring about my participants' attitudes and agency, would allow me to directly address what I determined to be the "research problem." This being the lack of students' mathematical engagement and achievement in too many mathematics classrooms; specifically, the lack of mathematical engagement and achievement of far too many Black male students. There are numerous research studies focusing on the failings of young Black men in education, yet after interviewing the participants in this study, hearing their stories, I hoped that these stories would bring awareness and inspiration to the education community of the importance of social justice oriented mathematics lessons.

In regard to the second question, my goal was to see if the social justice lessons themselves would change the way the participants viewed their environment and world. Often, when teaching a social justice lesson, it has been my experience over the last 9 years, that students rarely see or know the oppressive forces and prejudices that act upon them. One of the best side effects of teaching social justice lessons is that when students gather data and compare their own world to "other worlds"⁶ they, at times, come to realize that there is some level of inequality.

The final question was intended to examine the longevity that social justice lessons might have on a group of former students. The period of time between the interviews I conducted and

⁶ The term *other worlds* refers to other communities that differ from the community that the student lives in.

the time that the participants engaged in their social justice mathematics lessons (SJML) varied greatly between participants. I thought by having the participants read a current article about a SJML would help measure their level of engagement (if any) toward any present-day inequalities that might be acting upon them. However, exceedingly quickly into the study, it became evident that only a few of the participants wanted to engage in what they considered “schoolwork” and actually read the article. Although this third guiding question was kept for the study it was during the interview and on-going coding process that a fourth and perhaps more important research question came to light.

My fourth research question came about when I realized that I could not just limit my research to the participants’ SJML experiences. To better understand these remarkable young Black men, I also had to include their life experiences and relationships. Upon revisiting my original three research questions, I decided to add a fourth question:

4. How might the effects of a social justice mathematics curriculum influence a young Black man’s relationships, specifically, focusing on family, institutions, employment, and mathematics?

What started out as an academic inquiry into SJML opened a personal window into these six young men’s lives. The participants shared their intimate stories of relationships with family, work, and their daily life struggles. By adding a fourth research question that examined the complexity of these relationships the “voices” of my participants could be heard.

I started out this research with three guiding questions and soon discovered that these three questions would not fully give a voice to the participants. As Gustafsson and Hagstrom (2018) explained, “One of the greatest challenges for graduate students is how to come up with a clear rationale for their dissertation and thesis” (p. 645). By adding the fourth guiding question, the

voices of the participants were put first, and the lives of six remarkable young Black men can be properly and ethically heard and shared.

CHAPTER 2

LITERATURE REVIEW

In this chapter, I begin by providing a sketch of a SJML in which my students participated. The sketch is followed by a review of pertinent literature referenced throughout the study, splitting the chapter into two main sections: the first part focuses on social justice, the second part focuses on African Americans in education. The social justice section begins with a brief review of multicultural education, which leads to a literature review of social justice pedagogy. The social justice pedagogy review examines both social justice and mathematics education, concluding with brief overviews of the theoretical background and classroom practicalities of teaching mathematics for social justice (TMfSJ). I conclude the chapter with a brief overview of literature on the education of African Americans, and then specifically narrow the review to literature on male African Americans in mathematics.

Literature Review in Context

Riding the Bus

I never thought of losing, but now that it's happened, the only thing is to do it right. That's my obligation to all the people who believe in me. We all have to take defeats in life. Now it's my time to rise up and fight the injustice that is my loss to Norton.

–Muhammad Ali

When Muhammad Ali lost his first professional fight to Ken Norton in March of 1973, he summed up his performance in the aforementioned epigram. Educators, policymakers, and researchers have all experienced the same defeat when it comes to the education of African American male youth in mathematics. It is time for them to rise up and do it right.

While millions of students ride a school bus every day, the students at Benison High School (pseudonym, as are all proper names) did not have that option. Instead, the students rode

public transit city buses. Every day, two public buses pull up to the front of the school and take students on a non-stop express route to a train station approximately three miles away. This mode of transportation provides the students of Benison High School an avenue to get home; Benison is an Open Campus (i.e., alternative) high school and students come from all corners of the city.

In mid-March 2017, before the start of class, several students were talking about an incident that occurred at the train station where they were waiting for a train after school the previous day. There was a fight involving two students from another high school in the city and the transit police questioned several of the Benison High students.

The students felt it was unfair that they were detained and questioned when they were not involved in the fight. Trying to present one explanation for the action of the transit police officers, I asked them why they were even at that stop that was not on their normal route home. The students informed me that the express bus from school dropped everybody off at that station. This drop off did not seem rational, as there were closer stations to the school. Why would a bus take the students to that station? Why were the students detained and questioned when they were not involved in the conflict? Were they just at the wrong place at the wrong time? Was this incident another case of “juvenile delinquents” acting out? Or, were the students the recipients of unjust treatment and victims of the oppressive forces that attempted to control their movements after school?

Beginning the Fight

Centuries ago words were written to be a call and a spur to the faithful servants of Truth and Justice: “Arm yourselves, and be ye men of valor, and be in readiness for the conflict; for it is better for us to perish in battle than to look upon the outrage of our nation and our altar.”

–Winston Churchill

Instead of diving into converting exponents to logs, the planned lesson for the day, I asked the entire class, “Why do you think the school express transit bus drops you off at the Queens Train station?” There were only a few of responses: “It’s the closest” (most popular); “It’s the start of the red line”; “Its only two stops away from Union Station (pseudonym, and the main hub station for transferring trains); and my favorite, “The driver takes a break at the convenience store by the Queen Stop after he drops us off—his girlfriend works there.”

All responses were sound, but the students did not understand my outrage until I pulled up a map of the train system. One student pointed out where the school was and then the entire class noticed that the school express bus drove past two closer train stops than the Queens Train stop. Eventually, another student found a third station that was closer; initially, the bus would go away from Union Station, but it was less than a mile from the school.

The Knockout Punch

Everybody has a plan 'till they get punched in the mouth.

–Mike Tyson

I asked the students again why the bus drops them off at Queens Station when there are three closer stations. None of the students had any ideas. That day on the bus ride home, one student even asked one of the bus drivers why they went to Queens Station, he replied: “That is where I am told to take you, so I do.” It was time for the students to gather information and some data. The students split into groups of threes and fours and visited the closer stations to make some observations and gather data. When the students met as a class again the groups shared their findings.

The group who visited the closest station, Parks Station, reported that it was empty but clean and orderly. They could only stay for a few trains passing though as a transit employee told

them that they had to either leave or get on a train. They could not “hangout.” When they tried to explain that they were there for a class project, she told them to leave or she was calling the transit police.

The group who visited the next closest station, Scotty Station, did not have anyone tell them to leave but a transit police officer did stand by them the entire time they were in the station. “He stared at us daring us to do something,” Michael reported back to class; “He probably thought we were there to steal from the people.” The last group, at Pond Station, did not report any transit employee or police officer observing them while at their station. They did notice how busy their station was with “a bunch of White folk,” explained Shay. All three of the groups reported back that the traffic heading out of the city was mostly White people. The group at Pond Station noticed that everybody who got off the train was White and dressed in business suits.

The entire class was surprised that the radical makeup of the train riders was significantly different than they were used to seeing. The students traveled into the city after school on an express bus that took them to a train stop near the center of the city. They would then board the train from a platform that was two stops away from where the majority of business riders boarded outgoing trains. It did not take long for the students to figure out that they were taken from the school on an express bus not to the nearest train station but to the nearest train station in a predominately Black neighborhood.

The Recovery

Get up off dat mat, gon brush your shoulders off.

After collecting the data at the different train stations, the students mapped out three more efficient routes that the express bus could take. The students then calculated the amount of savings in natural gas (type of fuel consumed by the buses), wear and tear on the buses per school year with the reduction in daily miles, the amount of time that would be saved by the driver due to the shorter routes, and the cost in hours that would be recovered for the drivers due to the shorter routes.

The next step that the students decided to take (with some prodding by me) was to draft and mail five letters to various officials in the local and state government transportation authorities. The letters outlined the potential savings and asked for an explanation as to why the students from a predominately Black high school were shuttled past three closer predominantly White train stations.

The Post Press Conference

The students never received a response or explanation.

Social Justice and Education

Engaging students in mathematics in the current high stakes testing environment requires teachers to be creative. Teachers must develop lessons that connect students to their cultures and environments, creating a deeper understanding of mathematics, and aids students in understanding the power of mathematics (Kersaint, 2015). According to Felton (2010), teachers need to be educated to create “more equitable and just classrooms” (p. 91). Teachers need to engage students in mathematics that affect their world and challenge them with rigorous lessons which address equality and social justice. Felton suggested that teachers need to be trained in creating effective social justice lessons and called for higher educational institutions to re-

envision mathematics teacher education to prepare teachers for a more diverse population of students and creative curriculum.

No Child Left Behind Act (2001), Quality Core Curriculum (Georgia Department of Education, 2018), Common Core State Standards Initiative (National Governors Association Center for Best Practices and Council of Chief State School Officers, 2010), and the Georgia Performance Standards of Excellence (Georgia Department of Education, 2014a) are the latest national and state education initiatives to have been introduced in Georgia. Most students in the state have not experienced success with the mathematics curriculum that accompanied these initiatives. For example, according to the Georgia Department of Education (GaDOE) a majority (58%) of Georgia students who took the Coordinate Algebra test under the Common Core initiative in the spring of 2017 failed the test (see <http://www.gadoe.org>). Several of the 15 school districts in the metro area had failure rates above 50%, including Atlanta Public Schools (79%), Clayton County (74%), and DeKalb County (70%).

With such poor results, one might ask: Who does standardized testing serve? The students or private companies in the publishing and testing industry? According to Arce, Luna, Borjian, and Conrad (2005), “the most prominent profit-makers from No Child Left Behind are the educational publishing companies, whose subdivisions develop standardized tests” (p. 58). Mathematics educators cannot depend on politicians or private companies to solve the issues in education today. Saltman (2016) echoed this sentiment that corporations are profiting from standardized testing in schools. He claimed—

educational publishing corporations and media corporations in the United States have been converging, especially through the promotion of standardization, testing, and for-profit educational technologies. Media and technology companies—including News Corp, Apple, and Microsoft—have significantly expanded their presence in public schools to sell hardware and curriculum products such as tablets and learning software aligned with the Common Core State Standards. (p. 105)

Arce and colleagues (2005) suggested that educators need to be critical educators and stand up against initiatives such as No Child Left Behind. Educators need to align themselves with progressive groups to combat political and private corporate driven curriculum initiatives that do not have all students' interest in mind. Educators today need to seek creative and “alternate ways to restructure public education for the advantage of students who do not belong to the dominant class” (2005, p. 69).

A school system that is using standardized testing in a student supportive way is The San Diego Unified School District. This district is using standardized tests to identify students' content deficiencies and informing teachers in a timely manner rather than using the test as a “grade” for students or “rank” for teachers. Using this technique, Betts, Hahn, and Zau (2017) found that students experienced about a 4% growth in testing from one year to the next. This average growth was found across third, eighth, and tenth grades; they specifically reported, “math teachers actively used test results to help their students to improve in areas revealed by the tests as areas of weakness” (p. 61). Perhaps Randi Weingarten, president of the American Federation of Teachers, said it best during an interviewing on MSNBC, she explained: “Common Core standards should be a guide, not a straitjacket” (Weingarten, 2014). When asked about the effectiveness of standardized testing she expressed discomfort in how the tests were being used for teacher evaluation and noted, “teachers and community members who are turning away from market-based reforms like high-stakes testing are charting a new course for public education” (Weingarten, 2014).

Multicultural Education

One way to develop progressive and alternate curriculum is through multicultural education. Sleeter (2018) explained, “multicultural education is more than a set of strategies or

curriculum content, although it certainly includes these. It is also a site of struggle for the power to define the purposes and processes of education in a diverse and unequal world” (p. 6). She further explained that multicultural education can be an avenue that leads to increased social awareness toward issues such as increased anti-immigration, cross cultural marriages, gay rights, and differences in social and religious beliefs. Traditional pedagogy does not address these issues. Multicultural education can help students understand these issues and cultural differences, assisting students to “interact and interchange differences between minority students and white students” (Sleeter, 1995, p. 84). Banks and Banks (1995) explained that multicultural education is instrumental in a fairer pedagogy and that as a field of study it can create equal educational opportunities for “students from diverse racial, ethnic, social-class to fully participate and engage in a rich multi-cultural education” (p. 12). Banks and Banks further explained that one of the important goals of multi-cultural education is to—

help all students acquire the knowledge, attitudes, and skills needed to function effectively in a pluralistic democratic society and to interact, negotiate, and communicate with peoples from diverse groups in order to create civic and moral community that works for the common good. (p. xi)

Banks (1996) identified five distinct dimensions of effective multicultural education: content integration, knowledge construction process, prejudice reduction, equality pedagogy, and empowering school culture and social structure.

Content integration: Content integration is the extent to which the curriculum integrates information from the varied cultural backgrounds that are present in a school. In other words, educators in their respective schools must utilize the diverse cultural and social issues that the school’s student population embodies.

Knowledge construction process: The knowledge construction process encourages students to investigate not only the creation and process of knowledge but also how knowledge

production is influenced “by the racial, ethnic, and social-class positions of individuals and groups” (Banks, 1996, p. 4). Connecting students’ cultural backgrounds is not simply having ethnic food at a social event or bringing in your grandfather’s cane carved from a wood native to his country; the connection must be authentic such that real and current issues of cultural oppression are explored in the content integration.

Prejudice reduction: Prejudice reduction involves actions to reduce students’ prejudice toward others from different racial, ethnic, and cultural groups. When teachers engage in a diverse pedagogy that better represents the demographics of a school’s student body, students can experience more positive and democratic engagements with others. This potential authentic engagement can build trust between all stakeholders and allow for sensitive and candid dialogue to occur. This engagement can create a safe environment for engaging investigations that can connect the learners to a richer curriculum.

Equity pedagogy: Equity pedagogy engages culturally responsive teaching that aims to raise students’ performance through a diverse curriculum. Culturally responsive teaching occurs when teachers enter into an “ethical, emotional, and academic partnership with diverse students, a partnership that is anchored in respect, honor, integrity, resource sharing, and a deep belief in the possibility of transcendence” (Banks, 1996, p. 52).

Empowering school culture and social structure: Effective multicultural education focuses on empowering school culture and examining the social structure. Nieto (2009) placed greater emphasis on this last aspect, describing multicultural education as an entire school reform. She explained that multicultural education challenges and rejects “racism and other forms of discrimination” (2004, p. 345). Multicultural education is a departure from the totalitarianism style of teaching and embraces the pluralism of communities. With greater ethnic,

racial, linguistic, religious, economic, and gender diversity in neighborhoods it is important that local schools' pedagogy reflects these diverse neighborhoods.

Summary of Multicultural Education

Nieto (2009) understood the importance of the local school reflecting the surrounding neighborhood. Multicultural education encourages the school's curriculum and instructional strategies to embrace student diversity, culture differences, and helps create a socially just environment. Thus, developing a critical pedagogy that focuses on "knowledge, reflection, and action (*praxis*) as the basis for social change" thus "multicultural education promotes the democratic principles of social justice" (p. 68).

Paul-Binyamin and Haj-Yehia (2019) explained that enriching a curriculum with multicultural lessons is not enough to ensure students engage in critical thinking. They suggest an "encounter between cultures" (p. 258) where students can gain both knowledge and cultural wealth. Teachers must create an "egalitarian experience" (p. 258) in the classroom through respect of cultures, developing students' equal rights, creating equal opportunities, and utilizing social justice practices.

Many researchers who have critically evaluated multicultural education have suggested that multicultural education has minimal effects on issues in current education (e.g., May, 1999). They claimed that minority students are "still sacrifices of racial prejudice" (p. ix) and "get less educational opportunities and attentions" (p. ix). School curriculum and activities often are monocultural (see, e.g., Davidman & Davidman, 1997; Levinson, 2009; May, 1999; McLaren 2002; & Ramsey 2004) and do not focus on fundamental issues causing oppression and inequality to groups of people.

Ladson-Billings and Tate (1995) claimed, “current practical demonstrations of multicultural education in schools often reduce it to trivial examples and artifacts of cultures” (p. 24). The idea of an inclusive education does not always promote high challenging academic lessons. They also noted: “[The] ever-expanding multicultural paradigm follows the traditions of liberalism—allowing a proliferation of differences. Unfortunately, the tensions between and among these differences are rarely interrogated [into the classroom]” (p. 61).

Gay (2002) explained that many curricula oppress minority students and fail to solve underachievement because the policy makers themselves are strongly influenced by their own history and cultural prejudices. She noted that the majority of curricula in the United States allows middle class European American students “the right to grapple with learning challenges from the point of strength and relevance found in their own cultural frames of reference” (p. 113). Minority students, however, have been expected to “divorce themselves from their cultures and learn according to European American cultural norms” (p. 114), creating a failing double jeopardy for these minority students as they have to master a culturally oppressive curriculum while trying to function in cultural conditions unfamiliar to them. Educators need to adapt their pedagogical methods and introduce a curriculum that is culturally relevant to all students.

Social Justice and Pedagogy

Adams, Bell, and Griffin (2007) believed that in “an increasingly abrasive and polarized American society...social justice pedagogy (could) play a constructive role in helping people develop a more sophisticated understanding of diversity and social group interaction” (p. xvii). They further explained that social justice is both a goal and a process. The goal of social justice is “full and equitable participation of people from all social identity groups” (p. 3). The process that is needed to attain the goal of social justice should be, according to Adams and colleagues,

“democratic and participatory, respectful of human diversity and groups’ differences, and inclusive and affirming of human agency and capacity for working collaboratively” (p. 4). It is important for the group to create a “power with” that comes from the group and not a “power from” that is dictated to the group. Social justice pedagogy “embraces the idea that social identities such as race, class, and gender exist intersectionality” (Shinew, Floyd, McGuire, & Noe, 1995, p. 78). The social identities that people use to identify themselves do not act independently toward the individual but rather interact within a community of individuals and social norms. This “intersectionality,” in addition to being a defining source of an individual’s social, racial, religious, and sexual identity, also becomes a source of systematic oppression that often acts on individuals and is exerted by individuals. Awareness and identification of this intersectionality is an important step when developing and planning social justice pedagogy (Shinew et al., 1995).

Ginwright and Cammarota (2002) explained that social justice pedagogy “pays particular attention to the relationship between critical consciousness and social action” (p. 87). They suggested that critical consciousness is when the learner becomes aware of how “institutional, historical, and systemic forces limit and promote the life opportunities for particular groups” (p. 87). This understanding of critical consciousness parallels Freire’s (2000) term *conscientizacao*. Freire argued that people can only “know” that they can control their future if they act or directly engage the current conditions that affect and oppress their lives. Thus, *conscientizacao* is an “awareness that the contents of people’s day to day lives are not immutable facts of reality” (p. 47). Freire believed that a critical (or social justice) pedagogy that engaged individuals in *praxis*, or social action, would free individuals from oppressive states. Social justice pedagogy works

best when *conscientizacao* (critical consciousness) and *praxis* are balanced together to create an educational pedagogy that can promote informed action for and by the students and teacher.

Dagkas (2016) noted that social justice education will point out the advantages that one group enjoys over another, especially when there is a ruling mono-culture that promotes less opportunities for the disadvantaged culture. He further explained, “if we are to address existing inequalities in society, practitioners and researchers need to move away from pedagogies that are reflective of monocultural (white, middle class families) perspectives to avoid further marginalizing the ‘others’ outside of the monoculture” (p. 224).

Similarly, Gandin and Apple (2002) observed that the role of pedagogy in all countries should be to develop citizens who are “empowered” and the institutions of education should generate “structured forms of ‘educating’ communities for organizing around and discussing their problems and for acting on their own behalf through these channels of participation and deliberation” (p. 38). When student diversity is interwoven into a social justice rich curriculum, students can become connected to the curriculum and empowered agents for change.

A social justice pedagogy as explained by Malcolm X and Breitman (1966) can create well-rounded learners who do not follow “blindly the traditional path of archaic institutionalized education” (p. 51). Instead, it can empower a marginalized group of people. “One of the first things I think young people, especially nowadays, should learn is how to see for yourself and listen for yourself and think for yourself” (p. 51). Malcolm X realized that the integration of workplaces, educational institutions, and governments was not an easy solution. He believed that a social justice pedagogy should be developed with three main components: the recognition of oppression, the identification of oppression, and the action to expose and eliminate oppressions that affect marginalized groups of people. He stated: “We have to keep in mind at all times we

are not fighting for integration, nor are we fighting for separation. We are fighting for recognition as free humans in this society” (X & Breitman, 1966. p. 51).

Pratt-Clarke (2013) used a transdisciplinary applied social justice (TASJ) model to create a praxis that uses social justice concepts to help empower young African American women. Her TASJ model examined the “narratives, life stories, and the discourse of individuals” (p. 101) over several different disciplines. Similarly, Harvey (2009) suggested that when developing social justice pedagogy, it should be “initially approached as if the social and moral philosophy is a distinct field of enquiry through which absolute ethical principles can be laid down” (p. 14). This philosophy can then be applied throughout all disciplines and used to analyze events and forces that act upon oppressed individuals.

All the aforementioned definitions and/or conceptualizations of social justice include some form of personal recognition of oppression. Social justice education can be found in several disciplines: from the medical education field (e.g., Ambrose, Andaya, Yamada, & Maskarine, 2014), social studies (e.g., Lee, Menkart, & Okazawa-Rey, 1998; Wade, 2007), visual arts (e.g., Dewhurst, 2014), language arts (e.g., Luke, 2004), and mathematics (e.g., Gutstein, 2003). For instance, The World Health Organization (WHO) has included social justice in many of their project statements. The WHO (2014) felt that social justice begins by recognizing that (a) health is a fundamental human right, and (b) gross inequalities in health care are politically, socially, and economically unacceptable.

Ambrose and colleagues (2014), in their project exploring social justice pedagogy in medical education, noted that the “student-driven development of social justice programs provide a unique learning opportunity for both instructors and participants” (p. 244). Pre-med students and in-residency doctors worked together to critically define what equal access should look like

and then presented their findings to the hospital administration. Changes occurred in five of the seven research sites and all the participants reported coming away with “a greater understanding of who we serve and how to examine the procedures and policies of our institutions” (p. 248). Their student-driven program allowed the students and instructors to “identify their own needs, define their education, and determine their respective paths of social justice” (p. 245). This project demonstrated the important role that social justice pedagogy can play in creating equality in health care.

Lee and colleagues (1998) used social justice pedagogy to change the way social studies is approached from a historical and traditional approach toward holidays and reported historical facts. They developed a guide for teachers to “analyze the roots of racism, investigate the impact of racism, and examine the relationship between racism and other forms of oppression” (p. ix.). One investigation questioned the numbers and significant contributions of Europeans to the expansion of the western United States during the 1800s. It is widely taught through different social studies curricula and social studies textbooks that European settlers moved to the west and developed the land. What is often left out of the textbooks is the significant contributions that non-Europeans had in developing and settling the western United States. For instance, over 63,000 Chinese immigrants had settled in the west by 1835, their labor was used to construct the transcontinental railroad, but their contributions, experiences and the injustices directed toward them have been largely unreported (Chen, 2015).

Dewhurst (2014) used social justice pedagogy to engage students in activist art. By examining traditional art through suggested “frameworks for activist art making” (p. v) students are provided multiple lenses to analyze their social activist art projects. To illustrate, Dewhurst shared the narrative of a student he had questioned on the idea of social issue art:

Dewhurst: “Why might (an) artist make works of art about social issues or problems?”
Student: “To show a different way ... with art you can express it through different views”
Dewhurst: “Why would an artist want to do that?”
Student: “Because some voices are not heard.” (p. 8)

Art can be another avenue for students to make political statements and engage in struggles, injustices, and oppressions that are present in current society (Dewhurst, 2014).

Similarly, both Luke (2004) and Tierney (2006) believed in a “back to basics” literacy environment where literacy teachers encourage students to advocate for social justice and engage in activities for change in local and global communities through writing activities. Wenger, McDermott, and Synder (2002) encouraged higher institutions of learning to include social justice education in all subject areas to assist pre-service teachers in conceptualizing traditional educational settings as an area of overlapping cultures and diverse experiences to be utilized in the daily pedagogy (see Wenger, 1998).

White, Miles, Frantell, Muller, Paiko, and LeFan (2019) look at how doctoral psychology training programs could better serve a diverse society by including “socially just” group therapy training. They suggested that psychologists must possess “competencies to address social injustices and inequities (e.g., systemic racism) that may relate to clients’ presenting concerns” (p. 180). They stressed the importance for doctoral students to become “social justice advocates” and have this as a part of doctoral training. They agreed that in order to build social justice competencies in psychology training programs there was a “need to expand beyond the single multicultural counseling course model and infuse multicultural and social justice competencies into all domains of training” (p.181), including group work. White and colleagues studied the results of group facilitators who were trained in Intergroup Dialogue (IDG) which is a group intervention that brings together people from social groups with a “history of conflict (e.g., people of color and White people) for sustained, face-to-face communication” (p.181). They

claimed that when IDG was included in doctoral training programs their facilitators reported that they felt better prepared with—

skills for facilitating diverse groups and working with often challenging social justice topics (e.g., privilege and oppression) in groups. For our facilitators, their training afforded them the chance to implement social justice principles, like sharing power with members in the group. Several participants discussed learning how to operate within the group as both a facilitator and a group member with equal status. (p. 188)

Understanding the power that one person can hold over a group can drastically change the potential positive results. Working with disadvantaged groups and not over them may bring better results and pave the way for authentic change and learning.

Social Justice and Mathematics

This final part of the social justice literature review is split into two parts. The first focuses on the theoretical background of TMfSJ, the second on the practicalities of social justice lessons in-side and out-side of the classroom.

Theoretical Background

The phrase “social justice mathematics” became popular nearly a decade and a half ago with Gutstein’s (2003) *Journal for Research in Mathematics Education* article. Gutstein used Freire’s (e.g., 2000) writings to both argue and demonstrate that mathematics was a resource to create a pedagogy that encouraged social change. Gutstein (2006a) later clarified his two main ideas behind social justice mathematics: one uses mathematics as a tool to teach and learn about social issues and economic injustices; the second engages students in learning complex mathematics in and through exploring social and economic injustices.

Nearly two decades earlier, however, Frankenstein (1983) was the first in the United States to integrate Freire’s (2000) critical pedagogy into mathematics education. She argued and demonstrated that teaching mathematics can raise students’ critical awareness through reasoning

and through questioning issues that are pressing in students' lives. Frankenstein (1990) further explained that mathematics can promote social justice by “asking mathematical questions related to social issues and sharing the data with others to raise awareness on social issues” (p. 338).

Increasing awareness on social issues is the root of the definition to Skovsmose's (1994) term *mathemacy*.⁷ Skovsmose made clear that *mathemacy* means more than just solving problems. It has to be—

rooted in the spirit of critique and the project of possibility that enables people to participate in the understanding and transformation of their society and, therefore, mathemacy becomes a precondition for social and cultural emancipation. (p. 27)

Skovsmose noted that mathematics education should “guide students to develop a critical understanding of mathematics because of its important role in society” (p. 198). Mathematics becomes not only a source for decision-making but also empowers the students and encourages them to take social action. When mathematics educators teach students to become critical thinkers, then mathematics becomes an essential tool for democracy (see, e.g. Frankenstein, 1983; Gutstein, 2006a; Skovsmose, 1994).

Students engaging in social action and students examining their lives through critical mathematics are all beneficiaries of social justice lessons in mathematics. Gutstein and Peterson (2006) interpreted five main benefits that students can gain from critical mathematics instruction through social justice issues:

(1) Students can recognize the power of mathematics as an essential analytical tool to understand and potentially change the world. (2) Students can deepen their understanding of important social issues. (3) Students can connect mathematics with their own culture and community. (4) Students can understand their own power as active citizens in building a democratic society. (5) Students can become more motivated to learn mathematics. (p. 2)

⁷ Skovsmose, in 1985, coined the term “critical mathematics” in the European context. It refers to “mathemacy,” which parallels critical literacy for mathematics. Mathemacy consists of three components: mathematical knowing, technological knowing, and reflective knowing. It is specifically the third component that makes this approach to mathematical literacy a critical one.

Gutstein (2003) believed that social justice pedagogy could benefit marginalized and underrepresented groups of people. He used “mathematics to make sense of and learn about issues that were important and relevant to [students’ and teacher’s] lives and communities” (p. 66). Gutstein further explained, “an important principal of a social justice pedagogy is that students themselves are ultimately part of the solution to injustice, both as youths and as they grow into adulthood” (p. 39). Thus, students who engage in social justice pedagogy are more connected to the lessons, connected to the mathematics, and connected to the solution of injustice:

Although not all [the students] loved math, virtually all understood that mathematics was a tool not only to solve both realistic and fanciful, sometimes enjoyable, problems in a book, but it could also be used to dissect society and understand inequality. For the most part, they believed themselves capable of using mathematics to better understand social inequalities. (p. 67)

D’Ambrosio (see Namukasa, 2007) and Ladson-Billing (2011) both explained how mathematics is a gatekeeper to higher-level courses and grants easier access to higher education. D’Ambrosio further postulated that throughout history mathematics has driven the development of technological, industrial, economic, and political institutions. He placed the responsibility of this development squarely on the shoulders of mathematics educators, noting, “mathematics educators are deeply involved with all the issues affecting society” (as cited in Namukasa, 2007, p. 38). Mathematics educators have the responsibility to advance mathematics education and include all students to help them learn how to survive with dignity by tackling some of the most challenging social injustices facing them in society today. D’Ambrosio further explained:

We have to look into history and epistemology with a broader view. The denial and exclusion of the cultures of the periphery, so common in the colonial process, still prevails in modern society. The denial of knowledge that affects populations is of the same nature as the denial of knowledge to individuals, particularly children. (D’Ambrosio, as cited in Namukasa, 2007, p. 35)

Similarly, in the foreword to Kevin Kumashiro's (2004) book *Against Common Sense: Teaching and Learning Toward Social Justice*, Ladson-Billings noted, "teaching towards social justice does not mean teaching the better curriculum or the better story; rather it means teaching students to think independently, critically, and creatively" (p. xix). Kumashiro explained that mathematics standards are one way that schools can "involve preparing students to succeed in whatever context they find themselves, including contexts that privilege and value the dominant narratives" (p. 123). He stressed the importance for schools to not "uncritically teach to standards" (p. 123), but to examine them critically and develop a social justice pedagogy that can be connected to "real-world" situations.

Stocker (2007) argued that the importance of engaging students in social justice mathematics pedagogy was twofold. First, social justice pedagogy is a means to teach "key mathematical skills" to students (p. 11). Second, social justice pedagogy provides students with content that captures and increases their interest in justice, fairness, and kindness, replacing "purposeless content that furthers no student's ability to engage with their social reality" (p. 11). Ernest (2007), on the other hand, provided a philosophical argument for social justice mathematics pedagogy. He argued given that social justice issues and ethics is a branch of philosophy which need to be examined in the philosophy of mathematics teaching and learning, social justice lessons can challenge traditional, absolutist philosophies of mathematics and have powerful social implications.

In his 2007 article "Why Social Justice?", Ernest explained that "teaching and learning mathematics is a social process" (p. 584) that requires the teacher to bring out the best in students. The teacher therefore has a "responsibility to develop and improve each and every learner, and needs to be sensitive to the varying needs and circumstances" (p. 586) of those

learners. He noted that it is important that each student receive fair treatment and equal distribution of educational resources. Ernest concluded with the idea that “all [students] should be given education according to their needs and not according to their ability to pay” (p. 585) or how well they can successfully navigate the educational system.

On a similar note, Gregson (2013) considered that mathematics and mathematics education are not neutral activities and thus cannot “guarantee equitable opportunity or a voice for all” (p. 5). Teaching social justice in mathematics seeks to “broaden equity goals beyond significant mathematical learning for all groups to include the development of skills for fighting systemic oppression” (p. 3). The struggle for marginalized students and groups to push against this systemic oppression emphasizes the need for a mathematical pedagogy that “prepares students for success in the existing educational system while simultaneously preparing them to question and ultimately change that system to make it more equitable” (Gutiérrez, 2008, p. 3).

Kilpatrick (2013) noted the importance of a more equitable and just way of instruction by suggesting that infusing social justice themes into curriculum was simply not enough. Pedagogical and curricular decisions related to teaching mathematics along with social justice themes required the social justice mathematics educator to “become productively self-critical” (p. 173). A critical awareness was needed in order to stay true to the educators’ ideology of social justice. Kilpatrick encouraged mathematics teachers to become critical foxes explaining that successful foxes know many hunting methods that are required for survival as opposed to a hedgehog or mono hunter that knows just one big hunting method.

Panthi, Luitel, and Belbase (2018) conducted a study that explored the perceptions of teachers and the role that social justice themes played in their classrooms. Through in-depth, semi-structured interviews they captured the opinions of three mathematics teachers about the

roll that social justice plays in mathematics classrooms at three different public secondary schools in the capital of Nepal. Their findings suggested that “teachers should manage classroom environment[s] by asking questions equally to all students in the classroom so that students feel equality among each other” (p. 28). They noted that the teachers all faced challenges to “transform students’ thoughts about themselves as a member in a learning community” (p. 29) and not just a passive learner. Panthi and colleagues (2018) explained that each teacher stressed the importance of equality and caring for their students by creating a safe and judge free learning environment. They explained that the teachers:

Perception[s] of social justice through mixed grouping and sharing [of] their culture in a respectful environment is an important aspect of equity. This kind of action may lead to reducing the perceptual and performance gap among students in mathematics classroom (p. 29)

Thus, the teachers’ awareness and actions to promote equality, equity, fairness, social processing, and caring for students and their needs can create a more socially just learning environment.

Practical Applications

Educational institutions are largely set up to grant access to students who can operate within the system. Being a “good student” traditionally starts with quietly sitting in your seat and taking notes without being prompted. Students who self-motivate are one step ahead of the pack. Subjects such as social studies and language arts can, at times, be biased toward the view and opinions of the authors or publication companies (see Chen, 2015; Lee et al., 1998). Often it is said that mathematics is a neutral subject. With a focus on numbers, computation, and formulas there are no cultural influences on mathematics. Unfortunately, the mathematics curriculum in the United States is mostly derived from traditionally White male culturally dominate Europeans,

therefore “students from non-European backgrounds may believe that only European cultures have worked with and are capable of working with mathematics” (Shirley, 1995, p.33).

Students from non-European cultures may find “the mathematics learned in school irrelevant to their lives” (Shirley, 1995, p. 34). According to Davidson and Kramer (1997), “when students experience the mathematics in a classroom as not relating to them or their culture, they may feel invisible and unconnected with the content” (p. 139). Compound this feeling with the incorrect thinking that mathematics “is neutral, gender free, and beyond the realm of multicultural education” (Ladson-Billings, 1997, p. 698) and the perceived “objectivity” of mathematics quickly becomes bias.

Traditionally, mathematics education has been considered a privileged space for males. Ernest (1998) explained the necessity of a more just curriculum in mathematics to challenge the male domination of Western culture:

Success at dehumanized male mathematics may diminish our humanity, our ability to care, relate and feel. Sustaining the inferiority of ethnic minority groups and women through this view of mathematics does symbolic violence to all, and subtracts from our integrity as human beings. (p. 279)

Learners must be engaged in a mathematics pedagogy that is culturally relevant and connected to their experiences and explores solutions to current social issues.

According to Nolan (2009), a social justice pedagogy lends itself easily to mathematics. She explained that the social justice style lessons often use data gathering as a method to gather evidence against any injustice. Gathering, analyzing, and presenting data about social justice issues can replace often non-engaging, non-culturally relevant, socially unconnected, repetitive bookwork. Thus, a social justice pedagogy allows a greater diversity of people to have access, be engaged in, and experience success in mathematics.

Nolan (2009) explained that an effective and inclusive mathematics social justice pedagogy can focus on current issues. She added, “the most common approach to realizing a mathematics education in and through social justice is by integrating the facts and figures of poverty, exploitation, and discrimination into ready to use problem based lesson plans” (p. 207). Nolan further explained that the “mathematics-social justice relationship [is] a blessed union” (p. 207). This union, according to Nolan, can keep students engaged and can assist them in looking beyond the statistics of poverty and the prison population, for instance. Students can engage in the social forces and factors that lead to these statistics and not just look at numbers on a graph.

Both Nolan’s (2009) and Kumashiro’s (2004) social justice based lesson approaches were similar to Gutstein’s (2006a) approach that he developed while working with middle and high school students. Gutstein suggested that mathematics education should be presented “in a way that helps students more clearly understand their lives in relation to their surroundings” (p. 1), arguing that students must “have more than a surface understanding” (p. 2) of mathematics and current social issues to be successful. When students are empowered with social justice pedagogy they begin to “understand their power as active citizens” (p. 4).

There are various lesson topics that could motivate students to become active citizens. For example, the make-up of prison populations, the privatization of jails, racial profiling, poverty, minimum wage, gentrification, homeownership, defense budgets, military recruiting, effects of a fast food diet on personal health, equal access to education, educational funding, welfare, and immigration. Topics that would foster discussion concerning financial issues include credit cards interest rates, predatory lending practices, non-income verified mortgage loans, bankruptcies due to medical bills, federal debt, paying for college, weekly wage payment on a store account credit card, and check cashers/pay day lenders.

Gutstein (2006a) shared a financial based social justice mathematics lesson that he conducted with middle school students. He presented students with charts showing the U.S. income distribution dealing with fractions and percentages. At the same time, he showed the students just how much of the world's wealth is concentrated within just a small percentage of the world's population. After the students analyzed the maps and charts, they were asked about their reactions toward the data that they just investigated. Gutstein received responses from the students stating that they felt the wealth distribution was bad, unfair, and shocking.

Gutstein (2006a) extended the lesson by comparing the U.S. federal budget for military spending to social program spending. This lesson was an excellent example of how students can become critical thinkers during a mathematics lesson and become agents for change. These critical mathematics lessons provided the students with more than a surface understanding of the social issues and also started to empower and encourage the students to become active citizens (see, e.g., Gutstein, 2006b, 2007; Gutstein & Peterson, 2006).

Chao and Jones (2016) paired issues of fairness and mathematics together to help pre-kindergarteners to “mathematically recognise and address oppressions they see in their own world” (p. 15). Specifically they profiled the—

critical mathematics details in two Black history-based activities in which children use mathematics to describe and confront the unfairness they notice within Rosa Parks and Harriet Tubman skits. Through these activities, children learn how to communicate and address the unfairness they see using mathematics. (p. 16)

The students in Jones' class acted out the events that led to the Montgomery Bus Boycott in 1955. Students piled on to a “classroom bus” with limited seating and were instructed by the bus driver where they were allowed to and not allowed to sit. In addition to acting out the overcrowding of a bus the students also counted and colored in seats that could be occupied by different races of people. They used mathematics to help explain the unfair treatment of

marginalized people in the past. In another activity students map out an escape route modeling the mental map that Harriet Tubman used when assisting enslaved Africans through the Underground Railroad.

Voss and Rickards (2016) worked with a group of secondary teachers who used mathematics to explore income inequality in different nations. They worked with teachers to develop an open-ended problem that promoted students to use mathematics “as a tool to address, debate and to propose possible solutions to issues involving social justice” (p. 68). Their article explained the varying levels of success that each of the nine participating teachers experienced and the high level of excitement the students had with the lessons. Several teachers stated that their students were “highly engaged in the lesson dealing with money and trying to budget on a lower income” (p. 71). Voss and Rickards noted that “teaching mathematics for social justice is an innovative pedagogy that allows students to connect the lessons learned at school with their own real world and authentic life experiences” (p.72).

Appelbaun and Davila (2007) studied a group of educators who participated in a professional development course where they received instruction in planning and developing social justice curriculum. The teachers were taught how to develop social justice units based in the mathematics curriculum and also how to cross the lessons over to include other content areas. The teachers experienced success in the design phase of and the implementation of the social justice themed lessons. They felt the “social justice curriculum as a replacement unit ...[was]... more successful than the commonplace mathematics curriculum at achieving the expected content objectives” (p. 8). Appelbaun and Davila concluded that mathematical units taught through a social justice pedagogy equalized the educational opportunities for families living in poverty, minorities, immigrants, and women. They explained:

It is time for schools to change these inequalities through providing spaces of resistance, coupling the discourse of critique with that of possibility and helping teachers play their role as transformative intellectuals who witness the urgency in teaching for social justice. (p. 17)

Concluding Words on Social Justice and Mathematics

A pedagogy that is infused with social justice themes can engage students in complex mathematics at a higher level. Key mathematical skills and concepts can be improved and mastered when taught in conjunction with engaging material such as the topics investigated during social justice lessons (see, e.g., Stocker, 2007; Gutstein, 2003; Ernest, 2007). Teaching mathematical concepts and higher-level skills can only be effective if the material being taught is authentic and/or culturally relevant to the learners (see, e.g., Ladson-Billings, 1997, 2009; Nolan, 2009; Stinson, 2004). In addition to authentic and/or culturally relevant material all cultures and students' experiences that are brought to the classroom should be respected and valued. As Bell (2002) explained, the power must be given to the students, not taken from them. Finally, true dialogue that leads to social change is best fostered in a community where loving, trusting, and caring are the norms in the learning environment (see, e.g., Banks, 1996; Frankenstein, 1987; Kilpatrick, 2013).

Education and African Americans

Educating children has occurred since human beings have existed. Pre-historic man taught his children how to hunt, gather food, build shelters, and make tools. The indigenous people of North America had communities and similar survival pedagogy that was taught to young children by both women and men. These life lessons were the necessities for survival. After the arrival of Europeans on the shores of the Eastern coast of America the education of children continued. This early European style of education was primarily religious based and, for

a privileged few, privately funded. Coulson (1999) noted that education in the early colonies during the seventeenth century laid the groundwork for the future of U.S. public education:

It was customary for parents to send their sons to school from the age of six or seven until they turned fourteen, though this varied according to individual circumstances. Wealthy parents likely sent their children to school earlier and kept them there for longer than did parents with limited means. This difference was due not only to the need to pay school fees, but also the fact that poor and middle-class families could not afford to support their children indefinitely, and so had to ensure that they learned a trade of craft through apprenticeship, an experience distinct from schooling. (p. 40)

Public school arose in the early colonies as a response to “an influx of immigrants who had different religions or cultures. Its primary focus was to establish social order and mainstream vast numbers of immigrant children into a common school setting” (Coulson, 1999, p. 48). Boston is accredited with the first public school that was established in 1635. The Boston Latin (2018) school is still in existence today and although somewhat integrated, it continues to educate Boston’s elite children.

In 1851, an article in *The Massachusetts Teacher* stated: “In too many instances the parents are unfit guardians of their own children. The children must be gathered up and forced into schools” (Freidman, 2013, p. 79). Between 1852 and 1913 school became “compulsory (and) school attendance laws were enacted in all states” (Coulson, 1999, p. 84). In 1954 the U.S. Supreme Court in *Brown v. Board of Education of Topeka* outlawed racial segregation in all government schools. Shortly thereafter, in 1958, Congress passed the “National Defense Education Act, which provided federal funds to local public schools for science, math, foreign language instruction, as well as guidance counseling services” (Ornstein, 1984, p.181). Over the past 200 years there have been many theories and methods as to how students should be educated. According to Coulson, one thing is clear:

Today, while some children receive a decent education, many, particularly those in urban areas, receive a poor quality education. In many instances, public schools have actually

segregated the population more deeply between the have's and have-not's, creating a gulf of learning opportunities that is simply too wide for many parents to cross. (p. 390)

To close this gap, how should we teach students? Should everybody be taught the same way? Do different ethnic groups respond to different teaching methods better than other groups? According to Tatum and Muhammad (2012), “advancing the development of African American male youths who attend schools in context that are characteristically urban is presenting a major challenge for educators” (p. 435).

African American Children, Schools, and Teaching and Learning

Freeman (2006) claimed, “Black children globally are under-achieving academically” (p.61). He cited their loss of identity to culture assimilation and to cultural alienation. Freeman believed that this “loss of identity has led to the under-utilization of Black children’s potential, thereby often leading to their being disinterested in school, under-achieving academically, or dropping out of school” (p. 61). For a shift to occur, there must be a “different paradigm” (p.61) in the education of Black children.

Freeman (2006) provided three suggestions for schools and societies might undertake. First, value the culture of all the children with school curricula being “reflective of the histories and heritage of all groups in society” (p. 61). Schools need to recognize the cultural capital that students bring to the classroom; “that [cultural capital] must be recognized and valued, not minimized, or bred out” (p. 61). Second, the common practice of expelling and/or suspending Black children must stop. Schools need to find “alternative ways of stimulating and developing Black children’s interest in school” (p. 62). He also argued that when children are removed from the classroom whether in-school or out of school suspension their “potential is being under-utilized” (p. 62). Finally, Freeman asserted:

At the beginning of the 21st century, countries will find it necessary to develop strategies to address the societal and individual cost associated with Black populations' under-utilization while simultaneously increasing the utilization of the potential of Blacks. (p. 62)

Some African American children discover a different dominate culture, other than their own, during their elementary years in school. Expectations that are “based on mainstream norms can have a dichotomous impact on this [elementary school] stage of self-development in African American children and youth” (Gullan, Hoffman, & Leff, 2011, p. 36). Influences on identity development in African American children can be positively cultured through schools, family, and community. However, as children become adolescents “they inevitably spend more hours of the day and week in a variety of environments away from such positive influences” (DeCuir-Gunby, 2009, p. 120). These other influences can “affect the degree to which such positive influences are internalized and sustained” (p. 120). With up to eight to ten hours a day spent in a school environment it becomes the responsibility of the schools to promote all cultural experiences, not just the culture of the dominant class.

African American children too often struggle to define their culture due to a deep history of oppression in the United States. African American children in the 21st century “face the covert reality that they live in a nation entrenched in a long history that has marginalized the race into which they were born” (Singleton & Linton, 2006, p. 36). Having a positive identity during high school years “can be a unique challenge for African American teenagers because they learn from a young age that their race has carried a negative social stigma based on the color of their skin” (Tatum, 1997, p. 201). The pressure and stigma that is attached to being an African American teen, especially a male African American teen, can result in identity crises during the high school years (Toldson & Ownes, 2010). African American “adolescents may opt to choose a raceless identity, suppress the desire to achieve because being smart is associated with being

white” (Toldson & Ownes, 2010, p. 11). African American high school students may also choose to “exhibit oppositional behavior, isolate themselves socially and/or find it hard to focus on achieving in school” (Bonner, Lewis, Bowman-Perrott, Hill-Jackson, & James, 2009, p. 178).

Recognizing and connecting African American culture with the subject material being taught may assist “students [to] internalize the material and thus imprinting the experience not in their memory but [in] their experience” (Williams, 2011, p. 70). Hayes, Cunningham, and Courseault (2006) found that “African American students are at a disadvantage in their very earliest schooling experiences” (p. 126). Hayes and colleagues found that teachers can “often diminish the importance of academic success in African American students” (p. 127) and teachers with lower expectations for their African American students can “lower their students’ expectations for future school success and deter them from pursuing degrees in higher education” (p. 127).

Not valuing and understanding the roll that students’ culture and experiences play in the classroom is one way that teachers fail to connect with their students (see, e.g., Ernest, 2007; Freire, 2000; Ladson-Billings, 2011; Stinson, 2006). Another area of disconnect is the myth of poor parental involvement. Educators too often complain of little to no family involvement, suggesting that this perceived limited parental involvement is holding back minority students (see, e.g., Allen, 2010; Carrasco, 1996; Kitwana, 2002). Teachers often claim that more parental involvement is what is needed to “fix” minority students who struggle to keep up with the curriculum and/or act out in class.

Williams (2011) noted that school involvement is not always easy for African American parents. African American parents may encounter “many different factors that make it harder for parents to be involved in their child’s education” (p. 68), explaining that, “lower income parents

have less time to participate in their child's education" (p. 69). Parents with lower economic standing, often referred to as the working poor, work longer hours for a lower wage, and have less, if any, benefits. Their time is "often consumed by other activities unrelated to their child's education" (Newman & Chin, 2003, p. 31), often placing minority parents and the working poor parents at a disadvantage when getting involved in their children's schools and education. They struggle to balance work, raising children, and school involvement with limited free time. Most minority and working poor parents have the same goals, wants, and high expectations as their more affluent counterparts do yet with limited time and capital they are often perceived as uninvolved, uninterested parents.

Having greater participation in the classroom from both students and parents begins with creating a caring, open classroom culture, fostering hope for success, and setting high expectations. According to Beachum and McCray (2010), high standards are not all that teachers should have in the classroom. Teachers also should have "hope in the midst of hopelessness, action and advocacy in the face of hegemony, and a sense of spirit, which replenishes the soul and revives the will for change" (p. 215). McCray, Grant, and Beachum (2010) suggested that teachers need to provide this mentality of hope and be supported through professional development and assistance from social agencies. What they proposed is a "collaborative endeavor that will involve dedication, commitment, and trust among all stakeholders" (p. 243) within the school and community. Using a school, community, and church approach, they suggested that a union be made between all three. Their plan has five aspects:

School-Community Committee – This committee would be made up of school personnel, parents, local business leaders, church leaders, and/or anyone who has a stake in the school. This approach is directly connected to culturally relevant leadership because it relies on community members who can directly provide feedback and guidance to inform liberatory consciousness, pluralistic insight, and reflexive practice.

After-School Mentoring Clubs – These clubs would meet after school and be advised and facilitated by congregants from the local Black church and teachers or administrators. The school and the Black church would work together to promote the pedagogy of self-development, thereby reinforcing alternative forms of capital for the students.

Community Night – This event would celebrate the best of what the community has to offer. This event could be connected directly to promoting the pedagogy of self-development and used to encourage self-realization and self-assertion.

Weekend School – The weekend school could take place at the local Black church. This approach supports the tenants of the pedagogy of self-development.

Collaborative Community Service – This would be a jointly-planned community service event that involves both the school and the Black church. The Black church benefits by the collaborative relationship forged with the school as they address an issue of mutual concern, as well as the congregants serving as mentors and models for the youth in the service activity. (pp. 243–244)

The African American experience in this country has been long and complex. Cooper (2002) explained as education continues to evolve and change, researchers, educators, and policy makers need to better understand all students. Furthermore, Cooper claimed that it is “essential for educators and parents to become authentically attuned to this generation’s experience of what it is like to come into being as an African American male or female” (p. 1186).

According to Palmer and Maramba (2011), teachers who work with African American students need to counteract the negative displays of Black males in the media with different forms of imagery. Teachers can “use their classrooms as an effective forum for combating the impact of the hidden curriculum” (p. 43). They called for teachers to display positive images of African Americans and develop a classroom library that portrays African Americans in a positive light. They also encouraged young Black professional men and women to come into the classroom and share narratives “about their trials and tribulations, and focus particularly on their educational pathways, which enabled them to get to their current position” (p. 43). They suggested a teacher-training course for pre-service teachers to help them “confront their own

biases about various racial groups” (p. 43). They also suggested professional development trainings for current teachers be carefully developed and “facilitated so that they do not become just informational sessions” (p. 43) but rather are valued lessons that teachers can take back to the classroom. These valued lessons can then be incorporated into a classroom environment which celebrates all cultures, not just the dominant White culture.

Male African Americans, Mathematics, and Teaching and Learning

Jackson and Wilson (2012) claimed that teachers are “acutely aware of the need to educate African American males better in mathematics but struggle to identify how to do so” (p. 355). They continued, explaining that teachers often “tinker around the edges of instruction” (p. 355) with support activities such as tutoring and extra support mathematics classes. With often no professional development or strategy sessions on how to teach mathematics to male African Americans, “at best, teachers reported engaging in ‘book studies’ with their colleagues focused on supporting African American students in mathematics” (p. 355).

In her dissertation research, Rainer (2009) completed a case study of six male African Americans who finished high school. She found that there were three main factors that assisted in high school completion:

- (a) A close relationship with parents or mentors helped to support and motivate African American males in their academic achievement, (b) positive teacher perception and high expectation, and (c) after school extra-curricular activities can have a positive impact on academic achievement. (p. 104)

Her results encouraged teachers of African American male students to “focus on the positive aspects of academic achievement” and suggested that “being involved in after-school extra-curricular activities helped to motivate young African American males and promote academic achievement” (p. 105).

Leonard and Evans (2008) completed a study involving pre-service teachers who were placed in a predominantly African American educational setting. Some also participated in after school tutoring sessions within the community. All the pre-service teachers completed surveys before and after their placement that measured their knowledge of African American culture and education stereotypes. They found that the pre-service teachers who participated in both the school and community programs had the greatest change in perceptions—

teacher interns who participated in the community-based internship changed their perceptions of the predominantly African American students participating in the Math Links program. They recognized that “typical” stereotypes about these children simply were not true. (p.76)

Oliver (2012) completed an ethnographic study of 12 African American male students who were near completion of high school. She found that the young Black men’s perceptions of their world and their interactions greatly differed from their classroom teachers’ perceptions of the same interactions. Oliver explained that the Black male students often used the “expression of: I won’t learn from you” while having the “perception that teachers are sending them the messages—I won’t teach you or you can’t learn” (p. 146). According to Oliver, these perceptions led to the students “disengagement or learned helplessness” (p. 146), creating a cycle of failure. Oliver explained that teachers must foster and promote authentic relationships with students. Teachers need “to be comfortable in opening a dialogue with students and parents about what they perceive as caring and what they need from teachers to assist students in reaching their academic goals” (p. 147).

Corey and Bower (2005) shared a case study in which an African American male student did “not feel that he was given equal access to learning within the traditional classroom environment. His constant displeasure with the traditional school curriculum provided within the classroom showed that he felt he was at a disadvantage when it came to learning algebra” (p.

329). In addition to limited classroom capital due to his skin color the student also “altered his speech, his conduct, and his appearance in order to assimilate into what he viewed as the White classroom culture” (p. 330). The student’s experience in the classroom directly affected his perception of the course and appeared to have a detrimental effect on his willingness to learn.

Jett (2019) used critical race theory to examine the scholastic experiences of four African American males who earned undergraduate degrees in mathematics. He believed that there was a “need to illuminate [the] mathematical persistence among Black men” (p. 312) that was missing in current literature. He noted that there are “persistent master narratives [that] frame Black men in singular, essentialist, and deficit-oriented ways” (p. 312). He also explained the need for “advancing the knowledge base on Black men within mathematics education” (p. 312). His research found that all four of his participants attributed strong “internal factors within themselves that contributed to their persistence as mathematics majors” (p. 331). Jett noted that these factors included a persistent attitude, cultural identity, a spiritual connection, and each participant’s ability to develop a mathematical identity.

Redfield and Kraft (2012) reviewed 8 years of elementary school referrals in three different school systems specifically comparing the referral rate of different student ethnic groups. They asserted, “Color is a likely factor considered implicitly when finding and making those first critical referrals and subsequent educational decisions as to minority children” (p. 133). They further contended that “black boys” received the label in high incidence categories, such as mild intellectual disability; although in recent years, new eligibility categories are disproportionate, thus resulting in continued disproportionate placements of minority children. Blair, Steiner, and Havranek (2011) explained that implicit bias can be activated quickly and unknowingly or unintentionally. For example, an African American male student may receive a

referral for special education due to cultural differences between the student and the teacher. Because of the cultural mismatch, the teacher perceives the student's loud, demonstrative behavior as aggressive, thus interpreting it as a behavior disability.

Special education referrals are not the only factor that can affect African American male students' successful negotiation of traditional classroom culture. Jett (2010) suggested that the lack of religious acceptance or spiritual acknowledgment in classrooms can have a greater effect on African American males than their White counterparts. He further explained that African American male students are in some cases denied access to higher level mathematics courses due to misperceptions in regard to their behavior:

African American male students are not allowed access to mathematics because they are often viewed as lacking the necessary skills to engage in mathematical discourse even though they might exhibit their strengths through other venues such as their spirituality. (p. 324)

Martin (2009) claimed that African American male students would camouflage their success and adopt a neutral raceless persona to better cope within the European style mathematics classroom culture. African American male students would go so far as to relinquish their culture, mannerism, and speech patterns to transform to dominant European style culture within the classroom. These coping skills that often strip male African Americans of their identity did lead to limited success in the mathematics classroom for some, yet Martin believed that this camouflaging of race does not lead to the successful education of all African American students.

Educators need to focus on the experiences of male African Americans and develop an understanding of the social realities that male African Americans face every day in school and their neighborhoods. Martin (2007) further suggested that educators needed to "conceptualize mathematics not just as a school subject but as a means to empower African American students"

(p. 25). For educators to make these changes, Martin claimed that educators themselves must become agents for changes and reject “research and policy perspectives that construct African American children as less than ideal learners and in need of being saved or rescued from their blackness” (p. 25).

Hughes and Bonner (2006) noticed that there was considerable research studying the failure and underachievement of male African Americans in the United States in the educational system at all levels. They noted that the research should instead focus on how schools have contributed to this dilemma of underachievement. They explained, “current research would have many of us believe that Black males are pathological and failing miserably in our nation’s schools, when in actuality our nation’s schools seem to be the purveyors of pathology and are miserably failing Black males” (p. 77). Similarly, Martin (2000) noted years earlier that the focus of research concerning male African Americans had been focused on failure, “most studies have focused on student failure, often reporting this failure in aggregate form with little attention or voice given to the individual” (p. 131).

When Robert Moses was interviewed by Checkley (2001), Moses provided reasoned arguments with respect to the importance of teaching mathematics in context outside of the classroom. Moses explained that his “experiential learning model helps kids create a conceptual language by first grounding mathematics in the daily life and culture that they understand” (p. 10). Whether it is turning a subway trip into mathematical equations or developing a curriculum that converts traditional bookwork, educators must connect mathematics to students’ experiences. Checkley (2001) argued, “to do this we had to think about the students’ experiences” (p. 11) and demand teachers take value in African Americans experiences and

cultural relevancy (see, e.g., D'Ambrosio, 1990; Gutstein, 2006a; Ladson-Billings, 1997; Ladson-Billings & Tate, 1995; Stinson, 2006).

Concluding Words on Education and African Americans

“Mr. Potts check out 21!” exclaimed a student in my classroom the other day. “He on it, he drippin’!” is how this young Black man described 21 Savage. 21 Savage is a heavily tattooed, 25-year-old rapper/artist sensation. At first look, many might think of him more a criminal than a role model for a young Black man. Yet, 21 Savage is “on it.” In a 2019 interview with Seth Rogen, 21 Savage talked about his rise from gang life, being shot, being stabbed, his completion of high school after dropping out, currently investing over half the money he makes, his deep religious commitment to West African Ifá, and his performance on the new Lion King soundtrack (Savage, 2019). That’s a long way for a young man to come from watching his best friend get shot in middle school to currently taking flight lessons on a Lear Jet.

Freeman (2006) would describe a young 21 Savage as a youth in search of his identity, trying to fit in and find value in his culture. At a young age, 21 Savage immigrated from West Africa with his parents and grandparents. They brought with them a rich cultural family history. According to Williams (2011), this very culture would have been an asset in the elementary classroom, yet 21 Savage recalls hiding his past and trying not to “look or sound too African” (Rogen, p.18). The fear of looking “African” is what Tatum (1997) explained as a stigma that affects many African American teens in high school as they try to define their identity and how and where they fit into a dominant culture. 21 Savage did complete high school, yet one might wonder if things for him would have been different or easier for him if the value of his family’s experiences and culture had been embraced in the classroom (see, e.g., Gullan et al., 2011; Ladson-Billings, 2011; Stigler, & Hiebert, 1999; Stinson, 2006).

CHAPTER 3

THEORETICAL FRAMEWORK

In this chapter, I begin by providing a sketch of a SJML in which my students participated. Some of the students' responses are shared. Next, I explore the historical evolution of critical theory, moving through the Frankfurt School, the second generation Frankfurt School, other critical pedagogy theorists such as Freire (2000), and concluding with the emergence of critical race theory (CRT), highlighting scholars such as Unger (1983) and Bell (1994). At the end of this chapter, I discuss how CRT and education intersect as defined by Ladson-Billings (1998), and then I take a closer analytical look at the student responses shared in the Framework in Context section at the conclusion of the chapter.

Theoretical Framework in Context

A few years ago, I decided to expand the Real Expense of Fast Food lesson (discussed in Chapter 1) to include a study of the saturation of fast food restaurants in both urban and rural areas. Taking a page from The Saturation of Liquor Stores in my Neighborhood lesson (Tate, 1994), I had small groups of students look up a fast food restaurant chain in their neighborhood. Next, they set the Google Map window to 200 feet which allowed the names of business to appear on the screen. The students then centered the fast food restaurant in the middle of the screen and then counted the number of fast food chain restaurants they observed. The students also counted traditional sit-down restaurants. If the group was not sure what type of restaurant they were viewing, they were to investigate the restaurant and as a group determine which category it fell.

Next, the students looked up the same fast food chain restaurant in four different zip codes that I gave them. These zip codes were selected from a list of the top ten states with the

highest number of fast food restaurants. Then I selected the state capital and a nearby suburb to the south. For example, one group might get the states California and Texas. Their zip codes to research would have been Sacramento CA (95814), Freeport CA (95382), Austin TX (78731), and Garrison Park (78745). Each group was to organize their data of 7 to 8 different saturation counts.⁸ The students analyzed their results and then displayed their information in graph form. Each group had to describe 5 to 6 observations about their data. I was interested in how the groups might differ in their analysis and therefore I did not give any guiding questions for the analysis process. This step took the project and control out of my hands, so to speak, and placed it into the hands/minds of the students.

The analyzed results of the exercise can be broken up into four main categories: economics, eating habits, stereotypes, and what was missing. Even after completing this activity with a second class (and in subsequent years) the analyzed results are always most similar and seem to fall into the same four mentioned categories. Below are some example comments from students that fall under each category:

Economics of Fast Food Restaurant Locations

We got more stores, but they sorry, not all bougie like (named a near-by suburb). They pay more at (nearby suburb) people here work cheap so they got more stores. Rent is cheap here cuz the apartments, out in (named a nearby suburb) they got big houses. They can't afford to put up too many food places (personal journal entry).

Eating Influences and Eating Habits of Different Ethnic Groups

It's good and they got cheap meals. You go to a nice place for maybe your birthday or something but not every week.
It's good—ya know? Too much sugar but no cappin' I like sugar.
I get pizza—a whole one for \$5—not like you Mr. Potts you probably get like a \$20 pizza full of meat and vegetables (personal journal entry).

Stereotypes of Different Ethnic Groups

⁸ If two or more students lived in the same neighborhood then the group could pick another location of their choice.

We eat more (fast food restaurant) than white people.
 I eat bad during the week cuz my mama don't cook but on Sunday. So we get our own food till then. She not cookin' ever night—not like you Mr. Potts.
 I eat by the TV...my brother eats in his room playing Madden (a football video game)...and my mom works a lot, so we just get takeout. We don't sit at a table like other people (personal journal entry).

What is Missing

After the students have shared their analysis, I would offer up some alternate suggestions as to the possible reasons for the location of fast food restaurants. Here is a sampling of some of the questions I asked plus the typical response from the class:

What about supply and demand? Does that play into restaurant location?

Blank stare responses from the students

Do you think tax breaks might play a role in restaurant location?

Blank stare responses from the students

Anyone think that market share or company visibility might be a factor?

Blank stare responses from the students

The above nine sample responses from students who have participated in this activity speaks volumes to the experiences, misconceptions, stereotypes, oppressive ideals, and biases that some students bring to the classroom today.

Critical Theory

Gary Larson is considered one of the great cartoonists of our time. In 1982, Larson (1990) created a cartoon depiction that showed several sheep that were all grazing expect for one excited sheep that jumped up and shouted, “Wait, Wait! Listen to me! We don't have to be just sheep!” What made this sheep stand up and protest? Was he sensing the injustice that the herd was not thinking for itself? Or, was he just next in line to be sheared by the farmer? Either way, the sheep in this cartoon took a critical examination of his life and spoke up against the structures that “penned” him in. Examining, questioning, and reflecting on the structures of society so that they might be justly transformed are the foundation of critical theory.

Critical theory is a school of thought that involves a reflective assessment and a critique of how society and its structures and institutions act or affect individuals and groups. Critical theory is grounded in the early scholarship of Karl Marx and Friedrich Engels, authors of the *Manifesto of the Communist Party* or more commonly known as *The Communist Manifesto* (2008). The *Manifesto* is a social critique of capitalism and the way that it has oppressed the working class throughout history. According to Marx and Engels, “The modern bourgeois society that has sprouted from the ruins for feudal society has not done away with class antagonisms. It has but established new classes, new conditions of oppression, (and) new forms of struggle in place of the old ones” (p. 220). In the *Manifesto*, Marx and Engels deduced that all of man’s struggles that have occurred over time have really been struggles between the different classes: “The history of all hitherto existing society is the history of class struggle” (p. 219). The classes have used each other over time for industrial production. The ruling class oppressed the lower working class so that they can maintain the power structure. Frictions are caused between the ruling and working classes when too much demand is put on the working class by the ruling class. This demand, fueled by potential economic gains, would always end in conflict and revolution of some form. Marx and Engels called for all communists to “support every revolutionary movement against the existing social and political order of things” (p. 258). It was this revolutionary action against the ruling class that led to the critical examination of society and culture in the Frankfurt school.

The Frankfurt School

The Frankfurt School is known as an institution that enacted one of the first models of critical cultural studies that looked at the effects that different forms of culture had on societal norms. The five main theorists at the institute in the 1930s were Theodor Adorno, Erich Fromm,

Max Horkheimer, Leo Lowenthal, and Herbert Marcuse. These five men are credited with critically looking at capitalist societies and developing origins of critical theory (Kellner, 1989, 1995).

Pablo Picasso said, “Every positive value has its price in negative terms. The genius of Einstein leads to Hiroshima” (as cited in Gardner, 1993, p. 129). Strong words from an artist, yet Theodor Adorno (1903–1969) would have agreed with Picasso. Adorno (Adorno, Adorno, & Tiedeman 1997) examined art in relation to society. He believed that modern art could awaken people to see the oppressive forces acting upon them; in that, “art respects the masses, by confronting them as that which they could be, rather than conforming to them in their degraded state” (p. 44). Seeing art as a social commentary that could lead to changes in societies and oppressive powers, Adorno claimed, “art reflected the history of man more truthfully than do documents themselves” (p. 43). He also claimed no matter how just the ruling classes think they are treating the working class, they are simply oppressors of the people. Adorno also noted the importance and the “need to let suffering speak (as) a condition of all truth” (p. 45). As Adorno rationalized the censoring and oppressive forces in place in the art community, Fromm considered the oppressive forces of religion in society.

Erich Fromm (1900–1980) critically examined religion and its authoritarian hold on society; he believed that “true” freedom could be obtained once people became aware of guilt, love, shame, and freedom. This freedom would either be embraced or rejected. The three rejection methods are:

Automaton conformity – a process of social manipulation that results in the person striving to be exactly the same as they imagine the majority of other people to be, losing your self-identity. Thus becoming a cog in the bureaucratic machine, with thoughts, feelings, and tastes manipulated by the government industry and the mass communications that they control.

Automation conformity – this rejection is a submission to the choices of the society. Habit motivates repetition of a behavior that is adaptive and therefore is rewarded. Repeating this behavior is easier than making novel choices that would establish new habits. Thus the habitual behavior is more comfortable because it is known and safe.

Authoritarianism – this rejection involves giving yourself up surrendering your individuality and your self-integrity. This rejection to freedom involves the individual to end aloneness by losing the gap that has formed between them and society. Thus, giving themselves over to society and oppression. (Fromm, 1941, pp. 142–149)

These three different acts of losing control is what Fromm would describe as a person depriving themselves of freedom and thus, they lose their ability to act upon the society as opposed to the society oppressing them.

Fromm (1994) claimed that modern capitalism and the role that large companies/conglomerates play in controlling capitalist ideas is more about control and conforming to a group. Modern industry and economics do not want to develop spirited antagonists among the masses. Instead, they need “people who become consumers, who possess as little individuality as possible, and who are ready to obey an anonymous authority while suffering from the illusion of being free and subject to no authority” (p. 22–23). When corporations can convince both their employees and the general public that consumer consumption leads to happiness then the cycle of individual thought ceases and true freedom cannot be experienced. Keeping the social classes intact, with the majority of society embracing a consumption mentality, will only benefit the few who are born into privilege. (see, e.g., Abromeit, 2011; Fromm, 1994; Kellner, 1989, 1994).

Max Horkheimer (1895–1973) who was born into a position of wealth and privilege developed and used critical theory to look at his own life and wealth. Jacobson (in Horkheimer, Jacobson, & Jacobson, 2007) claimed, “Horkheimer’s letters reflect critical moments in his life where he examines his relationships with his parents, wife, associates and religion” (p. ii).

Horkheimer's experiences in Germany—born into wealth and status, drafted into the army during World War I, being exiled from his country, and later returning after the war—gave him a diverse perspective on life (Madigan, 2014). His examination of his own life through critical theory led him to the belief that society could change if the “working class would gain power and resist the lures of class structure and materialism” (Horkheimer, Jacobson, & Jacobson, 2007, p. 36).

Horkheimer (1987) stated that society needed to “move through institutions to a free and just life” (p. 17). He reasoned that if the working class could lead a life that was void of oppression that was put in place through institutions to maintain the status quo then the working class could experience true freedom. Once this freedom was in place the working class could self-critique history and the current power structure in place. Eventually they could empower themselves to create change “in order to achieve equality within a society the people must be able to perform an ideology critique to find the utopian content within their society and then exploit it for the good of the people and society” (p. 19). Horkheimer interpreted that society is affected by mass media and the growing availability of products to consumers, thus oppressing the working class through media. He described critical theory as a way “to liberate human beings from the circumstances that enslave them” (Horkheimer, Adorno, & Schmid-Noerr, 2002, p. 45). Freeing the working people from consumerism and media influences would upset the ruling class in which Horkheimer was born (see, e.g., Horkheimer, Jacobson, & Jacobson, 2007; Kellner, 1984; Madigan, 2014; Abromeit, 2011)

Herbert Marcuse (1898–1979) shared many of the same privileged experiences that Horkheimer did. He, like Horkheimer (1987), critiqued capitalism along with the Communist society of the Soviet Union. He examined different types of social repression in both capitalism

and communism. Similar to Horkheimer, he believed that the media created false needs that kept the working class oppressed. The only way to change either system was through revolution or “great refusal” (Marcuse, 1991, p. 33). Marcuse believed:

Industry revolution only trained workers to become more submissive and dependent on the power structure in place. It’s the media and corporate management who create false needs which continually oppress the workers. Keeping them in the current system of oppression. (p. 101)

Marcuse (1991) warned against passive or false revolutions where some protest is allowed, and small changes might take place, but the main oppressive forces stay in place. Recall Occupy Wall Street, which in August 2011 made headlines in the United States and around the world. With hundreds of people gathering in parks near Wall Street and similar protests in other large cities, it appeared that the working and oppressed people were rising up against big banks and the financial corruption that led to the then housing market collapse. Many protesters blamed greed and the lack of government oversight that led to this financial collapse. After the U.S. Congress placed some limitations on banks and investment houses the protesters have all but left the streets. This “occupation” is a clear example of what Marcuse would consider passive revolution, where some concessions were made but just 3 years later the banks were still taking huge profits and packaging potentially fraudulent mortgages (Committee on Oversight & Government Reform, 2014).

Another example of what Marcuse (1991) might claim to be a false revolution is the Black Lives Matter (BLM) movement that started in 2012 with the shooting death of Trayvon Martin. Will the BLM continue to shed light on senseless killings of Black youths and become a catalyst for change? Garza, Tometi, and Cullors (2013) explained that in the 6 years since the creation of the BLM movement in 2013 the group has organized and developed a global platform. The BLM organization, through its web site, continues to expose police brutality,

report on global racism, and organizes rallies to support minorities and oppressed groups. BLM has also influenced the reporting of police shootings, specifically by race. From 2015 through 2018 on average 236 Black people were fatally shot every year in the United States (Tate, Jenkins, & Rich, 2018). BLM, in conjunction with The Washington Post, continue to track all fatal police shootings in an attempt to hold police agencies more accountable for their officers' actions and continues to share the stories of an oppressed group of people.

Other Theorists in Association with the Frankfurt School

Antonio Gramsci (1891–1937) was a catalyst for change, continuing his theoretical study and research even while he was incarcerated for over ten years as a political prisoner. Gramsci (1971) wrote that society was controlled by three different sources: institutions, governments, and capitalists. He explained that cultural imperialism occurs when the head of state creates laws and controls the media to maintain power in society. Through this oppression, the ruling class can maintain control and can stop any uprisings.

Gramsci (1971) rationalized that if the working class ever rose up to challenge their oppressors the ruling class would take steps to frustrate the workers, even going so far as to sacrifice some policies or leadership. He explained that the working class was not “capable of orienting themselves equally swift [as the ruling class], or of reorganizing with the same rhythm” (p. 208). The members of the ruling class have “numerous trained cadres” and several “changes of men” that can all be placed into leadership roles to give the impressions of change and give the ruling class the ability to reabsorb the control that was eroding from them. Thus, the worker will never come out of the cycle of oppression and will remain pacified by the ruling class (see, e.g., Davidson, 1977; Gramsci, 1971).

Government and Industrial control and the pacifying of the masses by shifting the public's focus is what György Lukács (1885–1971) wrote about in *History and Class Consciousness* and referred to as *class consciousness* assigned by societal norms. Lukács (1972), similar to Gramsci (1971), was another founder of “Western Marxism” (Gluck, 1985, p.14). Lukács postulated that if the working class really knew all the limits that are in place to keep them oppressed and to not allow movement between the classes then they would gain class consciousness. Lukács believed that people could move within their class group, lower, middle, and high but to move from one level to another could not happen. Of course, there could be a few people who beat the odds and experience class movement or as James Joyce wrote in *Ulysses*, “there were others who had forced their way to the top from the lowest rung by the aid of their bootstraps” (Joyce, 2006, p. 164).

Lukács (1972) also explained that citizens are responsible not only for each other but also for those less fortunate. Society, as a whole, must have a collective responsibility and individuals within the society cannot go through life as individuals or single entities, never impacting other people. Lukács (1972) explained:

From the ethical point of view, no one can escape responsibility with the excuse that he is only an individual, on whom the fate of the world does not depend. Not only can this not be known objectively for certain, because it is always possible that it will depend precisely on the individual, but this kind of thinking is also made impossible by the very essence of ethics, by conscience and the sense of responsibility. (p. 83)

The idea that everybody must take responsibility for their actions and how they affect others is a corner stone of the Western Marxist theory (see, e.g., Feenberg, 2014; Gluck, 1985; Lukács, 1972). “As a Marxist,” Lukács (1972) stated, “I believe we must act for the good of the all, not like selfish protagonists, each in our own stories” (p. 88).

Personal stories can be shared in many different mediums. Writing, acting, music, and art are all different forms of story expression. Benjamin (1892–1940), similar to Lukács (1972), was concerned with the influences corporations had upon the art world. Benjamin (1968) believed that the inexpensive reproduction of classic art was a form of oppression. Inexpensive methods of re-creating classical works of art through etchings, wood stamping, lithographs, and so on would create “art that is designed for reproducibility” (p. 214). This reproducibility of past works of art reinforces the societal oppression of those times. These works of art often duplicated religious scenes instilling fear and art that was restricted by governing powers such as feudal lords and monarchs (see, e.g., Benjamin, 1968; Brodersen & Dervis, 1996; Wolin, 1994).

Benjamin (1968), similar to Adorno (Adorno et al., 1997), understood that the media and industry have a significant influence on society. Benjamin explained that when industry creates inexpensive re-production they are in fact oppressing individuals and “manipulate society into a conforming group who act passively and not questioning or revolutionary” (p. 218). The industry influences behind the funding of art reproduction can have a detrimental effect on the society’s consciousness and as a cultural force that can influence people’s impressions and beliefs.

When artists are restricted in expressing their impressions and beliefs they are succumbing to the influences of the corporation that attempts to control the art industry for income generating purposes only. Benjamin (1968) linked this controlling of the art industry to the cycle of politics:

To an ever greater degree the work of art reproduced becomes the work of art designed for reproducibility. From a photographic negative, for example, one can make any number of prints; to ask for the ‘authentic’ print makes no sense. But the instant the criterion of authenticity ceases to be applicable to artistic production, the total function of art is reversed. Instead of being based on ritual, it begins to be based on another practice—politics. (p. 220)

It is this cycle of controlling artistic production that keeps the same policies and political structures in place that will continue to oppress the working people and control society so that the current ruling class can retain power (see, e.g., Adorno et al., 1997; Benjamin, 1968; Brodersen & Dervis, 1996; Wolin, 1994).

Second Generation Frankfurt School

Freedom for artists to produce and question policies through art is one way that a society can critically examine and reflect upon itself. This message at times can be difficult to convey as the personal interpretation of art can vary greatly. Habermas (1989) believed that social structures could also be critiqued through what he termed the public sphere.

Habermas (1989) explained the public sphere as an idea that “preserved the social welfare state of mass democracy, an idea which calls for a rationalization of power through the medium of public discussion” (p.28). Habermas argued that prior to the 18th century European culture had been a “*representational*” culture. This type of culture was monarchy led and did not serve the people as an uplifting force. Instead, this representational feudal culture enforced “the old mode of production, the feudal organization of agricultural production involving an enserfed peasantry and the petty commodity production of the cooperatively organized urban craftsmen” (p. 15). Ironically, it was the greed of the ruling monarchy that led to the development of the public sphere. With international trade growing, the power structure shifted from a feudal system of rule to an organized estate driven economy to feed the growing international trade. Habermas argued, “On the one hand this capitalism stabilized the power structure of a society organized in estates, and on the other hand it unleashed the very elements within which this power structure would one day dissolve” (p. 15).

This change in power structure created new trade organizations to ensure smooth transactions and quality of commodities and finished goods. Capitalist financing arose that was funded by commercial exchanges and stock exchanges thus taking some of the power and control from the ruling monarchy, Habermas (1989) reasoned—

commercial exchange developed according to rules which certainly were manipulated by political power; yet a far-reaching network of horizontal economic dependencies emerged that in principal could no longer be accommodated by the vertical relationships of dependence characterizing the organization of domination in an estate system based upon a self-contained household economy. (p. 16)

This free exchange of ideas and policies between the people and the government for the betterment of society as a whole is one of the earliest examples of the public sphere. No one group or organization should have more influence over the government or each other. The public sphere is a “realm of private individuals” (p. 35) who, through dialogue, can convey the needs of “society to the state, in order, ideally, to transform political into rational authority” (p. 35).

Of course, there are a variety of factors that can unjustly influence the public sphere like the growth of commercial influences and mass media, which can influence society to become passive and convert into a consumer, self-interest, or greed driven society. The public sphere is not a platform for the “exercise of political and social authority” (p. 44); rather, it is a place for true dialogue and the exchange of ideas.

Habermas (1989) rationalized that democracy needed critical public input with the ability to create change to be successful. The public sphere can only work if society remains aware of the forces of oppression acting upon them such as commercialization and traditional historical institutions. Individuals, therefore, working together can create change (see, e.g., Bohman & Rehg, 2007; Habermas, 1989).

Honneth (1991) agreed with Habermas (1989) that critical public input was necessary for change and also the return of power to the individuals in the society. Honneth (1991) explained that when an individual's power is taken away from them, they lose their identity. When Walmart decides to carry a product, they do not take open bids from a variety of suppliers instead their business model is to tell the suppliers what they are willing to pay for a product and then see who agrees to their terms. This business practice takes all the power away from the individual suppliers and gives it all to the large corporation. Suppliers who wish to have their products appear in thousands of stores around the world must comply with the dictatorship called Walmart (Smith & Young, 2004). Honneth (1991) reasoned that if economic decisions were taken away from the small retailers and handed over to large retailers then the small business owners would lose their authority, decision making capacity, and "the cognitive and moral bases of his identity" (p. 32). This shift in power will create feelings of hopelessness, ultimately causing the individual to change, and gradually causing the entire society to change.

The gradual change in a society where the individuals lose their ability to interact and create change can take on the form of personal survival. With corporate pressure and media support the individual is programmed to conform and thus remains within their class structure. Honneth (1991) considered this pressure as a—

collective force of self-preservation [that] is transferred so unproblematically into the class-specified coercion that secures domination and into the individual coercion of self-discipline that a social space for the creative achievements of interacting groups no longer remains. (p. 56)

Thus, the ruling powers can continue to remain in power and corporations will continue to support the political parties who best serve their interest (see, e.g., Adorno, 1997; Gramsci, 1971; Habermas, 1989, Honneth, 1991, 1996; Horkheimer, 1987; Marcuse, 1991).

Returning individual power back to members of society is what Honneth (1991) suggested as a need for critical social theory. When all members of society can engage in critical reflection and then take action against oppressing forces, they can experience freedom and equality. Honneth compared his critical social theory to psychoanalysis. Psychoanalysis analyzes the person's process of will-formation from the "perspective of an emancipatory cognitive interest in order to free a subject from the force of unrecognized constraints upon action" (p. 239). Correspondingly, critical social theory is "the process of species will-formation in order to free it from the force of uncomprehended dependencies" (p. 239).

To protect individuals' rights within a society all members at all class levels must have free will formation and the ability to create authentic change. Honneth (1996) explained that this could happen when—

conditions in which individual rights are no longer granted disparately to members of social status groups but are granted equally to all people as free beings; only then will the individual legal person be able to see in them an objectivated point of reference for the idea that he or she is recognized for having the capacity for autonomously forming judgment. (p. 119)

To create change in a society there must be a catalyst. Albrecht Wellmer (1991) believed, as did Adorno (1997), that art could critically examine society and identify oppressors working within institutions and government. Wellmer argued that there is importance in the "aesthetic semblance" (p. 17) or the outward appearance of artwork but stresses the greater importance of "the significance of this constellation of reality for artistic production over its significance for reception" (p. 17). Meaning how the art is packaged and presented to society is not as valuable as the artists' thoughts during the construction of the piece or the artists' critique on social issues that the artwork reflects. Wellmer claimed that when the focus is on the message/reaction that artwork creates and not on corporate profits (the market value or the ability to recreate on a large

scale) then the art truly is a commentary on social structures and can be considered an agent for change.

Wellmer (1991) agreed with Picasso (in Chipp, Selz, & Taylor, 1968) that the journey of the artists' work and the message are more important than the value of the pieces or status an individual may think they obtain by purchasing an exclusive work of art. Picasso expressed that he felt museums were just a "lot of lies and the people who make art their business are mostly imposters" (as cited in Chipp et al., 1968, p. 272). He pointed out that revolutionary countries often have greater restriction on modern art and artists than peaceful countries. Yet all countries, stable and in flux, have infected the "museums with all our stupidities, all our mistakes, all our poverty of spirit" (p. 272). Society needs to remember it is not important who painted the work, or how much it sold for, but to understand and recognize the "inner life ... of the men [women] who painted them" (p. 273).

Critical Pedagogy Theorists

Paulo Freire (1921–1997) was an advocate of liberating education that involved both teachers and students to critically examine the forces behind their current position in society and if their educational system is one that promotes oppression or freedom. He taught working class and illiterate people to understand the world around them. He called this type of education freeing in contrast to traditional education practices. He felt that education should aim to serve and help people in their struggle to overcome their oppression: "In order for the oppressed to be able to wage the struggle for their liberation, they must perceive the reality of oppression not as a closed world from which there is no exit, but as a limiting situation which they can transform" (p. 31).

Freire's (2000) strong critique of the banking model (i.e., traditional method) of teaching is exemplified when the teacher holds all the knowledge and power:

Those truly committed to liberation must reject the banking concept in its entirety, adopting instead a concept of women and men as conscious beings, and consciousness as conscious intent upon the world. They must abandon the educational goal of deposit-making and replace it with the posing of the problems of human beings in their relations with the world. (p. 60)

This dehumanizing action of “deposit-making” is detrimental to both the teacher and students: “Narration (with the teacher as narrator) leads the students to memorize mechanically the narrated content. Worse yet, it turns them into containers, into receptacles to be filled by the teacher” (p. 53).

Freire (2000) contended that the importance of non-oppressive teaching starts with true dialogue. Dialogue requires a great love and humility for the world and its people. The love should not take the form of domination but as a commitment to others. Arrogance must also be avoided because it can project ignorance onto somebody else and will be perceived as their own. Above all, “dialogue further requires an intense faith in humankind, faith in their power to make and remake, to create and re-create, faith in their vocation to be more fully human” (p. 91).

Freire (2000) encouraged educators to develop problem-posing pedagogies, which is critical for education to “strive for the emergence of consciousness and critical intervention in reality” (p. 62). He continued to explain that a problem-posing pedagogy should be a humanist and a liberating praxis—

in the process of decoding, the participants externalize their thematic and thereby make explicit their real consciousness of the world. As they do this, they begin to see themselves acted upon while actually experiencing the situation they are now analyzing, and thus reach a perception of their previous perception. (p. 97)

The oppressed people must fight for their freedom and work with the teacher to become part of the education process by overcoming their false perception of reality. The world, no longer

something to be described with deceptive words, becomes the object of that transforming action by the oppressed people, which results in their humanization.

Teachers who embrace a critical pedagogy and, along with their students, investigate different social oppressions can aid in humanizing their students and help them develop their personal identities, or as Giroux and McLaren (1986) explained it, critical pedagogy is an “articulation of ideological education [that] involves the development of individual human senses” (p. 226). Students can use the investigation into controversial and oppressive social topics to better understand themselves. It can also help students define their religious, political, sexual, and societal beliefs or help develop one’s human senses. Thus, the investigation found within a critical pedagogy can be challenging emotionally and socially. Giroux and McLaren noted that a social justice pedagogy is rigorous in that a “critical pedagogy embraces the complexity of the topic rather than avoiding it” (p. 226).

Giroux (1996) encouraged teachers who were engaging in critical pedagogy to not shy away from controversial topics and to encourage their students to look past the influences of mass media, advertising, and institutional thinking—

what educators need to do is make the pedagogical more political by addressing both the conditions through which they teach and what it means to learn from a generation that is experiencing life in a way that is vastly different from the representations offered in modernist versions of schooling. (p. 99)

The traditional school curriculum does not challenge the oppression that students from disadvantaged backgrounds face in their daily lives. Teachers need to take on these issues that affect their students’ local and global environments (see, e.g., Freire, 2000; Giroux, 1996; Gutstein, 2003; Kumashiro, 2004; Shaull, 1978). Giroux reasoned that educators should be looking to expand critical pedagogy, not limit it, which would lead to closing “down the possibilities of a radical democratic society” (p. 105). For potential change to occur, teachers

need to engage in critical pedagogy and follow the teachings/readings of theorists such as Freire (2000), Giroux (1996), and McLaren (2002, 2006) who all understood that the way out from oppression is to first understand it and then take action to change it.

McLaren (2006) contended that with the growing globalization, of commerce, business, and personal wealth investment only a few are truly benefiting from this movement in business. Inevitably, some aspect of society must suffer when others accumulate vast wealth. Globalization does not necessarily mean a larger wage for the working poor or better health care for those without any; but rather, “worldwide empowerment of the rich and devastation for the ranks of the poor as oligopolistic corporations swallow the globe and industry becomes dominated by new technologies” (p. 20). When governments try to encourage globalization their primary function turns from its citizens to trying to attract foreign investment money. Thus, “deregulation, privatization of public service, and cutbacks in public spending for social welfare are the natural outcomes of this process” (p. 21). McLaren and Farahmandpur (2001) understood that throughout history the most vulnerable portions of society, the poor and working class, always suffer at the decision, greed, and power gains of the controlling class. The celebration of a global economy only “momentarily deflects attention from the millions of exploited men, women, and children around the world” (p. 2).

How do educators and concerned citizens help change the discourse that is being fed to students every day? McLaren (2006) reasoned that if change is going to occur then the empowering must start at an early age and equally to all learners:

The important issue is that the seeds of critique and transformation have been planted as soon as students are afforded the opportunity to become—and treated as—agents of their own history rather than passive recipients of a history written for them by the ambassadors of empire and their corporate quislings. (p. 18)

McLaren (2000) does not expect the current educational system to begin to awaken students through a critical pedagogy. That would only upset the current balance the ruling class is experiencing. He instead suggested that the educator engage the students in developing critical knowledge skills. He explained that the “revolutionary educator engages the world reflexively, dedicated to the praxis of transforming knowledge through epistemological critique” (p. 186), thus engaging in critical knowledge.

When education and revolution are pressed together, they can become the catalyst to foster critical knowledge and transform traditional inquiry into critical inquiry. McLaren (2006) described this process as a transformation for teacher and student to understand that—

historical materialism provides critical pedagogy with a theory of the material basis of social life rooted in historical social relations and assumes paramount importance in uncovering the structure of class conflict as well as unraveling the effects produced by the social division of labor. (p. 17)

When students can understand how the influences of materialism and mass media have affected their lives, they can then begin to deconstruct the social class structures and the forces that enabled the divisions of the class structure. Giroux and McLaren (1996) considered the “importance of educating students [and teachers] in the language of critique and possibility” (p. 324). When teachers and students can critically analyze the current limiting curriculum and start to develop a social critical curriculum then they will be open to the “possibilities for generating and cultivating a deep respect for a democratic and ethically-based community” (p. 324).

Understanding the language of critique and developing ethically based communities can only be accomplished if the oppressed fight for their justice. Freire (2000) explained that it is “absolutely essential that the oppressed participate in the revolutionary process with an increasingly critical awareness of their role as subjects of the transformation” (p. 144).

Critical Race Theory

Critical Race Theory (CRT) experienced a transformation of its own in the 1980s as a spin-off of Critical Legal Studies (CLS). Unger (1983) explained that the current legal system serves the people, but it truly only serves the ruling class. Laws are made to protect people, yet they are also put into place to support the current ruling class and the current power structure. Unger (as referenced in Southerland, 2006) clarified that a true democracy must allow the free movement of people between the class structures and not oppress them, forcing them to remain in a stagnant social position. It is these movements, or projects, that will define a society and become some of its greatest accomplishments—

in a world of democracies, in a world where the great projects that have set humanity on fire are the projects of the emancipation of individuals from entrenched social division and hierarchy; in such a world individuals must never be puppets or prisoners of the societies or cultures into which they have been born. (Southerland, 2006)

Unger argued that there is no true law or true politics but instead a ruling power whose only interest is to keep the legal system as it currently stands.

The University of California–Los Angeles (UCLA) school of Public affairs began its Critical Race Studies program in 2000 first in the Law Department and then in the School of Public Affairs. In 2006, both schools jointly developed a “definition,” so to speak, for critical race theory:

CRT recognizes that racism is engrained in the fabric and system of the American society. The individual racist need not exist to note that instructional racism is pervasive in the dominant culture. This is the analytical lens that CRT uses in examining existing power structures. CRT identifies that these power structures are based on white privilege and white supremacy, which perpetuates the marginalization of people of color. (UCLA, 2006)

CRT examines society and culture at the intersections of race, law, and power. Tierney (1993) explained that CRT is an “attempt to understand the oppressive aspects of society in order to

generate societal and individual transformation” (p. 4). Likewise, Matsuda (1991) considered unjust laws in America and then used CRT to analyze and revise these laws in an attempt to create a more just legal system. Matsuda (1991) rationalized that CRT is—

the work of progressive legal scholars of color who are attempting to develop a jurisprudence that accounts for the role of racism in American law and that work toward the elimination of racism as part of a larger goal of eliminating all forms of subordination. (p. 1331)

Russell (1992) took an alternative approach with CRT by using it to examine the individuals’ experiences within the judicial system. Here, CRT became the “central rather than marginal factor in defining and explaining individuals’ experiences and navigation of the judicial process” (p. 763).

CRT recognizes that race and racism are permanent and have become interwoven into the historical fabric of the United States. This fabric covers policy, institutions, governments, and commerce at all levels. Crenshaw (2002) explained that CRT is an effective tool to analyze and view racism in our society and institutions:

Make no mistake about it: We are in a full-scale baiting campaign. It is well-organized, and it could be effective if we fail to mine the lessons of Crit-bashing (attacks on feminist critics) in the 1980s and Red-baiting (McCarthyism) in the 1950s. Indeed, the structure of the assault is virtually identical: The baiters identify some threat to our cherished institutions or way of life ... and then claim that ruthless suppression is the only way to be sure the threat has been contained. (p. 1368)

Crenshaw continued to explain that one reason the controlling powers within a society are afraid of CRT is what might be exposed when the fabric of society is lifted. This exposure alone is reason enough to use CRT to achieve authentic research, yet what the fabric is potentially covering up is that “Critical Race Theorists are theorizing relations that many Americans do not want to think about yet must encounter occasionally when they want something very badly and have to engage the sensibilities of people of color to get it” (p. 1369).

The fear of engaging people of color and the outward international appearance of a racist U.S. society during the 1940s were catalysts, according to Dudziak (2000), for domestic change here in the United States. Dudziak (2000) explained that during the Cold War the “domestic civil right crises would become (an) international crises” (p. 6) unless the government acted. The U.S. government was concerned about how internal civil unrest would play out on the world stage thus, “civil rights reform came to be seen as crucial to U.S. foreign relations” (p. 6). The differences between American domestic policy and international policy led to many relation problems with different countries thus forcing the United States to enact civil rights laws domestically. Promoting “democracy among people of color around the world was seriously hampered by continuing racial injustice at home” (Dudziak, 2000, p. 12). The United States could not promote fair and equal treatment of citizens in other countries when there was civil unrest domestically.

Civil issues and racial injustices are what Derrick Bell (1994) wrote extensively about. He also served as assistant counsel for the National Association for the Advancement of Colored People (NAACP) and the Legal Defense and Education Fund. He developed legal strategies that were used in more than 25 federal cases of school desegregation. He led the legal team who fought for James Meredith’s right to apply and gain admittance to the University of Mississippi (Bell, 1987, 1994).

Bell (2002) was the first tenured African American professor at Harvard Law School and is considered the originator of CRT. He examined racial, economical, and political issues from a legal standpoint. Bell (1987, 1992) completed two books that used fictional characters to bring a voice to different social issues. Some of the topics included school integration, affirmative

action, interracial marriage, and the lasting effects of enslaving Africans. At the conclusion of each story, Bell included a legal perspective of the chapter topic. Bell (1992) claimed that—

slavery refuses to fade, along with the deeply embedded personal attitudes and public policy assumptions that supported it for so long. Indeed, the racism that made slavery feasible is far from dead in the last decade of twentieth-century America; and the civil rights gains, so hard won, are being steadily eroded. (p. 3)

Interestingly, Bell (1992) believed that education was the necessary first step to begin change in a society combating racism: “Education leads to enlightenment. Enlightenment opens the way to empathy. Empathy foreshadows reform” (p. 17).

Bell (2002) shared some of his experiences in *Ethical Ambition* and his attempts to live an ethical life in an oppressive society. One remarkable ethical choice that he chose was walking away from his position at Harvard Law School in protest against the lack of hiring minority women at the University. Bell (2002) stated, “we live in a system that espouses merit, equality, and a level playing field, but exalts those with wealth, power, and celebrity, however gained” (p. 4).

Critical Race Theory and Educational Studies

Understanding complex issue like race, the privilege of wealth in our society, and investigating racial inequality can be aided through the use of CRT. Delgado and Stefancic (2012) recognized several different themes that occurred within CRT. The following is a sampling:

Storytelling – the naming of one reality or being. Using narrative to show and understand the radical oppression that minorities face in our society.

Intersection theory – how race, class, sex, nationality, or geographical region differs for different groups in our society. For example, a police stop for a group of Black men would differ for a group of Black women or Latinas. Likewise, a group of White men should have a different experience than a group of Latinos stopped in a southwest region of the United States (i.e., Arizona).

Legal Institutions – critical pedagogy and its existence in a standards-based classroom.

Revisionist – a critical examination of civil right laws passed during the cold war that were enacted not in the interest of human rights but to improve the image of the United States to other countries to gain allies.

White privilege – an examination of the numerous social advantages that come with being White or part of the dominant class. Education, social, career, and financial benefits come with being White—especially, a White male.

All these different methods of CRT themes involve experiences that individuals might encounter in society. CRT places greater emphases on experiences, giving “voice” to a group of people who are often overlooked (see, e.g., Bell, 1992, 2000; Delgado & Stefancic, 2012; Dudziak, 2000; Unger, 1983). CRT also places value on cultural knowledge and recognizes it as an educational asset—not something to be left at the door of the classroom. Instead of marginalizing the difference of race and culture, CRT considers race and culture as assets in teaching and learning. CRT educational studies consider race a strength and includes such diverse research methods as narratives, story-telling, and biographies (see, e.g., Bell, 1987; Carrasco, 1996; Olivas, 1990; Solórzano & Yosso, 2000).

Giving a voice and placing value on it for marginalized people all over the world is one of the greatest strengths of CRT (Crenshaw, 2002). It gives value to experiences, culture, and recognizes that all people of all color, race, gender, sexuality, and class status are valued:

When people who don't know me well, Black or White, discover my background (and it is usually a discovery, for I ceased to advertise my mother's race at the age of twelve or thirteen, when I began to suspect that by doing so I was ingratiating myself to whites), I see the split-second adjustments they have to make, the searching of my eyes for some telltale sign. They no longer know who I am. Privately, they guess at my troubled heart, I suppose—the mixed blood, the divided soul, the ghostly image of the tragic mulatto trapped between two worlds. And if I were to explain that no, the tragedy is not mine, or at least not mine alone, it is yours, sons and daughters of Plymouth Rock and Ellis Island, it is yours, children of Africa, it is the tragedy of both my wife's six-year-old cousin and his white first grade classmates, so that you need not guess at what troubles me, it's on the nightly news for all to see, and that if we could acknowledge at least that much then the tragic cycle begins to break down. (Obama, 2007, p. xv).

In the end, a CRT framework in educational studies challenges the traditional claims of the educational systems “objectivity, meritocracy, color-blindness, race neutrality, and equal opportunity” (Solórzano & Bernal, 2001, p. 313). A CRT framework that is committed to social justice can act as a liberator or as a “transformative response to racial, gender, and class oppression” (Matsuda, 1991, p. 1330).

Critical Race Theory and Education

Two scholars are credited with bringing CRT into the field of education. According to DeCuir and Dixson (2004) Ladson-Billings and Tate used CRT to examine social and political structures that normalized, and repeated, racism in the education field. Solórzano and Bernal (2001) explained that CRT can “further develop a race-and gender-conscious framework that examines and explains” (p.310) the prevalent role of racism in educational institutions.

Ladson-Billings and Tate (1995) argued in favor of using CRT as an analytical framework in education research to uncover normalized racism. Ladson-Billings (1998) explained that CRT can be divided into three concepts. First, CRT can be used to investigate how the current laws and policies normalize racism in society. Second, CRT necessitates a belief in “interest convergence.” This convergence, as explained by Lopez (2003), is a belief that the interest of minorities only becomes a concern when it can promote the self-interest of European Americans. Third, CRT acknowledges two different realities: dominant and subaltern. These three concepts of CRT investigation can help provide a critical lens when used as a framework for educational research.

The first concept of CRT looks to “unmask the hidden faces of racism by exposing and unveiling white privilege in its various permutations” (Ladson-Billings, 1998, p. 12). Critical

race theorists understand that racism is a normal constant in our society and the majority of people never notice it because it is a part of everyday reality. Lopez (2003) explained that—

racism has never waned in society; it has merely been manifested in different forms. However, the discourse on racism has shifted through time, such that overt and/or blatant acts of hate (e.g., name calling, lynching, hate crimes, etc.) have only been identified as being racist. This focus on explicit acts has ignored the subtle, hidden, and often insidious forms of racism that operate at a deeper, more systemic level. When racism becomes “invisible,” individuals begin to think that it is merely a thing of the past and/or only connected to the specific act. (p. 70)

In studying the responses of young Black males who have participated in SJML, CRT will assist in analyzing and exploring their perceptions to reveal any racist behaviors or practices that they observed.

The second concept of CRT, interest convergence, explains how European Americans are not aware of or interested in issues that are significant to African Americans. Milner (2008) explained, “interest convergence stresses that racial equality and equity for people of color will be pursued and advanced when they converge with the interests, needs, expectations, and ideologies of Whites” (p. 333). He gave an example of a school district who had “begun busing immigrant ‘non-English-speaking’ students to one of the ‘best’ local schools in the district” (p.332) thus giving these immigrant children access to a high achieving school. The school system at the same time boosted the school’s foreign language course offerings “for all the students, mostly white, upper-class, English speakers, in the school who were now also learning to speak different languages as well, mostly Spanish” (p. 333).

In this study interest convergence aided in analyzing the participants responses by recognizing/naming different oppressions that acted upon them. One example of interest convergence that acted upon all the participants was the school systems policy that landed all the participants at Benison High School. A school systems’ policy of transferring a “troubled” or

“failing” student to an alternative school to “help” the student really only serves the high school that is transferring the troubled/failing student. Ultimately, this transfer of a trouble/failing student will help high schools’ state academic rating.⁹

The third concept of CRT identifies two differing views of reality, a dominant reality and a subaltern reality. The term subaltern was coined by Gramsci (1971) who explained that the term was used to describe the class of people who were not part of the ruling or preferred class. He explained that the “subaltern classes are subject to the initiatives of the dominant class, even when they rebel; they are in a state of anxious defense” (p. 25). Thus, the subaltern groups are excluded and displaced from the political hierarchy and social economic institutions.

Because it is often not seen in the work that researchers do, Lopez (2003) urged researchers to use of CRT to help identify and name racism: “Our respective lenses are not attuned to recognizing it (racism) in our daily lives” (p. 85). He further noted:

CRT provides us with a healthy reminder that racism is alive and well in this country and functions at a level that is often invisible to most individuals. It reminds us that the only way we will make advances in dealing with the problem of racism is if we take the time to see and understand how it operates, recognize it within ourselves, highlight it within our field, and take brave steps to do something about it. (p.86)

Perhaps the most powerful asset that the CRT framework provides any researcher is its ability to identify and challenge racism. From a CRT perspective, the participants in this study were existing in the subaltern reality and a study that focuses on Black males can help bring their racial reality to the front of the bus, so to speak, as CRT has done with other similar studies.

Concluding Words: A Thought Experiment Using Critical Theory and CRT

At the beginning of this chapter, an excerpt from a past SJML was shared. The activity focused on the saturation of fast food restaurants by different zip codes. Students conducted

⁹ Examples of this transferring can be found in greater detail in Chapter 4, under the heading School Setting; additional examples in Chapter 5, under the heading Overarching Codes/Themes and Sub-Themes.

research in small groups and analyzed the data they gathered. Students' comments/reactions that were originally recorded in a personal journal were classified into four groups that were analyzed in the conclusion using both critical theory and CRT. This could be considered more of an example of how critical theory and CRT could be used to interpret the shared comments than an in-depth analysis of research results. As in-depth interviews were not conducted, the following is intended to serve more as a conclusion than research findings.

Economics of Fast Food Restaurant Locations

Two of the three statements shared by students that I classified under the heading of economics reflected what Ladson-Billings and Tate (1995) might consider hidden racism. Both comments degraded the students' own neighborhoods while romanticizing what they considered "white" neighborhoods. Explaining that the stores in their neighborhoods are old, not "bougie"¹⁰ or that nice houses are in the suburbs while lower rental apartments are in their neighborhoods. The students shared their oppressed assumption that all stores are better if they are located outside of "my neighborhood." Giving the suggestion that low rent is a factor that leads to the greater saturation of fast food restaurants is insightful, yet the students comment has hidden racist and self-depreciating undertones when the student shares their belief that the sole reason for low store rent is due to the price of the surrounding housing establishments.

A second insightful economic observation is that a geographical area with traditionally lower wages might contribute to the saturation of fast food restaurants. Yet, the students' suggestion that a nicer area would pay a higher wage might reflect the students' oppressed belief that people in his neighborhood are not as valued and therefore are payed a lower wage. Both Tierney (1993) and Matsuda (1991) would agree that this student's suggestion that the "niceness" of a neighborhood being the sole determining factor in the setting of wages can be

¹⁰ Bougie is defined here as being of a higher class or fancy.

explained through CRT as an example of the oppressive aspects of society that students in the minority class face every day (see, e.g., Tierney, 1993; Matsuda, 1991).

Eating Influences and Eating Habits of Different Ethnic Groups

One student shared that his reason for visiting fast food restaurants was due to the value that they offer. This reasoning was an affordable option for him (and his family) to visit on a regular basis. He explained that his family might visit a sit-down restaurant only on a special occasion, such as a birthday. Interestingly, the second comment shared by a student was that fast food was simply good tasting. He explained that he knew that the food had a high sugar content and he understood that the extra sugar was not a healthy choice, yet he admitted that it was the high sugar levels that he liked about the food. The student exclaimed that he was not “cappin’ [lying] I like sugar.” This admission of enjoying something so much, such as sugar, even knowing that it is not good for your health is perhaps what Fromm (1994) would attribute to the power of advertising.

The fast food industry has, and continues to, saturate the advertising market daily with pictures of happy, thin, healthy looking people, and cartoon-like mascots, enjoying/promoting their meals. This saturation has influenced millions of people daily to buy a fast food meal which perhaps many of the consumers know is not the healthiest choice. The advertising industry, sugar industry, and the fast food industries have, in essence, tricked the consumer into thinking that they are making a free choice of selecting a fast food option. This trickery has been accomplished through a billion dollar multi-media advertising campaign that has created “people who [have] become consumers, who possess as little individuality as possible, and who are ready to obey an anonymous authority while suffering from the illusion of being free” (Fromm, 1994, p. 23).

The third statement in this group speaks directly to the perceived differences between racial groups. A student explained that they would choose a whole pizza costing \$5.00 with just cheese because of its affordability. The student then continued to share their perception of my White privilege in that I would order a much more expensive pizza simply because I am White. Ladson-Billings (1998) might explain this as an example of unmasking the often unspoken hidden beliefs and perceptions of White people that many minority students have. This student has probably seldom sat down and eaten with many people outside of their economical and racial makeup, thus their belief that people from different races, mainly White, would order a much more elaborate/expensive pizza.

Stereotypes of Different Ethnic Groups

In addition to students suggesting that my family orders elaborate and expensive pizzas, one of the most common explanations for the higher saturation of fast food restaurants in lower income neighbors is “we [black people] eat more (specific name of a fast food restaurant) than white people” (personal journal entry). This belief is specifically addressed by Ladson-Billings and Tate (1995) as one of the main reasons to use CRT as an analytical framework to explain the normalized racism that is embedded in many minority students. CRT can shed light on the systematic oppression that minority students experience year after year and how this oppression/hidden racism influences their daily lives and shapes their beliefs.

Gramsci (1972) explained the term “subaltern class” as a class of people who are influenced by the dominant class. This term can be used to give a possible explanation of one student’s reasoning for eating fast food during the week and his mother cooking only on the weekend. There are many factors that could explain this, yet without further inquiry an accurate analysis cannot be established. Drawing on my own experiences with students who attend

Benison High School, one explanation could be that this student's mother works at night or is working two jobs. Thus, Gramsci might point this out as an example the subaltern class where a mother, working two jobs or at night, does so for the convenience of the dominant class.

What is Missing

Having completed this activity with five different classes over several years I am not surprised that students have no responses to my prompts regarding supply/demand, tax breaks, and market share as possible influencers to fast food restaurant locations. Lopez (2003) explained the importance of identifying and naming racism in our day to day lives in order for effective change to occur. He explained that racism is alive and well in our society today and invisible to most individuals. I am reminded of this hidden racism every time, thus far, when conducting this portion of the lesson and my prompts elicit no response from the class.

Using critical theory and CRT as a joint framework for this study can assist in ethically describing the experiences of marginalized Black men's journeys through high school mathematics. The idea that race plays a part in every aspect of these young men's lives is one of the fundamental beliefs of CRT. CRT can also look to challenge the dominant claims of the neutrality of mathematics and the public school system. The mathematics lessons that these young Black men experienced were grounded in social justice, which is in line with both critical theory and CRT beliefs. CRT will recognize the experiential knowledge that these young men brought to the social justice lessons and help uncover how race affects their experiences with social and institutional oppressions (see, e.g., Bell, 2002; Giroux & McLaren, 1996; hooks, 1990; Stinson, 2006).

CHAPTER 4

METHODOLOGY

This chapter begins with a shared personal story that led me to the realization that I needed to authentically connect with my students if I planned to remain in the profession of teaching. Next, I discuss a brief rationale for qualitative research and then summarize different research methods that were considered for this study. I then link case study methodology to my framework of both critical theory and CRT. Later in the chapter, I discuss my subjectivity and how I planned to manage it, followed by the details of how the study was conducted. I conclude the chapter with the limitations of the study and a summary of the eight SJML that are referenced throughout this study.

Methodology in Context

Barely three years into my teaching career, I was ready to quit. It was the day before Thanksgiving break, and I had just broken up yet another fight in the hallway. This fight was the sixth in just 4 months of school. While breaking up the fights, I had been assaulted in four of the six break ups. Additionally, I felt my students were not learning; they didn't do their homework; they never seemed to pay attention (except when I made popcorn for them); and only one or two were performing at grade level. When I spoke to my principal and told him my intentions of possibly leaving teaching and applying at Home Depot he told me to give it until Christmas and then come back and talk to him. And with a smile, he also suggested I duck more when breaking up fights.

One month later, I knew that teaching was where I belonged and could not wait for the Christmas break to be over so I could start teaching again in January. What happened in those 4 short weeks? First, I realized that my students' life experiences were significantly different from

my own; and second, I came to learn about the abusive home life where one of my students lived.

On my return from a Florida beach vacation after a restful Thanksgiving break, I was stopped by one of my students, Carl, in the hallway just before class started. With a big smile on his face he asked, “How was your Thanksgiving break?” Knowing Carl really didn’t care about my Thanksgiving break I replied, “Fine, how was yours?” He then turned his head, pointed to the side of it and said, “I got shot! In the head!” Carl then pulled the crushed bullet out of his pocket and proudly displayed it for me. After further questioning, I found out that during the Thanksgiving break a stray bullet had hit him during a drive-by shooting in his neighborhood. When I asked him if his head hurt, he said, “Only a little,” and then placed the bullet back into his pocket and went down the hall looking for someone else to share his story.

The second experience that changed my outlook as a teacher was coming across a student in a pair of urine stained pants. At the beginning of December, the Language Arts teacher across the hall came in my room and asked if I could take a student to get new pants and also to do some laundry for him as the pants he was wearing smelled of urine. Just a month earlier, having completed my first stint as assistant football coach, I still had access to the laundry room and the lost and found clothing pile. I took the young student, Darryl, who was in my afternoon class, to the gym, got him clean clothes and let him shower in the locker room. Once clean, I had Darryl help me load his dirty clothes in the washing machine and then took him to the coach’s fridge for a snack because he complained of hunger. While he inhaled two yogurts, I asked him about his clothes and if he need to do more laundry. Darryl told me that his washing machine was broken at home and he and his dad had no way to do laundry. I told him to come in early the next day with their clothes and we could wash them all.

The next day Darryl arrived with three garbage bags full of dirty laundry. Over several loads of laundry while sitting, talking, and listening to Darryl, I came to realize that he was living in a situation that was unsanitary and possibly not safe. After taking Darryl to the principal and explaining his situation, the three of us walked to Darryl's house. We dropped off the laundry and observed the unsanitary living conditions. The house was infested with bugs and there was trash all over the house. Darryl received permission from his father to come to my house for a few days while he got the house cleaned up. Darryl stayed with my wife and me for about a month and then returned to his father's home. During that month, I contacted child services but unfortunately they could do nothing for Darryl unless he was at home when they conducted a home visit. It took the Department of Families and Children Services a week and a half to visit Darryl's house where they removed him from his home immediately. A year later, I stood by Darryl at his father's funeral. He thanked me for helping him change his life. Those were big words from a young 14-year-old boy who was heading into high school. I realized then that in order to be a more effective teacher I needed to better understand where my students were coming from.

Nicholas (1980), in a keynote address to the First Annual convention of the International Listening Association, explained: "The most basic of all human needs is the need to understand and be understood. The best way to understand people is to listen to them" (p. 2). I came to understand Darryl when I took time to listen to him and hear his narrative. I was able to help him and he in turn helped me become a better teacher. I was a teacher who came to realize that I really did not know my students and that I needed to change so that I could better understand them. Owens and Ennis (2005) argued:

The need for creating relationships with students so that they feel cared for and can then care for themselves, each other, and the [inclusion of the ethic of care as pedagogical]

content [knowledge] has never been more evident. As teacher educators it should no longer be assumed or left up to luck that our students, future teachers themselves, realize the significance of care, understand the dynamics of caring relationships and environments, and approach their teaching and their students with care.
(p. 421)

Carl and Darryl taught me that my life and my experiences were significantly different from my students. In retrospect, I was foolish to think that I could teach them the way I was taught. When I was a high school student, I remember walking to school thinking, “I need to hand in my mathematics homework right away, so Mr. Smith doesn’t mark it late.” While my students were walking to school thinking about which students to avoid, what the school is serving for breakfast, and how to stay away from the school police officer, “Cuff”em Jones.”¹¹

Providing youth with opportunities for meaningful involvement and responsibility within the school are expected outcomes in schools that have high expectations. Participation, like caring and respect, is a fundamental human need: “When schools ignore these basic needs of both students and teachers, schools become alienating places” (Benard, 1991, p. 4).

Understanding and respecting your students were valuable lessons that Carl and Darryl taught me. The lessons I learned from them, have not only kept me in the teaching profession for 24 years but now I also find myself conducting a study that utilizes qualitative research methods to observe the effects that teaching mathematics through a social justice lens might have on young Black men who have completed high school.

Methodologies Aimed Toward Understanding and Respecting

A general definition of qualitative research is “any type of research that produces findings not arrived at by statistical procedures or other means of quantification” (Strauss & Corbin, 1990, p. 11). Qualitative research, while not collecting statistical data, gathers rich data

¹¹ The school police officer who was appropriately nick named by the students because the first two things he always did was line everyone up against the wall and then put everybody in plastic zip tie handcuffs.

about personal experiences, behaviors, feelings, and emotions not captured by quantitative research (Barbour, 2001; Caelli, Ray, & Mill, 2003; Fitch, 1994; Strauss & Corbin, 1990; Thomas, 2011). Qualitative research aims to understand unique interactions and meanings in a particular situation, but here understanding does not seek to predict outcomes but rather to gain insight into the situation (Patton, 1990). Qualitative research can investigate relationships between social movements, conflicts and interactions between nations, organizational or institutional functioning, and so forth (see, e.g., Bogdan & Biklen, 1998; Denzin & Giardina, 2009; Mauch & Birch, 1998; Padgett, 1998).

Exploring relationships is “what separates qualitative research from the numbers” (Douglas, 1985, p. 82). Gathering data on different types of relationships might “consist of interviews and observations but also might include documents, films or videotapes, and even data that has been quantified for other purposes such as census data” (Strauss & Corbin, 1990, p. 11). During and after qualitative data collection methods, the researcher might begin to see trends and commonalities in and across the data. Thus, according to Strauss and Corbin (1990), allowing the qualitative data to be statistically analyzed:

[The researchers] are, in effect, quantifying qualitative data. In speaking about qualitative analysis, we are referring not to the quantifying of qualitative data but rather to a nonmathematical process of interpretation, carried out for the purpose of discovering concepts and relationships in raw data and then organizing these into a theoretical explanatory scheme. (p. 11)

There are many reasons to conduct qualitative research. Qualitative research might be the preference and/or the experience of the researcher; that is, the discipline in which the researcher comes from might lend itself to qualitative methods (e.g., anthropology, cultural and social psychology and sociology, history, etc.). The problem or phenomenon under investigation might be more effectively addressed through qualitative methods. For instance, some research is simply

better conducted in the field, such as homelessness or addiction. That is to say, to gain a better understanding of participants' stories and experiences, the researcher may have to travel to the participants' location (i.e., go to the field) (Cronin, 2014; Denzin & Giadiana, 2009). Similarly, in other areas of research, such as the act of "coming out" or sharing experiences of growing up in poverty, the participant might feel threatened in an institutional or formal environment and thus better results can be gained by meeting in a neutral or safe place in the field (see, e.g., Cavage, 1996; Cornin, 2014; Mayo, 2008; Rossman & Rallis, 1998).

Qualitative methods can be utilized to explore substantive areas where little is known or about which much is known to gain a different perspective or novel understanding (see, e.g., Kreps, Herndon, & Arneson, 1993; Mauch & Birch, 1998; Patton, 1990; Stern, 1980).

Qualitative methods can also be used to obtain the finite details about phenomena such as emotions, feelings, and thought processes that are difficult to gain through traditional quantitative research methods (see, e.g., Douglas, 1985; Glesne, 1999; Strauss & Corbin, 1990). Perhaps Turner (as cited in Weathington, Cunningham, & Pittenger, 2010) gave the most succinct reason for engaging in qualitative methods: "You may have heard the world is made up of atoms and molecules, but it's really made up of stories. When you sit with an individual that's been there, you can give quantitative data a qualitative overlay" (p. 525). In other words, qualitative methods allow the stories of those who have experienced the phenomenon under investigation to be heard.

Overall, qualitative research focuses more on the participants than on the data that they might generate. It leans toward broadly defined interpretive, postmodern, feminist, and/or critical conceptions of human experiences rather than more narrowly defined positivist, post-positivistic, humanistic, and naturalistic conceptions (Grossberg, Nelson, & Treichler, 1992). The open ended

and probing questions often used in qualitative data collection procedures offer participants a chance to use their own words as opposed to selecting from a set of pre-determined answers, which is too often the case with quantitative (survey) research. The four familiar qualitative methodologies I considered for this research are shown in Figure 1:

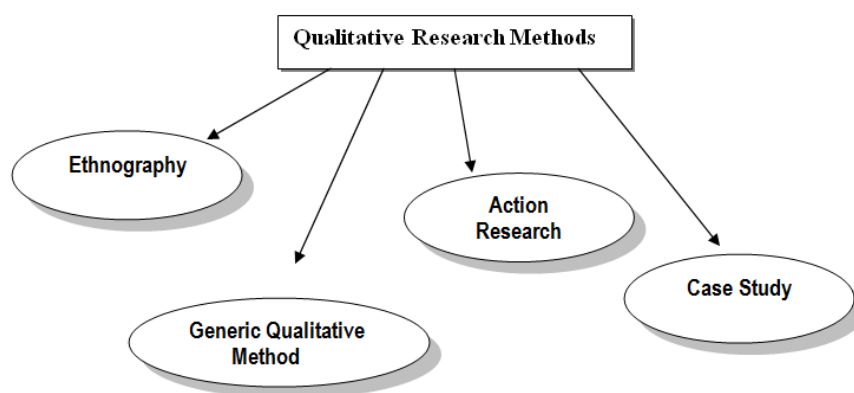


Figure 4. 1. Qualitative research methods.

Ethnography

The origin of the word ethnography comes from Greek, meaning “a combination of the words ‘ethnos’ (people or tribe) and ‘graphia’ (writing)” (Jones and Watt, 2010, p. 13). Thus, Ethnography is the writing about people with regard to the scientific description of the customs of cultures and people. Goulding (2005) explained that ethnography is a focus “on small-scale societies” that is concerned with “the nature, construction and maintenance of culture” (p. 298). She continues to explain that the ethnographer’s goal is to “look beyond what people say to understand the shared system of meanings we call culture” (p. 298). Jones and Watt (2010) stressed the importance for ethnographers to stick to a series of principles, which include:

- A desire to accurately provide a ‘thick description’ of a social world.
- The importance of historical and cultural contextualization.
- The intent to present the ‘native’s point of view’.
- The importance of reflexivity
- The importance of subjectivity. (p. 26)

Generic Qualitative Method

Merriam (1998) stated that generic qualitative research differs from ethnography research (research that is focused on culture), or grounded theory (the building of theory), because it simply seeks “to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved” (Merriam, 1998, p. 11). According to Caelli, Ray, and Mill (2003), generic qualitative studies are either the combination of two or more known methodologies or they are “not guided by an explicit or established set of philosophic assumptions in the form of one of the known qualitative methodologies” (p. 4). It, therefore, provides the novice researcher, clinical researchers, and others a form of “epistemologically and methodologically congruent standard[s]” (p. 4), which can be successfully followed in a uniform method of sorts.

Action Research

According to Greenwood and Levin (1998), action research has two dimensions. First, it can work through a series of cycles that are planned, put into action, evaluated, and then further action is planned. Or secondly, action research is collaborative, in that members of the system who are being studied participate actively in the action plan. Greenwood and Levin (1998) rationalized that the goal of action research is—

the creation of a more democratic, just, fair, and/or sustainable human situations’ with local expertise (the teacher) because we start from the premise that human beings are intelligent, experts in their own lives and life situations, and that the mobilization of their expertise is a fundamental ingredient in any successful and lasting social change process. (p. 134)

Case Study

Rubaie (2002) argued that case study research is a legitimate research method and explained that “it is well suited to a holistic, democratic discipline dealing with the

understanding and change of interwoven complexities associated with interpersonal processes that emerge” (p. 34). Case study research can focus on specific situations and gives the researcher the opportunity to fully investigate everything encompassing that situation (see, e.g., Cornin, 2014; Patton, 1990; Yin, 2003). Thomas (2011) further considered case study research as—

analyses of persons, events, decisions, periods, projects, policies, institutions, or other systems that are studied holistically by one or more method. The case that is the *subject* of the inquiry will be an instance of a class of phenomena that provides an analytical frame—an *object*—within which the study is conducted and which the case illuminates and explicates. (p. 512)

The diverse experiences of case study participants are what Denzin and Giardina (2009) encouraged researchers to investigate: “We are no longer called to just interpret the world. Today, we are called to change the world and to change it in ways that resist injustice while celebrating freedom and full, inclusive, participatory, democracy” (p. 13).

Employing a case study methodology in my project provided my former young Black male students a space for their “voice” to be heard and shared as they recounted the injustices and experiences in the classroom and how (if at all) the social justice lessons they engaged in affected their lives after high school. Giving these young men a chance to share their views, opinions, and struggles in a safe setting established over several interview sessions shed light on their inner thinking and the methods they employ to deal with potential day-to-day oppressions that they believe affect them. The results of these case studies challenged the perceptions of society at large that has labeled them as dangerous Black men or as troubled Black youths (see, e.g., Anderson, 1987; Cooper, 2002; Freeman, 2006; Hayes et al., 2006; Rawls, 1971; Tatum, 1997).

Linking a case study methodology to critical theory and CRT produced results that were rich in dialogue and (potentially) liberating for the participants: “If the structure does not permit dialogue the structure must be changed” (Freire, 2000, p. 54). Being interviewed provided past students who have experienced multiple forms of marginalization by different oppressive systems gave the participants access to the “process of decoding” method and “thereby [made] explicit their real consciousness of the world” (Freire, 2000, p. 97). Matsuda (1991) inferred that interviews can give the participants a chance to share their life experiences, their culture, and their navigation through an educational system that casted them aside. Connecting the frameworks of critical theory and CRT with a case study methodology acted as a liberator, if you will, or as a “transformative response to racial, gender, and class oppression” (Matsuda, 1991, p. 1330), giving the participants a chance for *their* stories to be heard.

Subjectivity

I received a swimming scholarship to attend university. Over the Christmas break, during my freshman year, I participated in a training camp with the swim team in South Florida. One morning after practice all the long-distance swimmers got our left ears pierced as a bonding ritual. We all bought the same dolphin earring that we thought looked really “cool.” We kept our earrings in and went through the usual cleaning and infections that often goes hand-in-hand with new piercings. A few months later, I went home for spring break, but I removed my earring prior to going home knowing that my father did not approve of earrings in men and would not understand why I got one. A few days after being home my father noticed the hole in my ear. In a few short words he explained to me that no one would hire me with “a hole in the side of my head” and demanded that I take it out.

Because I was financially dependent on my father, I took it out. However, when I returned to school, I promptly put it back in my ear as an expression of my independence and freedom from my father's authority. Unfortunately, after a week of not wearing an earring the hole had closed and thus started a 2-month battle to re-pierce my ear to re-establish my "coolness." Unfortunately, both my ear and my father won that battle. My short-lived time with an earring was reduced to just a couple of memorable pictures and a stern talking to from my father. As I reflect on my father's subjectivity, I must take into consideration his positionality. Born in 1942, he left home at 17 and completed high school at night a few years later. As a young adult, he worked two jobs at times to support his growing family. Then, in his thirties he became financially stable with a successful company that he ran for just over 20 years until his death. He could not approve of or understand why his 18-year-old son wanted to pierce his ear in order to bond with teammates. He only saw the earring as something that did not conform with his world.

According to Foucault (1997)—

there is no sovereign, founding subject, a universal form of subject to be found everywhere, rather subject [subjectivity] is constituted through practices of subjection, or, in a more autonomous way, through practices of liberation, of liberty ... on the basis of a number of rules, styles, inventions to be found in the cultural environment. (p. 51)

Subjectivity is the correlation between "types of understanding, forms of normativity and modes of relation to oneself and others" (Foucault, 1986, p. 4). Baker (2011) rationalized that subjectivity is similar to creative writing, which "is a practice that is dynamic, reflective and creative" (p. 45). Butler (2004) further clarified that the experience of "othered" subjectivity can "undo a prior conception of who one is only to inaugurate a relativity newer one" (p. 1). In other words, if my father ever reflected on his own subjectivity and realized why he "othered" young men with earrings he might have redefined his identity and a newer one might have emerged.

Ambrosio (2008) explained:

We cannot transform ourselves through a simple act of knowing, through critical reason or reflection alone, but only by *risking* who we are, by seeking out and testing ourselves in situations that illuminate the contours of our subjectivity, that destabilize our certainties. Transforming the self requires that we act with personal courage and develop a tolerance for uncertainty and vulnerability. (p. 255; emphasis in original)

When researchers acknowledge their subjectivity and clarify their personal stakes then “they may benefit their souls, but they do not thereby attend to their subjectivity in a meaningful way”

(Peshkin, 1988, p. 17). One’s subjectivity will occur throughout the research process, therefore, it is important for the researcher to systematically identify their subjectivity continuously.

According to Peshkin (1988), “When researchers observe themselves in a focused way ... they learn about the particular subset of personal qualities that [come in] contact with their research [and the] phenomenon has [been] released” (p. 17). It is these qualities that can alter the researcher’s findings and thus should be “disclosed to the readers where self and subject became joined” (p. 17). Though continuous self-monitoring and self-reflecting the researcher can monitor their subjectivity and record/reflect on it accordingly.

In order to deal with subjectivity during the research and writing process, Peshkin (1988) suggested an enhanced awareness with a self-monitoring system in place:

I see this monitoring as a necessary exercise, a workout, a tuning up of my subjectivity to get into shape. It is a rehearsal for keeping the lines of my subjectivity open—and straight. And it is a warning to myself so that I may avoid the trap of perceiving just that which my own untamed sentiments have sought out and served up as data. (p. 20)

Managing my Subjectivity

Two years ago, I had a student in my mathematics class who was covered in tattoos. Mark would proudly display them and say he wanted more. Mark told me he had over eighty tattoos and planned to stop when he had no more room for ink. When I assigned homework over the weekend to his mathematics class I would always add “and Mark your extra assignment is no

more tattoos over the weekend.” I used to wonder where he was going to get a job. He had tattoos on his arms, legs, hands, chest, and neck. Later, he took a summer school class that I was teaching, and he asked me for a reference. He wanted to apply at a grocery store for part-time work. I asked him if they approved of his tattoos and he told me to “get with it Mr. Potts. Everybody has tattoos. Even the lady who hired me.”

I started to look around, and he was right. Tattoos were everywhere. I had taken my father’s subjectivity toward earrings, internalized it and then categorized my students with my own stereotypes of who gets tattoos and who is employable. I sat down with Mark at the end of summer school and asked him about his different tattoos. The narrative that he shared was not some “bad boy” running around getting symbols and images put all over his body as I had internalized. Instead, he showed me the names of the people who had died that surrounded his heart: his mother, a cousin, and his daughter who passed away when she was just 2 months old. He told me that when he was incarcerated he had the word “Freedom” tattooed on his neck so he would never forget his experience of being locked up for just over two years. He had “live” and “die” on his fingers that reminded him of his days in a gang and then the open hands of Jesus on each wrist to remind him not to go down that path again.

That afternoon I apologized to him telling him I had no idea of what he had been through and how his tattoos told his narrative, his personal struggle with finding himself and trying to complete high school. Mark helped me see my subjectivity and through real dialogue with him I have changed my personal feeling about getting “too many” tattoos. The grocery store was lucky to hire a great hardworking kid like Mark. I know that my dad might not have hired him, but I would have.

Throughout my preparations conducting this research, from the formulation of the initial research questions to the interviewing of former students, to the writing of results, my positionality as a White man studying issues of race, racism, and White privilege/supremacy remained at the forefront of my mind. I examined my subjectivity throughout the entire process of this research. This act of examining the research process in the context of my positionality can be described, at least in part, as reflexivity. Reflexivity involves a self-scrutiny on the part of the researcher; a self-conscious awareness of the relationship between the researcher and an “other” (see, e.g., Chiseri-Strater & Sunstein, 2006; Foucault, 1991; Pillow, 2003). Peshkin (1988) shared a technique that he used to keep his subjectivity in check called the “Six I’s.” Peshkin explained that the first I is his understanding that “I (Peshkin) am disposed to see-and no less consequential, not see” what is being observed. He understood that he cannot remove his subjectivity from his research therefore it is better to manage your subjectivity then try to remove it. He used the other five I’s to help manage his subjectivity during his observations:

I can consciously attend to the orientations that will shape what I see and what I make of what I see. By this consciousness I can possibly escape the thwarting biases that subjectivity engenders, while attaining the singular perspective its special persuasions promise. (p. 21)

I used Peshkin’s six I’s during my study to help manage my subjectivity. Just as he differed from a group of rural southern Christian educators (his research participants), I too differ from my participants. I am a White man from Canada, and I have lived in the southern United States for half of my life. Prior to beginning this PhD journey, I taught in an urban setting for almost 17 years. Qualitative research sets the researcher as the data collector. It is normal to expect that the researcher’s beliefs, cultural background (gender, socioeconomic status, education, ethnicity), and political position, are all variables that may affect the research process. Just as the participants’ experiences are framed in their own culture so are the researcher’s. As a member of

the dominant culture in several categories, it was important that I established trust with each participant and was mindful that topics brought up during this research project might have been uncomfortable for both participant and researcher (hooks, 1990).

Glesne (1999) considered that the researcher's awareness of subjectivity can contribute to create trustworthy research and also to a better understanding of the researcher's self and their investment in the research (p. 95). She encouraged the researcher to experience and embrace all emotions as they progress through the research process. According to Glesne, the researcher should "inquire into (their) perspectives and interpretations and to shape new questions through re-examining (their) assumptions" (p. 105). Qualitative research seeks to provide an understanding of issues through the experiences of individuals being aware so by self-checking my positionality it enabled the voices of the participants to come through and not my own voice (see, e.g., Crethar, Rivera, & Nash 2008; Denzin & Giardina 2009; Merriam 1998; Padegett 1998).

As Freire (2000) explained, there must be a "dialectic relationship" (p. 50) between two groups to have true conversation. For a researcher to be totally objective is not a reality. One can never totally separate from their subjectivity. As a researcher, I needed to acknowledge who I was as an individual and the subjectivities that I brought to this research. I was careful to not speak for the research participants but instead reported their narratives and how they have navigated through different oppressive spaces. If I inserted my voice into this research, according to Freire (1998), such actions on my part would, in fact, be counter-liberating, thus positioning me as an oppressor. To be an advocate for mathematics lessons taught through social justice, my research had to reflect the voices of those who participated in this research and not *only* my own.

Methods

Qualitative research brings human experiences to the forefront and also emphasizes inductive and interpretive methods that are applied to the “everyday world which is seen as subjective and socially created” (Anderson, 1987, p. 384). This type of research is focused on the participants. It “examines the qualities of (the) communication phenomena whereby data tends to be continuous rather than discrete, and the emphasis is on description and explanation more than on measure and prediction” (Fitch, 1994, p. 32). With the focus on the individual and not on numerical outcomes, qualitative research will yield results of greater value because it “encompasses a variety of methods variously referred to as interpretive, naturalistic, phenomenological, or ethnographic” (Kreps, Herndon, & Arneson, 1993, p. 1).

The driving force behind my research was to interpret the effects that mathematics lessons taught through a social justice lens had on former students. Case study research is the study of life, its experiences, and the transformations that result from those experiences (see, e.g., Anderson, 1987; Fitch, 1994; Sofaer, 2002). These transformations and experiences were recorded through rich, in-depth, one-on-one interviews. Foucault (1997) explained the importance of examining life experiences and transformations:

that’s why I really work like a dog, and I worked like a dog all my life. I am not interested in the academic status of what I am doing because my problem is my own transformation. This transformation of one’s self by one’s knowledge, one’s practice is, I think, something rather close to the aesthetic experience. Why should a painter work if he [or she] is not transformed by his [or her] own painting? (p. 131)

School Setting

The participants in this study all attended and graduated from the same secondary school. Benison High School provided a non-traditional, drop-out prevention, educational setting that served “at-risk” students. It is located in a major urban center in the Southeastern United States

(city population: 448,000, metropolitan population: 5,490,000). The median home price for the urban area was \$192,000. Although the median price for a house sold around the schools' neighborhood was higher, the entire urban area was taken into consideration as students from anywhere within the school system boundaries are allowed to attend Benison High School. Benison High School did not service a particular neighborhood, so students were given weekly bus passes to travel to and from school. The school was considered an alternative, open campus secondary school. The school was established in 1992 and had an enrollment of about 300 students. The school maintained extended hours, which allowed students who might work the flexibility to leave early or arrive late. Classes ran from 9:00 a.m. until 8:00 p.m.

Students who attended Benison High School came from many different paths. The 8.5 program was for students who had been previously retained two or more times and had not successfully completed the 8th grade. They were administratively placed at Benison High School. Benison High School had an extended day and a five 9-week term system that gave students the opportunity to "catch up." These students could later choose to join their zoned school after they become academically on-track for graduation. Additionally, a student was enrolled at Benison High School when they transferred mid-year from another school system. This procedure was an advantage to the student because of Benisons non-traditional term system. Thus, students did not have to wait for several months before they joined the more traditional semester or year-long high schools that made up the rest of the schools in the system. Furthermore, if a student transferred from outside the school system where they attended a term/quarter class schedule or if they were attending that systems alternative/open campus high school then they were directed to Benison High School. Finally, if a current student was enrolled in another in-system high school and they wanted to graduate early then they were considered for placement at Benison

High School. The above scenarios, however, made up only 10% of the open campus student body.

The majority of the students came to Benison High School through one of the following two ways. First, they were transferred to the open campus school after they were released from incarceration or they made the decision to return to school after they had dropped out. Often court mandated conditional release from a juvenile detention center required the student to attend school regularly (Shigley, 2012). Several of our older students had similar requirements with their parole or their alternative sentencing. Upon their release and/or plea bargain they had to attend and actively seek the completion of their high school diploma.

The second, and most popular avenue for students to be enrolled at Benison High School, was through their zoned school counselor. High schools are judged on many different criteria to determine if they are successful. One of the measures is the percentage of students who graduate on time, 4 years from the date of enrollment in the 9th grade (GaDOE, 2014b). This criterion has led to the common practice in the school system to place students in the next grade level class if they were successful in the previous class or not. Then, when the student had been at the school for 2 years, the counselor encourages the student who is behind to enroll at Benison High School where they can then “catch up.” This procedure removes the student from their roll and, in turn, improves their school’s graduation rate. The graduation rate at Benison High School was around 7% to 10%. Interestingly, in spring of 2012 one of my mathematics classes investigated the graduation rate at Benison High School as a social justice lesson. That May, Benison High School graduated 107 students but only nine students were considered on time graduates, students who completed high school in 4 years or less. The other 98 students were considered

drop-outs by the states recording procedures. My students calculated the following graduation rate for the class of 2012:

- 4 years from enrollment date in the 9th grade – 8.4%
- 5 years from enrollment date in the 9th grade – 17%
- 6 years from enrollment date in the 9th grade – 62%¹²
- 7 years from enrollment date in the 9th grade – 86%
- 8 years from enrollment date in the 9th grade – 96%

All the students at Benison High School completed the same graduation requirements as students who attended traditional high schools in the state. Two major differences from other high schools in the same system is that Benison High School had no organized team sports and it held three different commencement ceremonies through-out the school year for students who completed the state required coursework.

Participants

All the participants in the study graduated from Benison High within the last 5 years and range in age from 19 years old to 25 years old. A total of eight students were asked to participate in the case study. Six of the eight completed the entire study. I stayed in touch with the students through social media, texting, phone calls, electronic mail, and (their) return visits to Benison High School. All the former students were young Black men; one was attending a 4-year post-secondary college; one was unemployed; two were working full time; one was working two part-time jobs; and the other three were enrolled in 2-year or vocational post-secondary schools. The original eight participants had completed at least one mathematics course where SJML were taught, and the six participants who completed the study had completed two courses where SJML were taught. The mathematics courses were either an Advanced Algebra Trigonometry A/B or Math IV part A/B that were modified to include SJML.

¹²This graduation percentage was 9% higher than the school systems average in 2012.

The Advanced Algebra Trigonometry A/B courses focused on the following concepts: circles, parabolas, ellipses, hyperbolas; trigonometric and inverse functions; trigonometric identities; matrices, vectors, and probability. The Math IV part A/B courses focused on the following concepts: probability and statistics; polynomial functions; rational functions; radical functions; right triangle trigonometry; and the creation of models to solve contextual problems (GaDOE, 2014a).

Data Collection

The purpose of this study was to explore the effects (if any) of a social justice mathematics pedagogy experienced by a group of six young Black men. I conducted three to four interviews with each participant. Interviews can be defined as conversations with a purpose. They are considered to be an essential source of case study information given that most case studies focus on human affairs. The interview is viewed as a dynamic, meaning-making occasion where the actual circumstance of the meaning moment is what is important. Researchers also need to prepare sufficient background information about the participants before the planned interviews start (see, e.g., Berg, 1998; Bogdan & Biklen, 1998; Cavaye, 1996; Yin, 2003).

Douglas (1985) outlines three different interview categories. The first category is a formal or standardized interview, which is highly ordered and can be used to gain background information. The questions are all pre-arranged and take on a questionnaire form. The same questions are used for all the participants. The second category of interviews is considered a semi-standardized or partially structured interviews. This interview has a set of pre-arranged questions that are asked in a certain order. The third type of interview is informal and not set up with pre-determined questions. The interviewer may not know all the questions in advance. Here

it is important that the interviewer have the participant discuss the topic thoroughly with guidance from the interviewer.

For this research, a questionnaire was presented to the participants and then interviews from two of Douglas's (1985) interview categories. This research utilized the informal and semi-formal techniques of interviewing. Background information was gained by presenting the questionnaire first. Completion of the questionnaire by the participants was a process used to "collect data with maximum reliability and validity" (Kumar, 1999, p. 21). The questionnaire contained questions that participants answered regarding general background, family, educational, and personal experiences (see Appendix C for initial draft).

The second category of interviews was considered a semi-standardized or partially structured interviews. This interview had a set of pre-arranged questions that were asked in a certain order. After the questionnaire was returned, I set up the first semi-formal interview. This interview, which lasted between 60 to 90 minutes, clarified any questions that stemmed from the questionnaire and allowed participants to reflect on their memories of the SJML. The interview session then led the participants to discuss influences, if any, that the SJML may have on their current lives. The interview also encouraged the participant to reflect on mathematics classes they completed in middle and secondary school. I was interested in whether their perceptions about mathematics had changed from classes completed with social justice lessons as a part of the curriculum and classes completed without social justice in the curriculum.

The second formal interview took place after the participant completed reading a research article about a social justice lesson.¹³ I asked all the participants a series of pre-set questions to get their reactions, perceptions, and personal reactions (if any) to the article. The third

¹³ The article was Stocker, D. (2012). Toys for boys? Challenging domestic violence using mathematics. *Our Schools/Our Selves*, 21(4), 105–124.

interview/meeting was an opportunity for each participant to reflect on what was recorded in each interview and gave them a chance to comment on anything that they may want to change or expand on (a form of member checking; see, e.g., Carlson, 2010; Strauss & Corbin, 1998). All the interviews took place in safe and comfortable settings. Local coffee shops, public libraries, or other public spaces were utilized. I was also mindful to keep the meeting places near public transit lines as it tended to be the main source of transportation for the participants.

I completed all the interviews in an 8 to 10-month time period. I felt that keeping the interview meetings close together created a better flow for the participants and at the same time gave them time between each interview to organize their reflections. Prior to the interviews all participants were given a brief outline describing the research and their role in it. I obtained consent forms from each participant and also completed the University required IRB process. Each interview was recorded digitally and then transcribed verbatim by me for later analysis.

Data Analysis

The success of analyzing qualitative data lies in the reoccurring themes that develop. The struggle or path to success is to find and *identify* these themes (i.e., themes do not emerge but rather are identified through repeated readings and coding within a specific theoretical framework). Tesch (1990) described an eight-step systematic process to analyze textual data:

- (1) Get a sense of the whole. Read all the transcripts carefully and take notes in the margins and also writing down any ideas that come to mind.
- 2) Take one document to begin with and pose the questions, "What is this about?" It is important to not focus on the substance but understand the underlying meaning of the text. Again use margins for notes.
- 3) Complete the second step for all the interviews and then cluster together similar topics. This collapsing of specific topics can be grouped into larger overarching topic headings.
- 4) Now review back over the data and write codes next to examples in the data where they occur. This organizational scheme may produce new categories and new codes may emerge.
- 5) Find the most descriptive wording for the topics and turn them into categories. Here is the opportunity to reduce—collapse a second time—the number of categories by grouping topics that are similar to each other. Lines can be connected to topics to show interrelationships.
- 6) Create an

abbreviation for each category and alphabetize these codes. 7) Assemble the data material belonging to each category in one place and perform a preliminary analysis. 8) If necessary, recode the existing data. (p. 142)

This thorough eight-step process was the technique that was utilized to code and group the data gathered through the interviews and responses to the social justice article.

In addition to collecting data through questionnaires and interviews, I transcribed each completed interview directly after the recorded interview was completed. This timing enabled the coding process to begin right away. I also kept the vernacular and verbal patterns of the participants. I included their terms, pauses, and repetitive words in the transcript, thus allowing their voices to come through. Consequently, the coding process was ongoing, and every category was analyzed and subsequently lead to new inquiries for future interviews and data collection (Strauss & Corbin, 1998). While transcribing the data I also consulted with a Black female teacher of Language Arts who also worked at Benison High School. She assisted with the vernacular transcriptions of the participants. Throughout the translation of the participants' recorded interviews I often consulted with her to ensure I was correctly capturing the voice of the participants. This process helped the participants voices come through during the collection process and in the final reporting. I was aware that I could not stop my voice from coming into the data analysis along with other influences. I worked at managing my subjectivity throughout (Peshkin, 1988) and let the participants' voices, their stories, be heard through the data and research process.¹⁴

Protection of Participants and Ethics

¹⁴ As discussed in the preface, there were four critical readers of different parts of the dissertation who self-identified as Black. Comments and critiques for the data representation and analysis chapter (Chapter 5) were collected from four different Black readers. These readers consisted of a male doctoral student, two female secondary school counselors, and one female English Language Arts teacher.

Participation in this study was entirely voluntary. None of the participants received any monetary gain for their time or transportation. Because all the participants are considered adults by the state's legal definition (code O.C.X.G.A. 39-1-1 [2010]) each participant was required to sign a participant consent form (see Appendix B). Participants could withdraw from the study at any time with no repercussions, and all data collected pertaining to them would not be used in the study. The risk involved with participating in this study was limited to what they would normally face on a daily basis. Participants were informed of the intended use of the information collected and that their information would be maintained under electronically secured password protected documents or under lock and key by the researcher. Pseudonyms were used instead of real names to protect the identity of the participants and all other family members mentioned during interviews or in the completion of the questionnaire.

Plans to Disseminate the Findings

I developed 12 social justice lessons for the mathematics classes that I taught. I have added a detailed explanation of 8 of these lessons in Appendix F as part of the final dissertation. My hope is that more teachers will use social justice instruction to connect their students to issues that directly and indirectly affect them. Three times¹⁵ I have presented at conferences sharing the process that I go through to develop social justice lessons in mathematics and the reactions of my students. At both conferences, the audience participated in a shorter version of one of the lessons completed by my students: "Presenting or publishing your results to a wider

¹⁵ Potts, D. (2010, February). *What do Gaddafi, Libya, and oil all have to do with a circle? A social justice mathematics lesson*. Workshop presented at the 22nd Annual At-Risk Youth National FORUM, Myrtle Beach, SC.

Potts D. (2011, October). *Infusing social justice into your mathematics lessons*. Workshop presented at the Annual Georgia Mathematics Conference, Eatonton, GA.

Potts, D. (2012, October). *What do Gaddafi, Libya, and oil all have to do with a circle? A social justice mathematics lesson*. Workshop presented at the 24th Annual National Dropout Prevention Network Conference, Orlando FL.

audience than your committee is one of the best ways to contribute knowledge to your field and advance your professional life” (Roberts, 2004, p. 195).

Limitations

There were a few limitations in the study:

1. The participants are all Black men who ranged in age from 19 to 25 years old. All the participants came from similar, more or less, backgrounds and all were born/raised in the same urban area. The participants also shared commonalities in social economical standing, single parent family make up (absent father, raised by maternal mother, by relatives, or by grandmother), and all had similar academic struggles. Therefore, the results of this study may not be generalizable to other schools/educators due to the differences in student demographics.
2. Because the study relied on accessible and willing participants, a random sample was not possible. The sampling pool was limited as the mathematics course that is used to teach social justice lessons was not offered every term.
3. Due to the transient nature of the young men, continuous contact was not always possible. Some of the factors that came into play during the study were changes in phone numbers, disconnected phones, and school/work commitments.
4. The social justice pedagogy that was developed was specific to a state curriculum that was at the time specific to one state. Although there has been a move to develop a national curriculum the lessons might not be transferable to all states’ curriculum.

The limitations as defined by Mauch and Birch (1998) explained that a limitation is a “factor that may or will affect the study in an important way, but is not under the control of the researcher; a

delimitation differs, principally, in that it is controlled by the researcher” (p. 103). The delimitations for this study were:

1. Participants of the study: 8 former male students, all graduates of an urban secondary school ages 19 to 25
2. Time of the study: two years from August 2017 until May 2019
3. Communication: timely and effective scheduling of interview appointments and follow up mailings/communication

Social Justice Lesson Summary

The participants in this study recalled a total of eight SJML. The following is a brief description of these eight lessons. A greater description can be found in Appendix F.

The Real Cost of Fast Food

Objectives: Students used function notation and linear graphs to chart cost analysis of dining out at a fast food restaurant. Students also tracked the consumption of salt, saturated fat, and sugar consumed from multiple weekly visits to a fast food restaurant. Students developed a deeper understanding of a healthy diet and the nutritional value of different foods.

Skills: Graphing a linear function, finding the slope of a line, compare and contrast functions, graph analysis, and investigate the nutritional value of foods.

Description: Students measured the weekly cost of eating the same meal at a fast food restaurant for 3 months with a set number of weekly visits. Students also tracked their consumption of salt, sugar, and saturated fat. Students shared their results visually via a graph and algebraically by developing the equation of a line. Students also were asked to compare their results to an alternate meal with healthier choices compared to the students selected/typical menu selection at the fast food restaurant.

Not My Stop

Objectives: Students used the distance formula to measure the distances between the school and different public transit stations. Students also completed the cost analysis of the difference in expenses of travel between different public transit stations. Finally, students gathered data and participated in a presentation of their findings.

Skills: Map reading, distance formula, bar/line graph, cost analysis, and oral presentation skills

Description: Students used an online mapping tool to calculate and compare the distances between public transit stations. Students took their results and developed a cost analysis of transportation between the school and the different stations. Students created bar and line graphs for visual displays. Students also presented their findings to their peers and school administration. Students calculated the closest and most economical transit station to be dropped off after school. Students investigated any unusual drop off locations and, through research, developed theories supporting or disputing the drop off locations that were selected.

Water Shortage

Objective: Students tracked and charted their personal water consumption to compare and contrast their consumption to different communities who experience water scarcity

Skills: Data gathering, data analysis, personal reflection

Description: Students charted their personal water consumption and compared their results to different communities who experience water scarcity. Students compiled their data and completed a written analysis/presentation, sharing their findings with the class. The students also shared their personal experiences/reflections of a clean water transportation activity.

The Saturation of Liquor Stores in my Neighborhood

Objective: Students used an internet search engine to determine the number of stores in an area that sold liquor. Students compared and contrasted the number of stores in different zip codes and also calculated the saturation rate

Skills: Mapping skills, developing ratios, comparing/contrasting ratios, calculating percent, commutation with rational numbers, and research analysis

Description: Students researched articles that reported on the effects of liquor stores in low income areas. Students wrote a summary of the positive and negative effects of stores in these areas. Next, students used an internet mapping/search engine to tally the number of business establishments that sold liquor in different zip codes. Students then developed a ratio to calculate the saturation of liquor stores by zip code. Using their collected data, students reported on the different saturation rates by zip code in relation to the average house price in the same area. Students then shared their findings and reactions to the presented data.

School Crossing

Objective: Students gathered data to check school compliance to state regulations and to compare/contrast two other nearby high schools (within a seven mile radius) safety signage to Benison High School safety signage.

Skills: Distance analysis, ratio comparisons, percentage comparisons, photographic evidence gathering, and scale drawings.

Description: Students gathered numerical data of the number of school safety signs in front and surrounding the school. The information was also supported with photographic evidence. Next, the students constructed an overhead map of the school and the exact location (to scale) of the safety signage that was posted around the school. The students then conducted the same process at two different high schools in the surrounding area. The students compared and contrasted the

three schools noting any variations. Once the activity was completed the students discussed their results and made proposals on how to bring equity in the safety signage surrounding the different schools (if any).

CEO Pay

Objective: Students researched and calculated the hourly rate paid to Chief Executive Officers and other company board members.

Skills: Computation of large integers, calculation of percentages, compare/contrast different hourly rates, angle of elevation, and triangle construction.

Description: Students worked in small groups to research and calculate the hourly rate of pay for CEO's of popular companies. The students converted the yearly pay amount of the company CEO including bonuses into an hourly rate for a 40- and 60-hour work week. These two rates were then compared to different pay rates within the same company. The CEO hourly rates were compared to an introductory employee's hourly rate and a manager's hourly rate. Students then calculated the percentage of difference between the rates and attempted to show that difference as the angle of elevation in a right triangle.

Mortgage Fraud

Objective: Students compared different home foreclosure rates by postal code.

Skills: Research/gathering data in order to build/support an argument, histogram construction, line graph construction, and bar graph construction.

Description: Students worked in small groups to gather and interpret data related to foreclosures over a 10-year period. The data were then compared to data in different postal codes based on different yearly mean incomes. The results were compiled, and the groups reported their

findings. The students were required to create and share at least three different types of graphs. Each group was also required to produce a PowerPoint to show their findings.

What Do Gaddafi, Libya, and Oil All Have to Do With a Circle?

Objective: The students took the parts of a circle and matched them up with different parts of a conflict or current issue.

Skills: Vocabulary related to parts of a circle and current events.

Description: Students worked in small groups to define different mathematical terms related to a circle. Next, the students researched a current conflict or current event and matched up the mathematical definitions to different parts of the researched conflict or current event. Students from the group presented their definitions with full explanations and defended their definitions to the class.

CHAPTER 5

DATA REPRESENTATION AND ANALYSIS

The participants in the study—six young Black men who, during high school, participated in a series of social justice mathematics lessons (SJML)—underwent a series of interviews in the spring of 2017. This fifth chapter is divided into four parts. In the first part, I share a social justice lesson in context. The second section provides a description of each of the six participants and gives the reader a glimpse into each of their lives. The third section provides a brief look into quantitative data. Although this study is qualitative, during the data analysis process some noteworthy numerical trends developed. The final part of the chapter focuses on the participants' agency toward the social justice lessons in which they participated. Specifically, focusing on how the participants' experiences might still affect them in their current day-to-day activities and observations.

Data Representation and Analysis in Context

The six young men who participated in this study all completed high school and shared some similar experiences growing up. They all agreed to participate in this study, share memories, share feelings about the successes, and failures, in their lives thus far. For all six, the journey for this research project began when they participated in two or more SJML at Benison High School (taught by me). They have since graduated and moved on to other endeavors. Participating in these interviews might be considered, metaphorically, as completing the circle that they began to draw back when they entered elementary school.

Coming Full Circle

Geometry is always a challenging class to teach as it is heavily laden with terms and proofs where students often struggle. Years ago, during my time in teachers college, I

participated in a practice lesson where we created a definition book for the many terms related to geometry. Thinking this was a great resource tool for students, I, too began developing a definition book years later with my geometry students. This “student-centered” book was hands on and seemed, at the time, a great reference tool. The students created their own definitions for each term/formula for their book based off the definitions I gave them. The students would thus internalize the definitions by putting them into their “own” words. Traditionally, the students would add to their definition books for the unit covering circles. Some of the terms they would focus on were: circumference, diameter, radius, center, chord, arc, semi-circle, secant, tangent, inscribed angle, central angle, and area formula. Unfortunately, these student-centered interactive books never really worked for all students as they were the very definition of Freire’s (2000) teachers loading information into students as if they were receptacles.

A few years ago, several students approached me with questions about the Arab Spring and Gaddafi. They were studying this topic in a social studies course. These students’ questions gave me the idea to connect the terms associated with circles to international events happening in the world. Collaborating with a social studies teacher, a series of lessons were created that had students link geometry terms to current events in Libya. One of the strongest points of this lesson was its openness. After the students were provided with all the definitions of the circle terms/formulas, several newspaper articles about Libya, and informational handouts from their social studies teacher, they worked in groups to match up the circle terms with different people, historical events, and geographic locations all dealing with Libya.

Finding the Center of a Circle

The students broke up into groups and began to debate among themselves how the parts of a circle could be linked to Libya. There were many different ideas and well thought out and

argued definitions. The most diversely defined term was the center of the circle. One group immediately decided that Gaddafi would be the center of a circle. A student in the group explained “[once] Gaddafi was the leader of the country or we could just say the military once they control everything. It must be the center of the circle as all the points on a circle reach out in equal distance from the center” (personal reflection journal, January 2014). Another group had a tremendously lively debate, eventually deciding to define the center as Tripoli. “It’s the capital of Libya so it must be the center. That’s where all the government offices are and Gaddafi old castle” (personal reflection journal, January 2014). The third group at first defined the center as Tmassha, a small town geographically in the center of Libya, until one member of the group convinced the other three members to switch the definition of center from Tmassha to oil. “Everything be ‘bout the oil. That’s how they got their money” (personal reflection journal, January 2014).

Six Multifaceted Young Black Men

This study engaged six young black men who participated in at least two interviews. These interviews generated nearly 57 single-space pages of typed transcript. In an effort to introduce each participant a common “story telling” outline is followed. I begin the introduction with my description of when I first met each participant at Benison High School and then a physical portrayal follows. The intent of the descriptions is to begin to build a visual of the participants during their high school years. Following the physical portrayal is what I referred to as a “significant event” that the participant shared with me either during the interview or in another setting such as during the school day or in a meeting outside of school prior to this

study.¹⁶ The participants' significant event is an event that might have led (i.e., motivated, inspired, persuade, etc.) them toward high school graduation. Each participant's event could also have derailed their high school graduation plans. Yet through support, perseverance, hard work, and fortitude, each participant negotiated—that is, dealt with, accommodated, or reconfigured (Stinson, 2013¹⁷)—various obstacles to continue their high school education.

This part of the description was difficult to include in the portrayal as most of the events do not paint the participants in a “positive light” per se. Rather, the events tend to feed into common stereotypes that most young Black men face daily in the United States. Prisoners, store robbers, drug dealers, and auto thefts are just some of the labels, true or not, that young Black men carry with them every day in America. Although several of the participants did commit crimes and spend various time periods incarcerated these single shared events do not define or frame any of the young multifaceted men who participated in this study. Sadly, young Black men today are the most “talked about” but the least known about (D. W. Stinson, personal communication, September 2018). Each participant's description concludes with what they were engaged¹⁸ in at the time of the interviews and their definition of social justice mathematics lessons.¹⁹

Dwayne's Narrative

¹⁶ Prior to writing up these significant events, I checked with each participant to ensure that they were “comfortable” with this event being shared as part of their description. All six participants agreed to the inclusion, with most adding clarity and greater detail to complete the event's description.

¹⁷ *Negotiate* here is defined in more robust terms— to deal with (some matter or affair that requires ability for its successful handling)” (i.e., to accommodate); “to arrange for or bring about through conference, discussion, and compromise” (i.e., to reconfigure); or “to successfully travel along or over” (i.e., to navigate, or in this context, to resist) (Merriam-Webster's Collegiate Dictionary, 1999, p. 777). Or, said more directly, there are three ways to negotiate: by “sucking it up,” by compromising, or by refusing to yield. (Stinson, 2013, p. 74)

¹⁸ Engaged in – meaning type of work they were employed in.

¹⁹ The order in which each participant is introduced is chronological to his initial interview date.

I first met Dwayne when he was enrolled in an Algebra II class. He was a talkative lanky kid who wanted to add something to every lesson. He took meticulous class notes and came to school every day. He was never late for class, instead arriving early. Physically, Dwayne was an average teenage youth, thin and standing about 5'10". When I meet him for the first interview, I noticed that he had put on some weight since high school and had begun to grow a beard. His beard was rather patchy, but he nurtured it often by stroking it in an attempt to encourage it to grow into a full beard.

Nearly six years ago, against the advice of family and friends, Dwayne walked into a police station and self-surrendered. He was accused of three serious sex crimes, being charged both as an adult and as a juvenile for the same offenses. Dwayne turned 17 in jail, waiting for any member of his large family to arrange his bail. In the four months that he spent in jail no one came to his aid.

Dwayne's family consisted of one biological sister and 10 half-sisters and half-brothers who all forgot about him. The same family members who told him to self-surrender did not step up to support him when he complied with the issued arrest warrant. He did not qualify for a signature bond because of the severity of the charges and according to the courts he was classified as homeless. The aunt he had been living with and paying rent to for the previous year and a half was the same aunt who accused him of sleeping with her half-sister's 15-year-old daughter. This disqualified her address being used for release due to the charges brought against Dwayne.

Although incest was mentioned every time Dwayne went to court it was never tested nor proven. Dwayne's father's infidelity led to uncertainty as to who was biologically related to whom. Eventually, Dwayne stopped trying to explain his father's infidelity and numerous

children with different women every time he went to court or was given a new public defender.²⁰ Dwayne's father had 12 children with 5 different women. He died in jail when Dwayne was less than one year old and had led a life that was ruled by drugs and breaking the law. Dwayne's mother, who also had many encounters with drugs, died of breast cancer when Dwayne was 12 years old.

With so many roadblocks in Dwayne's life, there was great potential for him to fail and to follow in his father's footsteps. Defying all the odds—being homeless, criminal charges pressing against him, incarceration for 4 months during his last year in school—Dwayne still managed to bond out of jail and graduate on time, ranked fifth in his graduating class.

The event that lead Dwayne to graduation was not being incarcerated but rather occurred after he was released and had trouble finding a place to stay:

Dean: When you came back to school after being locked up, what was that like?

Dwayne: They [my family] didn't want nothing to do with me. 'cept my sister and my aunt but I had to give her my [food] stamps. She wanted the money from the state but did not want me. My sister let me stay with her and I didn't have to give her nothing. All she said was finish school. You know I have 11 brothers and sisters and none of them wanted to help me out or let me stay with them.

Dwayne went on to explain that the rejection from his family was the hardest thing to face while locked up trying to make bail. No one in his family came forward to offer any financial assistance so that Dwayne could get out of jail while he was waiting for his trial. After posting bail and moving in with his older sister, he focused all his energy and attention on catching up with his schoolwork and completing his last few classes to graduate.

²⁰ During Dwayne's incarceration while awaiting bail, I worked with him to help him keep up with his classes. I coordinated with his teachers and through twice weekly visits I passed and collected completed school assignments from him. Over his 4 month period of incarceration, Dwayne explained the case against him and throughout his entire case proceeding I often attended court with him in a moral support capacity. Thus, I became privileged to follow in Dwayne's journey through the court system from his incarceration to his eventual plea deal.

At the time of our interview, Dwayne was working in the food industry while also working to clear his record. As a condition of his probation, he could apply to clear his record after he successfully completed his probation. When we met, he was at 3-months post probation. Dwayne had begun the lengthy process of trying to get his record cleared. During a follow-up phone conversation (June, 2018) with Dwayne, he defined SJML:

Dean: Well, how would you describe all these lessons that we talked about and you completed?

Dwayne: Ya, they were better than doin' regular math. I mean it never seemed like we were doin' adding and stuff it was more 'bout trying to find out why it's happening and learning 'bout other people and what they go through. Like the struggle to get good water in India or eat healthy when you got junk food everywhere. The lessons were good. More interesting and more 'bout stuff that matters.

Dwayne recalled four SJML in varying details over several months of interviews and phone calls. He recalled his work of “gathering data” and “writing a letter with all the information” about inadequate school crossing and signage. A letter to which he never received a response from the school board. It seems that perhaps Dwayne has come to realize that when “stuff matters” it should be investigated and questioned. His own experiences led him to suggest a SJML of investigating “how many people get charged and then plead out” (Interview 2).

Dwayne's participation in SJML, it seems, has elevated his awareness of social oppression. It is possible that he has developed new tools and skills which help him in maneuvering through obstacles in his daily life and assist him in rewriting his life's narrative.

Tony's Narrative

I first met Tony when his twin sister was in one of my mathematics classes. He would walk her to class every day and I would always think what a protective older brother he was. When I mentioned this protective stance to him one day after his delivery, his sister spoke up

right away exclaiming, “I’m older! By 4 minutes” (personal memory, fall 2014). Tony just looked at her and quietly replied, “So the doctor say.” This quiet response is illustrative of his personality. He stands 5’10” and is built like a linebacker at a Division Two school—lots of muscle but just not quite enough height. He has a deep voice and the most neutral expression on his face—always. When reviewing his attendance record, he missed less than 10 days of school in the 2 years he attended Benison High School.

One rare day when Tony was absent from school, I asked his sister where he was. She simply answered, “Court.” When I pressed her for more information, I began to hear about the Tony that existed before he attended Benison High School. Tony explained that he chose to change his life path after a brief hospital stay during which some of his closest friends were arrested. Tony shared that he was not happy with choices he had made a few years earlier and had wanted to return home for a while. During our first interview, Tony reflected that the decisions he made in ninth grade were not good life choices:

Tony: I fell in with my friends and started getting in trouble again. Not going to class, pulling the fire alarm—that got me kicked out the first time. Starting fights or throwing food in the lunchroom. That’s when I got kicked out again and stopped coming to school.

Dean: How long did you not go to school?

Tony: ‘Bout 2 to 3 years.

Dean: During that time what did you do? Were you home?

Tony: My mom kicked me out. I stayed with friends who had places. I hustled to make money. It was fine but then my partner got jammed up and I went back home.

Dean: What do you mean by “jammed up?”

Tony: Arrested. I was sick and at the emergency. I had my appendix out so I was not there, but I would have been if not for the appendix.

Dean: Oh, I didn't know—is that how you ended up at Benison High School?

Tony: Ya my old school sent me there and said cuz I had not been in school I had to go to Benison. I also could not use my mom's address cuz she wouldn't let me back until I was in school and I needed an address to enroll.

Understandably, Tony's appendicitis became his catalyst to redirect his life's path. Even the frustration of institutional red tape and his mother's strict demands could not deter him from re-enrolling in high school. He faced his first obstacle when he tried to enroll at Benison, needing to have proof of an in-district address before he could enroll. This proof of residence is an obstacle for all homeless students trying to return to school. The need to prove you live in district is difficult without papers to prove you have an address and you are paying bills. Tony's mother would not let him move back until he was enrolled. Tony, therefore, was confronted with his first dehumanizing obstacle. He had to convince school administrators to let him enroll while having to confess his embarrassing homeless status.

Another obstacle Tony had to overcome was changing his routine to being back at school and becoming a student again. He described this experience:

Dean: So, when you were enrolled at Benison that first year, how was it?

Tony: It was hard. I had been out. School had always been difficult for me, math especially. But as the years went passed, I got better. Benison was hard. There was so much ... crazy ... it was always difficult, math is my hardest subject.

Dean: So, you are saying that math was the hardest subject for you? Was anything else hard about being back at school?

Tony: Ya being out and then back at school it seemed that I forgot a lot and then being back in everything was a lot to understand and get back into numbers and graphing. I remember the whole 9th year all we did was graph. I never did it. I would just copy the person beside me. I never really did well but I came to school so I could get back home.

Dean: Getting back home was important to you?

Tony: Ya I was homeless. Living on the street waiting for my mom to let me back. My sister used to bring me food and stuff. I still had my clothes and shoes at my mom's, so I need to get all that back. Once I was back in school, I couldn't sleep all day like I was doin'—now I had to be up.

The requirement for Tony to maneuver in a traditional academic space seemed difficult for him. Tony's struggle to re-adjust to traditional educational practices was not as easy as showing up to school. He shared that he struggled with his first mathematics class back at Benison High School and confessed that he even resorted back to old methods of cheating, copying work off other students. It seems that in order for Tony not to fall back into his routine he had to continue to evolve as a learner and develop techniques that enabled him to complete his own work.

In order for Tony to live with his mother and twin sister he had to turn his back on the street family²¹ with whom he had lived for just over two years and focus on completing high school. His desire to change in the end was fueled by his desire to stay connected with his biological family, explaining that even though his educational journey was hard he “never really did well but I came to school so I could get back home” (Interview 1).

When we met, Tony was working part time for a parking company near an airport. He was working nights and was waiting for an employer-imposed probation period so that he could begin to work full time. Once employed full time, he planned to continue working nights and enroll in trade school to become a certified mechanic. Tony shared his future hopes during a follow-up phone interview:

²¹ The term *street family* refers to the participants' friend groups, street/neighborhood groups, and organized gang affiliation. All these families are separate from whom the participants would consider their organic or biological family.

Tony: I just need to get my work straight by the airport then I can work at night and go to school during the day. Right now, there is only part time at night, and I need full time.

Dean: Oh, okay. When do you think that will happen?

Tony: Ya my manager says that in a month or a bit they can switch me but first they need to get some paperwork in to get the job open for me a probation thing. And a drug test too. I had two already. Just walk into work and they be like, go pee.

Dean: Well that would be great—but it may be hard to work at night then go to school during the day.

Tony: There's afternoon classes too, I would take those. And I stay awake, you know, I like to be up at night anyway—that's how I could make my money being a mechanic that work late.

Tony described SJML during his first interview as simply being “good.” When pressed, he further explained, “We did different stuff—not really math but other stuff. You had us read articles and stuff that had a bit to do with math but more ‘bout different things” (Interview 1). During his second interview, when asked again about his definition of SJML, Tony further explained:

Dean: Okay, well Tony how would you define all the social justice lessons you did?

Tony: Good. Ya good. I mean the lesson were good and all—interesting and fun you know. You made it good not just talkin’ up at the front of the room givin’ problems. Other classes we are just sittin’ there doin’ problems. I always slept when the teacher put out the problems.

During Tony’s second interview he spoke at length about a SJML, focusing on eating habits and fast food. It was after this discussion that he shared his second more meaningful definition of SJML. His recollection of this lesson, and others, more than three years after they

were taught demonstrate his engagement and the seemingly effect they had on his learning experience.

Jeff's Narrative

The first time I met Jeff he was enrolled in one of my twelfth-grade mathematics courses. He was the first student to arrive, a trend that continued each day for the entire semester. He was so consistent that he eventually became responsible for setting up the daily warm-up activity for the class.

Jeff stands just over 6'4" and is best described by his nick name "Stretch." Tall, thin, and with a dark complexion, he definitely stands above the crowd. When I taught him several years ago, he was heavily tattooed as a teenager. A few months into the school year, I asked him about his many tattoos. Specifically, I remember him having a "XO" tattoo on his hand between his thumb and his pointer finger. I asked him if he was sending kisses to a loved one. He quickly corrected me, "Naaa Mr. Pott[s] you funny. It stands for X (Ecstasy) and Oxy" (personal memory, fall 2015). This was the first glimpse I had into Jeff's' former life before he enrolled at Benison High School.

When Jeff was just 12 years old, he joined a neighborhood gang and found it was an easy way to make some extra money. He began working as a look out and eventually climbed up the gang hierarchy to selling drugs on a corner with his own crew. Eventually, he expanded his business to the high school that he was attending. This decision led to his dropping out of high school, getting kicked out of his mother's house, arrested, and incarcerated for just over two years:

Dean: How long were you at Davis High School (pseudonym) in 9th grade?

Jeff: Not long, not long at all. See I got caught up in the game²² and thought I didn't need school no more. Ya know? I had my hustle on and I was makin' money runnin' my game.

Dean: So, you left Davis High School?

Jeff: Ya, 'bout a month or two and I just started workin with my crew. We was makin' money and the only thing school did was take time away from that. (Interview 1)

Within a year of being kicked out of his mother's house, Jeff and several of his friends²³/gang²⁴ members were arrested and charged with drug possession with the intent to sell. He made a plea deal and ended up spending just over two years in a juvenile detention facility. He did attend high school in the detention facility and began his journey to becoming a high school graduate. After Jeff was released from the juvenile detention facility, he focused his energy on remaining in school, completing his parole, and following his mother's rules so he could remain in her house.

Jeff also worked hard at cutting his ties with his former friends/gang members. He completed his 6 months at a transitional high school and then selected Benison High School because it offered a faster path to graduation and it was not in his neighborhood. Additionally, Jeff began the long, painful, and expensive process of having his gang affiliated tattoos removed. He was still going through tattoo removal when he completed his high school degree at Benison.

²² Through conversations with Jeff, he explained that "caught up in the game" was his phrase for selling drugs. This phrasing was also confirmed by the fourth critical reader who noted that the term "game" is a pseudonym for selling drugs.

²³ I added the term *friends* to recognize that not all associates and acquaintances of these young men are fully gang affiliated. Through discussions with former and current students I understand there are many different levels to gang involvement/membership, and I do not assume that the people referred to during these interviews are all gang members.

²⁴ In this study, I have no intention of investigating the role that gang affiliation or engaging in illegal activities might have had on these young men. I acknowledge that there is research in this area, yet this study is not intended to add to that body of research.

When we met for our first interview, I asked him if he was finished with his tattoo removals and he informed me that he had and that the process took him 4 years and about \$1,000.

When Jeff was asked to describe the social justice lessons that he participated in he shared three main descriptors: straight, interesting, and you had to be there; in that, attendance was necessary to participate in the lessons. He explained:

Dean: Okay, well how would you define or describe the social justice lessons we did in the class?

Jeff: A definition? I don't know. They was straight. Tight. They was good they kept me interested. Ya, normally I stop listen but your class you had to be there. Listen to make sure you could follow the problem. You always talkin bout problems with the government and stuff.

Dean: So, your definition might be that the social justice lessons were straight, as in good? And you needed to listen to follow along?

Jeff: Ya straight good and Mmmm and be there—can't miss your class cuz then you miss the reason we studin' the problem. And not just math problems but other problems like the wastin' water and the food graphs 'bout salt and you know grease.

Dean: Grease?

Jeff: Ya know? Like the fat.

Dean: Oh, maybe calories?

Jeff: Ya calories. (Interview 1)

Jeff's work ethic and focus to succeed remain strong. At the time of our interview, Jeff was working two jobs, one in a large grocery chain and a second job in the evening at a warehouse. He explained during our first interview that he is keeping his full-time job during the day at the grocery store while completing a probation period at the higher paying warehouse job:

Dean: Are you still at the grocery store?

Jeff: Ya, I also got a night job workin' in a warehouse and there I make more—17 a hour. I'm just not full time yet. I have to wait 6 months before they give

me more hours than I will leave [the grocery store]. Seventeen is a good amount—that's money now that you don't walk away from that. There are guys there makin' 25 a hour. (Interview 2)

Jeff is reinventing his identity through completing high school, the removal of his gang related tattoos, and keeping a regular and legitimate job. Collectively, these efforts show that Jeff has learned how to maneuver through the forces and impulses that pulled at him during his middle and early high school years. It seems that Jeff is now in control of his future and his childhood forces/impulses are no longer directing his future.

Calvin's Narrative

I first met Calvin in the hallways. He was not in any of my classes; in fact, he never really seemed to be in anyone's class, just in the halls. I got to know Calvin on an early spring Saturday morning when I was asked to volunteer to go with an Outward Bound group taking 14 male students whitewater rafting.

On the drive up to the river, many of the boys were bragging about how they were going to paddle and ride the rapids. The group became a lot quieter when they saw the river and the speed at which the water was moving. I am sure several would have backed out if just one of the boys had said no but their pride and bravado pushed all of them into four rubber boats that bounced down a rushing river for an afternoon of tipping over, getting stranded on a rock, discovering that they really cannot swim (thank goodness for tightly tied life jackets), and working together to make it to the end of the river—alive.

At the time, I did not realize that this trip would bond me to these 14 young men for the rest of their time (and beyond) at Benison High School. This trip quite possibly changed these young men and gave them all a bonding experience that they may never forget. Calvin ended up in my mathematics class the next school year, and I teased him all year that I was the one who

pulled him out of the water, “saving” his life. One afternoon after class Calvin confessed to me that he was afraid to get in the water that day. He shared that he is not a strong swimmer and was worried about getting swept down the river. Calvin might have been the last guy to jump in the water to go swimming, but I remember him helping us all back into the boat, pulling us up with little effort. He lifted a 200-pound person like they were simply a sack of tennis balls. Calvin has strength to spare. He stands 6’2” and carries 250 pounds of muscle like a professional athlete. He can dunk a basketball, sprint faster than most people, and can hold four soda cans in one hand, all skills he loves to show off. Although he never played any organized sports, he probably could have easily excelled at several.²⁵

Since sixth grade, the only time Calvin saw either of his parents was during visitation at a state prison. His mother was incarcerated on drug related charges when Calvin was in 5th grade. Just under a year later he witnessed his father’s arrest for a charge to which he would later plead guilty, murder in connection with the sale of drugs. Calvin also spent several years incarcerated for the sale of a controlled substance and criminal gang participation.

During our first interview, Calvin shared that his turning point in school was when a friend got shot and nothing was done to the person who was the shooter. Also, several of his friends were arrested and locked up:

Dean: I remember that your second year at Benison High School you were in my class and you passed that class and then I looked at your transcript you passed almost every class you took from that point on. What happened?

Calvin: Okay, well you see I saw that for me at least I was not goin’ back to jail. And you remember Quith? I was there when he got shot. That guy came out and shot him. Didn’t care and Quith was not even in the car. Guy was

²⁵ Through critical readers of this chapter, I was made aware of the athletic references that I was attaching to four of the six participants in their descriptions thus far. Not wanting to attach “common athletic attributes” (critical reader comment) to Black males, I reflected on the descriptions of the participants. Ultimately, I limited athletic references to only two of the six participants. I member checked with those two participants; both agreed with their descriptions.

crazy, never got locked up, police just took his gun and that's it. Fucker never—oh sorry—guy never got locked up but acted tough after that.

Dean: So, is that what turned you around being there when Marquith got shot?

Calvin: Ya, and some of my partners were g'tting' locked up too. I couldn't go back cuz of my record. If it got brought back from Juvi and I would have gone for a long stay.

Dean: What did your friends—or partners do to get arrested?

Calvin: Not arrested they locked up, put away, there for a term. I would have been there but my granma need me to move some stuff so me and Dre go over there and the rest of our crew got jammed. We were the only two who was not there.

Dean: Wow, so helping your grandmother kept you out of jail?

Calvin: 'Bout time seeing that she put me there before ... but na I mean she had to ... I was runnin'....

Dean: Okay, so then you came back and you were a different student?

Calvin: Ya I talked with my granma and I agreed to walk ... you worked out my classes and show me that it would take like a year—or little more.

Dean: I remember auditing your transcript.

Calvin: You know I asked the counselor, but he told me to wait and I was like I can't wait now my granma wanted a date—remember she called you?

Dean: Called me? I think she called me every week at first—asking if you were in class doing your work and staying out of trouble.

Calvin: Ya she cared (pause) wanted me to stay out and not go in like my mom (pause) Like my partners. (Interview 1)

Calvin credits his grandmother's tough love for helping him go straight and graduate. Not being with his gang associates the day they were arrested reminded Calvin that he needed to change his lifestyle to break his personal cycle of incarceration.

At the time of our first interview, Calvin was working two different jobs and also saving to buy a house with his grandmother. His mother had been released from prison, but he does not

have any contact with her, initially a condition of both their paroles but, as he explained to me: “My granma is the one who is my mom. She raised me and got me to leave the bangin’ life” (Phone Interview). Perhaps Calvin’s actions from when he was younger continue to cause him some personal embarrassment. However, it was interesting to see such a large, muscular man be humbled by his past and then be so passionate about his love for his grandmother and excited about his future.

When I asked Calvin about his definition of SJML, he gave the lessons one of their greatest complements. He explained that he enjoyed the lesson so much that he would have attended the lessons even if his grandmother was not making him attend school:

Dean: Before we start how would you describe the classes, the ones we did with the fast food study and the (public transit) bus lesson?

Calvin: Ya well I been thinkin’ for a minute and you know remembering what we used to do in your class. I mean I always liked your class—probably would have come even if my Granma didn’t make me. You know you was always doin’ stuff—stuff that seems to be ‘bout us or stuff that was you know, ‘bout us. (Interview 1)

When trying to define SJML myself, I often think that it would be something like: students engaging in mathematics through investigation and gathering data for evidence-based arguments, or simply as Calvin said, “doin’ stuff.” I would also add in that SJML are about students engaging in gathering data about social issues that affect their world and the oppressions that work against them, or as Calvin explained, “stuff that was you know, ‘bout us.” Our two definitions might read differently, yet I feel that Calvin’s definition in his words might speak directly to the ultimate goal of SJML. He realized that the lessons were about him and that he was so engaged in them that he would have come to class even if his “Granma didn’t make me.”

George’s Narrative

George did not walk into my classroom so much as he bounced; the character Tigger in *Winnie the Pooh* readily comes to mind. George was always smiling with a positive outlook on life in general. I never recalled him being in a bad mood or not upbeat. To use one of his own expressions, George was either on the verge of being “piped up” or was “piped up.” He was a good student, focused and eager to complete his classes to graduate. Although this was the student that I met, a younger George was not always focused. George stands about 5’5” and may weigh 110 pounds. A small guy with a lot of energy, George attended nine different schools between third grade and graduation. Nonetheless, he is happy to remind you that he made it:

Dean: So, no one in your family thought you were going to graduate?

George: Ya know ... Nobody thought I was gonna graduate. Even my dad said I couldn’t do it. But I finished. He drove all the way, like 7 hours, from (a southern state) to watch me cross that stage. (Phone Interview 2018)

Although George was not the first in his family to complete high school—his mother and older half-sister both finished high school—he might have taken the longest route to complete his degree.

When George was in the third grade his parents’ marital troubles ended when his father moved to another state and filed divorce papers. Perhaps George’s inability to express his emotions resulted in him lashing out physically toward other students. Although he explained in his first interview that he felt his grades did not suffer, he still found his aggressive behavior was affecting his school success:

Dean: Your bio sheet listed about three different elementary schools?

George: Ya, ‘bout three.

Dean: So why did you attend three, were you guys moving? Why did you switch?

George: We was moving, and I got kicked out.

Dean: You got kicked out of elementary school? What were you doing?

George: Fighting a lot, ya I was fighting.

Dean: Fighting? Really? You don't seem like the type.

George: Ya I started doin' that around third grade and getting in trouble. I was still getting good grades and stuff it was just that I was getting into too much trouble.

Dean: Okay and then you guys would move—because you got kicked out?

George: Na, my mom would move us you know before anything really bad happened. We just went to a bunch of schools. (Interview 1)

Perhaps in an effort to keep her son out of trouble or maybe due to financial restraints from a recent divorce, George's mother moved three times while George was in grades 3 through 5.

During middle school, George's mother attempted to control his fighting behavior by having him move in with his father and his new family. Although George did spend a full year with his father, in the end, it did not work out and George returned home to live with his mother. Perhaps after spending the year with his father, George missed the laidback attitude of his mother and having fewer siblings in the house. George explained in his first interview that when he lived with his mother it was just him and his brother. This was not the case when he lived with his father's new larger family:

Dean: On your bio sheet you listed one "real brother" and two others. You also put that you have two "sister from my dad." Can you explain that a bit?

George: Ya see with my mom I have my brother, there was just one of him ... and then with my dad there was—I had two brothers and two sisters.... Man shhhhh it was a big transition for me not only with more people in the house, but my dad is way different than my mom. My dad is a real disciplinarian and my mom is just chill, you know, laidback. You know my mom is just like the real laidback parent and my dad he strict and he stay on you like we was getting wippins and stuff. My sisters they ran away so many times. Shhhhhh so many times but that wasn't for me I never ran away.

Dean: So, your brother with your mom that's your full brother? With your dad?

George: Ya

Dean: Okay then when you moved in with your dad, he had four kids?

George: Ya that's right, only one, a baby, was his and the other his new wife's kids from different dads. But my dad was raise'n them. It was a packed house. (Interview 1)

It was during George's middle school years that he transitioned between his father's and mother's home. Once George entered high school back at his mother's house, he seemed to finally find peace with his parents' divorce and ended his aggressive behavior. He excitedly described entering the ninth grade as a turning point for him during his first interview:

Dean: What was it like being in high school?

George: (High school) was tight. It was so great. I mean man when I first go up there I didn't even talk I mean like I was like no bad stuff. I was just having so much fun. One thing 'bout (high school) is that there was so much school spirit. We just had fun. When you, you walk through the doors you got this feeling like oww man I'm home. So, it was just a just a good feeling walkin' in the door. It was like they had piped up pep rallies. Their pep rallies were so much fun.

Clearly, George was craving a "normal" high school experience with academics mixed with extracurricular activities and new social connections. It would be these new social connections that would soon land George back in conflict with his teachers and the school administrators. Perhaps after 7 years coming to terms with his parents' divorce and finding a stable living

arrangement with his mother, George was ready to enter the potentially distracting world of romantic relationships.

George explained that it was no longer fighting that was getting him into trouble but instead acting out in class looking for attention:

Dean: Were you fighting again? At your new high school?

George: Naw I was done fighting. I was just... everywhere I was just doin' everything. Cuz you know what I mean? It was 9th grade. And you know you are like man I got all these girls up here older than me I gotta show out for these girls. Mannnnn it was crazy. I was just doin' stuff. (Interview 1)

By the end of Georges first year of high school he was not focused on academics but rather on the different social offerings that high school had to offer. During George's second year at high school he was on a "behavior contract" and was eventually removed from the traditional high school. The high school gave him a choice of being removed from the school system or attending Benison High School:

Dean: So, you came here. How was the transition?

George: When I got up here, I knew 'bout three people. Ya three people. And at first, I was like still playin' and then I was like I need to stop. Just stop. You see what I got kicked out for they was tryin' to send me to CCP²⁶ Tribunal, ya know? But I was like I can't do that. They was like oh well. But they was like you got another option. They sent my stuff over here and they was like go here (Benison) or you got to go to tribunal. (Interview 1)

This final ultimatum was the push that George needed to focus on his classes and complete his high school graduation requirements.

At the time of our first interview, George was working at a major airport, often picking up night shifts to earn extra money. George explained that he normally does not work nights, but he was earning overtime and the money was too good to pass up. He also explained that his

²⁶ The College and Career Preparation Room in the school system board office or CCP is where the school system holds all tribunal hearings. Tribunal hearings are for students who are being considered for removal from the school system.

employer was having trouble finding qualified employees: “They need to hire someone, but it takes so long cuz of the background check” (Phone Interview 2018). He reasoned that there are several jobs at the airport but most of his friends have records that prevent them from passing the background check and being employed there.

Getting individual attention helped George find success at Benison High. The smaller class settings and his maturing were two key reasons he graduated. When George was asked during his second interview to define SJML, he shared:

Dean: Okay great. I forgot to ask you during our first interview what your definition of social justice math lessons we did. What do you think about the math lessons that we did that focused on social justice?

George: I liked them they were good. They were not like the other classes where they talk and you just sat there. It’s like you was I’m goin to go this way even though you might not think it’s right but then we can see that it’s wrong it’s not really like you think—you know what I mean?

Dean: Ah I think—ummmm are you talking about the lessons that we did or the questions I asked?

George: Both. I mean the lessons were good and you was always asking questions that made me think like why is this happening, or can they do that, and nothing happen to them? (Interview 2)

Perhaps this short exchange shows that George has a developing understanding of the empowering forces that SJML can create. As a result of the SJML, maybe George has begun to question forces in the world around him, not as a passive participant, but as an active member of his society who thinks and who can possibly create change.

Nick’s Narrative

I first met Nick in the halls of Benison High School. He’s the definition of a social butterfly. He also dresses impeccably, telling everyone that he was wearing skinny jeans long before they became popular. His favorite accessory was a neck scarf, which he wore all year

round. He picked up this fashion accessory after he attended a Bollywood movie that he explained opened this new fashion style: “I never thought about different cultures beside Europe having great style. But when I saw Sonam Kapoor, she just had it!” (Phone Interview 2018). He would walk down the halls of high school greeting everyone, including teachers, staff, and students. If he did not know you, he would walk up and introduce himself. He had mentioned several times while attending Benison High School that he plans to be a famous actor and meeting people was good practice to help him break the ice and get his name out there.

Nick is 5’10” yet he has a much larger presence. He has light skin and is proud of his “perfect” complexion²⁷. He has a big smile with perfectly straight teeth. He is always on a diet yet often you will see him with a bag of chocolate chip cookies, his favorite snack. He is outgoing and an excellent student, always prepared for class with his notebook, and pencil ready. Nick was one of the few students who never needed any direction to start on a warm-up problem and always completed his homework.

When Nick entered high school, he had an idealistic vision of what it would be like. Unfortunately, as he explained in his first interview, when he arrived it was different than he thought it would be. He explained that he thought “high school would be better. I thought high school would be like what I pictured it on a TV show and when I actually got to high school.... Oh lord have mercy, it was, was way different.... Way different!” (Interview 1).

After making a few friends—mostly older students and some at other high schools—Nick began to enjoy the social aspect of high school. He recalled that he fell into a trap of doing just

²⁷ Nick was an active editor in regard to his personal description for this research paper. He added in the “light” skin color, perfect teeth, and his acting accomplishments thus far. Often, while he was at Benison High School, I would overhear him talking about his “money maker” while gesturing with his hand circling his face. Also, during our second interview he shared that he does not engage in physical confrontations any more explaining, “You know I have no problems cause I used to throw these (gesturing to his clenched hands), but not now. I need to keep this looking good (gesturing toward his face) because it’s gonna to make me money one day” (Interview 2).

enough to not get into trouble but at the same time often ignored his class work. During our first interview, I asked him about his 9th grade classes:

Dean: What was 9th grade like for you?

Nick: Like nothing. Well I mean we did math, English, social studies, and stuff but really nothing, no work. We joked in class a lot and clowned. We would do a little work because the teacher would not teach the whole time, so it was easy to just do a bit of work and then play for the rest of the period. (Interview 1)

Falling behind during Nick's first few years of high school was mostly due to his ever-expanding social circle. Nick began to act out while in class by talking with friends and spending time sharing social media posts on his phone. His rebellious behavior in class was tolerated as long as he did not push his behavior beyond the accepted limits of the teacher. Nick's playing during class time, however, did eventually catch up with him. When it came to the end of the semester, he found himself falling further and further behind academically.

Nick reflected that he was responsible for his academic failure in the 9th and 10th grades. He described the school environment as more like playtime than a time to learn. He began to spend too much time making friends and expanding his social circle:

Dean: Why you fall behind during 9th grade?

Nick: I was too social—oh ya—I not even going to lie. My 9th grade year, I played. I take full responsibility. I did play. Because when I came to high school—how could I say it? Because of the environment and I mean the people that's up there—it's not a negative environment, it's just that it's hard to steady yourself and it's hard to not meet nobody and that's what had got me and you know, you friendly, and you start talking to that person and then that person and more people and more people and more people—you become a socialite. (Interview 1)

Nick believes that he never really got into any trouble from his teachers because he always went to class and that only the students who skipped were suspended or kicked out. But socializing did catch up with him and when he entered his third year of high school, he found himself behind.

During our first interview, Nick shared his shock of when he realized that he was behind. He had been enrolled in the next level classes without passing the previous classes/pre-requisites:

Dean: It was after your 10th grade year that you realized you were behind in classes?

Nick: Yes! When I failed my 9th grade year and I was supposed to be in the 10th grade on my transcript and then in 11th it said 10th—oh Lord—oh Lord I needed to graduate. I needed to graduate!

Dean: Is that when you switched schools? To Benison High School?

Nick: I wanted to go to a school where I can get my credits and you know and graduate. I said I don't care how long it takes me I am willing to do the work. Because everything I failed was from 9th/10th grade year. So, it was not like I did not know it I just didn't do the work. So now that I know the type of work I need to do and with the work I had done I could just go right back to it and get it finished. (Interview 1)

Once Nick began to focus on his schoolwork he completed all his classes, even taking several out of order. He was proud to share his accomplishments, especially in mathematics:

Dean: How did you find the classes at Benison High School?

Nick: You know I passed 10th and 11th grade math after I failed 9th grade twice? I never went back until I took your class (12th grade) then I finished 9th grade in the summer. Math was also the class that I had to make up the most. The other classes were not as many, not as hard. (Interview 1)

Nick reflected on his year and a half at Benison High School during a phone interview explaining that even though he left his large social group he made new friends easily and did not fall into the trap of not getting his schoolwork completed. He said that he would still “meet friends at school but it would be before and after class. I was super focused when in class” (Phone Interview).

Nick left a month after he graduated from Benison High and moved to Los Angeles. He wanted to try to pursue an acting career. He found some on and off work for about a year while taking acting classes but caught a big break when he was cast as a recurring extra for a television

show that was being filmed back in his hometown. He returned home and is spending the next year “trying to not embarrass myself and learning everything I can” (Phone Interview).

When I asked Nick about his definition of SJML, he was very quick and specific to respond. Nick explained that he “didn't know the Middle East or where it was. They don't teach that in geography class. I mean we are always looking and coloring maps, but we never learn about the country like we did in your class” (Interview 1). Gutstein (2006a) would explain this SJML as “reading the world with mathematics,” where Nick is not learning superficial things about the location of a country or who its current leader. Instead, he is engaging in the culture and inner workings of a country and its history, all the while performing mathematics.

Some Statistical Observations

Although this project is qualitative, during the course of gathering data some interesting quantitative data surfaced. All the participants completed a biographical and educational data survey that was created for this research (see Appendix C). The results of the surveys were reviewed and organized with the intention to develop a fuller picture of these six young men. Here, it is not my intention to conduct an in-depth statistical analysis of this data, yet it potentially shows possible significance. This section reports on four different statistical observations: the number of schools attended at the elementary, middle, and high school levels; the duration of homelessness experienced during high school; the number of years incarcerated; and the number of year's affiliated with a gang.

These four statistical observations give a snapshot that further introduces and informs the reader about the extraordinary young men who participated in this study. The statistics show that these young men faced similar obstacles and struggles that inflict far too many youth of color today.

Number of Schools Attended

When the participants completed their biographical data sheets, they indicated the different schools they attended at the elementary level (pre-K–5th grade), the middle school level (6th–8th grades), and high school levels (9th–12th grades). Figure 1 breaks down the number of schools each participant attended at the three different grade levels.

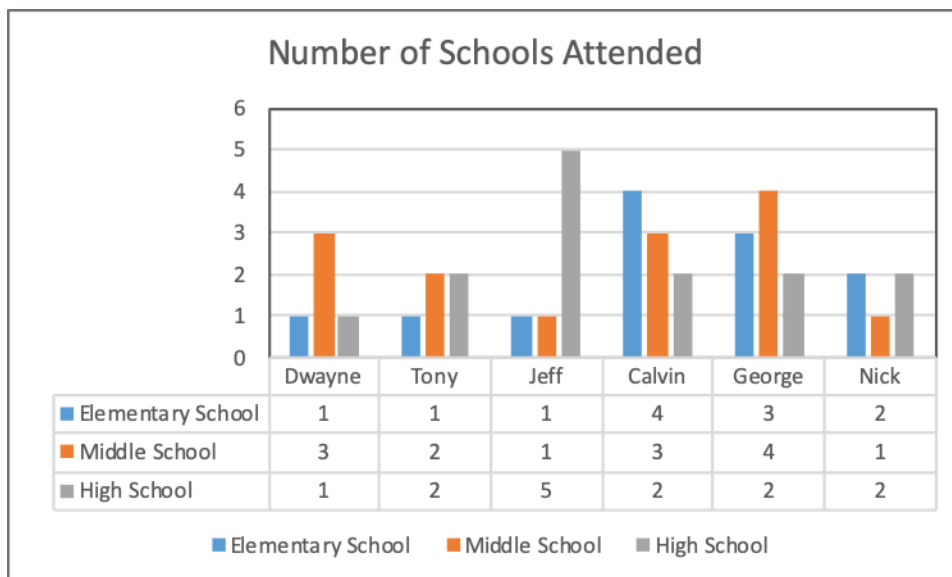


Figure 5. 1 Number of grade-level schools attended by participants.

Next, the mean of each school level was calculated for the group; the results are displayed in Table 5.1.

Table 5. 1
Mean Number of Schools Attended

| Elementary School | Middle School | High School |
|-------------------|---------------|-------------|
| 2 | 2.333 | 2.333 |

With a mean of two or just over two at each level does not seem to raise any statistical significance. Perhaps though, for middle school, attending 2.333 different schools in just three years might be considered high. Statistics provided by the school system attended by participants

noted that in 2014 the “churn” rate²⁸ for middle school students in the system was 17% for students who attended one to two middle schools. The report further explained that only 6.1% of students in the state attended more than two different middle schools (Georgia Department of Education, 2014a). It might be summarized from the biographical data collected that for many of the participants they, and their families, began to experience some form of transience or homelessness after elementary school. Such dislocation may have caused an increase in the number of schools attended, especially during middle school.

Further examination of the biographical data for the mean number of schools attended revealed that there was one participant outlier at each of the three levels of education. These “high” number of schools attended at each education level is displayed in Table 5.2. Included in the table is the school level, the participant name, the number of schools attended, and a corresponding event during that time that possibly could have been a factor in the higher than average number of schools attended compared to the rest of the group. These life events were obtained through both the biographical data questionnaire and the interviews.

Table 5. 2
Outlier at Each Educational Level and Corresponding Life Event

| Level | Participant | Number of Schools Attended | Corresponding Life Event |
|-------------------|-------------|----------------------------|--|
| Elementary School | Calvin | 4 | Homeless and biological parent’s drug use |
| Middle School | George | 4 | Living between divorced parents and fighting in school |
| High School | Jeff | 5 | Engaging in illegal activity and kicked out of the house |

When Calvin was asked about attending four elementary schools during his first interview, he explained “Ya there were lots [of elementary schools] cuz we moved a lot. My

²⁸ Churn rate refers to the percentage of students leaving a school/school system within a calendar school year.

mom and me.” During the same interview, Calvin shared that after he completed 5th grade his mother was incarcerated on drug related charges and he moved in with his biological father.

George attended four middle schools. He never failed a grade but did miss two half years while he was moving between his divorced parents’ homes in different states. He was also fighting often in school, something that started in 3rd grade when his parents split up. During his first interview, he explained his higher frequency of middle schools attended compared to the other participants (middle school names are pseudonyms):

George: Ya well I started at Freedom Middle, but I left in the middle of the school year right after Christmas. Then I didn’t get into Reed Middle School even though we lived down the street by it cuz they said I had no file. You know to get in.

Dean: So, they were waiting for paperwork from another school—from Freedom Middle?

George: Ya and also, I was caught in the school fighting when I was not there yet.

Dean: Wait, you went to the school and got in a fight? And you were not enrolled yet?

George: Well it seems like it was that, but I was enrolled they just sent me home sayin’ I couldn’t come back until they got all my papers. It was like the first day.

Dean: So, did you end up going back there?

George: Not right away. Ya see my parents were separated and my mom got tied ... fed up with me and sent me to my dad’s. Then ummmm when I moved in with my dad, I was goin to North middle back in 6th grade.

Dean: I see, so maybe that’s four middle schools?

George: Ya but not for long for some of them like I didn’t want to stay with my dad, so it was like part of 6 but got it there and then was suppose to go to 7 at Christmas but I went back to my mama’s house. That was ‘bout a year. So, then I went back to my mama house and ended up going to Jones Middle after that.

Dean: Okay so for 6th you were with your mom, then 7th with your dad, and 8th back with your mom?

George: Ya like that. Well, 'cept I did 7th back with my mama cuz I did not get all of 7 with my dad. And then 8th too with my mama.

George's attendance at four middle schools perhaps was not only housing issues with his mother but also perhaps a personal "anger" issue that he battled with starting in 3rd grade until he reached high school.

Jeff attended five high schools which is more than double the mean for the group. During our first interview, we went through the different high schools that he attended. His troubles began in the 9th grade at his second high school. He explained to me that the time he spent at his second high school was: "not long not long at all. See I got caught up in the game and thought I didn't need school no more. Ya know? I had my hustle on and I was making money runin' my game" (Interview 1). Jeff's hustle was selling drugs with a group of friends. This hustle eventually led to his arrest for dealing drugs on school property and led to the third high school he attended inside a state juvenile facility. Upon his release, he had to attend a transitional high school to bring his number of high schools attended to four. He explained how he ended up at his fifth high school, Benison:

Ya I was too old to go back to my (second high school) and I was kick out ya know? For sellin. I mean they didn't caught me, but they knew I was the one supplying there. So, after I got out (of the transitional Parks High School) I went up there and they told me to go to Benison cuz of my age. Well first I had to go to Parks then to Benison ... after a couple of months. (Interview 1)

It seems that Jeff's illegal activities were a direct influence on the high frequency of high schools he attended and distracted him from completing his courses. Once he was released from incarceration, he completed his high school courses in just over two and a half years.

At different levels of education Calvin, George, and Jeff each attended a higher than the mean number of schools amongst the study's participants and higher than the states average. Whether the reason was personal aggression, transient housing, or clashing with the judicial system, it seems that once these young men stabilized their home life with their organic family and were able to experience some success in an academic setting they were able to focus their energy on completing their education.

Duration of Homelessness

The next statistical data reporting focuses on the participants sharing their different housing situations during their years in school. Homelessness was defined as the period of time, in years, that the participant was not living at his permanent home or when the participant said they were homeless. Four of the participants, similarly, defined their permanent home as that which their mother lived in. Calvin considered his grandmother's home as his permanent home, and Dwayne considered himself homeless for his entire high school enrollment²⁹.

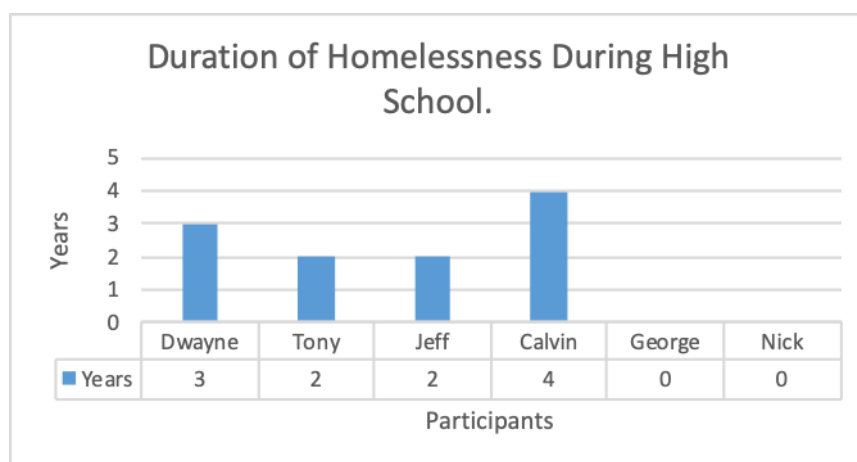


Figure 5. 2 Duration (in years) of homelessness during high school.

²⁹ Dwayne came to realize his “homelessness” status while in jail and being denied release from incarceration on his own recognizance. He did not have a permanent address for more than six months over the previous 3 years. In the eyes of the court he was labeled homeless because he lived with various relatives and friends for brief periods of time. This expanded my personal understanding of homelessness as I had limited my definition to a person living outside or in a temporary shelter.

The mean for the homelessness for the group was 1.833 years. Yet, if you consider adjusting the group size to four, excluding both George and Nick, who reported zero years of homelessness during high school, the mean increases to 2.75 years. This mean might be considered a more accurate reflection of the group of young men who were affected by homelessness during their high school years.

The participants varied in their openness to discuss their homelessness. Tony explained in his first interview that he became homeless when he was expelled from his high school in the 9th grade and his mother kicked him out of the house. He explained:

Tony: When I got to S High School (pseudonym) and I fell in with my friends and started getting in trouble again. Not going to class, pulling the fire alarm—that got me kicked out the first time. Starting fights or throwing food in the lunchroom. That’s when I got kicked out again and stopped coming to school.

Dean: How long did you not go to school?

Tony: Bout 2 to 3 years.

Dean: During that time what did you do? Were you home?

Tony: My mom kicked me out. I stayed with friends who had places. I hustled to make money. It was fine but then my partner got jammed up and I went back home.

Tony’s matter of fact response “I went back home” was not as easy as simply walking back into his mother’s house. But rather, he had to re-commit to returning to high school and graduating.

Jeff was also kicked out of his house by his mother after she discovered that he had stopped attending school and was failing all his classes. During his first interview, he re-told the events of the night that his mother kicked him out for not attending high school:

Jeff: Well she [his mother] called up there [the high school] lookin’ for my grades and all. But they was all—he no longer here. And she freaked out with what ya mean? And stuff. Man she was mad that night. I got home and she was waitin’ for me. She was mad and aggggg (un-audible). What could I say? I

was like, ya know? I just can't do school no more.

Dean: What happened? What did she say?

Jeff: She kicked me out! Ya that night. Packed some cloths and left. She couldn't have me no more. I was out. I went to my partner house. Ya know? And then just kept goin'. I mean. Ya know? School for me was not important then. It was like, I just was not thinkin' school then.

Jeff spent the next 2 years living with a group of different friends, spending different periods of time at their houses, and not having any permanent address. He listed this time on his biographical survey as being homeless. When I asked him about this during our second interview, his reasoning was:

Dean: On your bio form that you filled out you put that you were homeless for 2 years. Was this after your mom kicked you out for failing all your classes?

Jeff: Well really not goin (to school).

Dean: Oh yes, you were not going. So, when you were at your buddy's house you considered yourself homeless? Why?

Jeff: Cuz, I was not with my mom.

Dean: Oh okay. Well is there anything else you want to add?

Jeff: Na

Both Jeff and Tony were kicked out of their mothers' homes due to their actions at school and had to find other living arrangements. During the period that they were absent from their mothers' homes they lived with friends and considered themselves homeless. It could be suggested that they were not actually homeless depending on the amount of time they spent at each friend's residence and if they helped pay rent or not. In the end, they felt similarly to the

other two participants who experienced homelessness during high school: if you're not welcome in your mother's home, then in their eyes, you are homeless.³⁰

Number of Years Incarcerated

When calculating the mean for the years spent incarcerated for the participants, I was alarmed at the years summing to 10.25 total years. I heard my inner voice say, "That's almost two years each!" My relationship with all these young men began when they were enrolled at Benison High School. All my interactions with them, except for Dwayne, happened after they were incarcerated. This part of the study was an eye opener for me and a reminder that all these young men had lives and experiences before I met them. I am still surprised to learn that four of these young men spent time incarcerated and two of them for four years each. All four of these young men obtained a high school diploma, which is in itself statically relevant. The fact that all four of these young men continue to struggle to find decent employment today because they all carry the stigma of incarceration is another area worth studying.

As mentioned above, the mean years incarcerated for the participants was 1.708 years. Similarly, as was the case with Figure 2 (Homelessness during high school) it was noted that George and Nick reported that they were never incarcerated. An adjusted mean was calculated with the removal of those participants from the calculation. The new adjusted mean is 2.56 years.

³⁰ It is understood that this study is not about adding research to the field of homelessness among school aged children. This information is included to help the reader create a more complete picture of who the participants of this study are and the adversity they experienced during their school years.

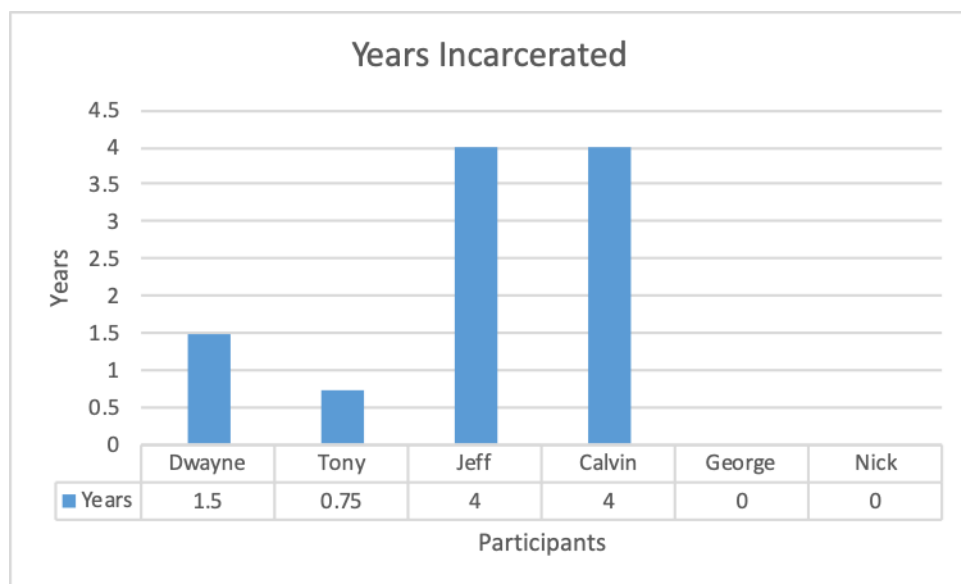


Figure 5. 3 Years incarcerated.

Jeff and Dwayne were the only two participants who talked about their incarceration during their interviews. Jeff gave a brief explanation that he was “the one supplyn’ [dealing drugs]” at his high school. Dwayne on the other hand was charged with non-drug related charges. He summed up his experience during our first interview with the criminal justice system as follows:

I liked the way it was handled—it was fast, it kind of went by like I expected it to. Maybe a little bit after I was out of jail it was the 3 years that it took to get a decision of what to do with me maybe was a little frustrating. Being in and out of court for a few years. For me that kinda dragged it out for a while. I think everything was handled the way it should have been. (Interview 1)

For Dwayne, the waiting part of his case luckily occurred while he was out of incarceration. This fact enabled him to continue his high school classes and graduate while waiting to find the outcome of his case. When his 5-year legal ordeal ended it was rather anticlimactic according to Dwayne. He explained that he would go to his monthly court dates thinking, “I was going to court, I was like ya, I’m going to go there for nothing today and then one day I was like Oh this is it” (Interview 1).

Calvin did share a comment about his time incarcerated when he wrote “jail school” as a middle school that he attended:

Dean: Did you get in trouble with the school for fighting?

Calvin: Mr. Potts I stayed in trouble. I was kick out three times and never finished 8th grade. Then I got locked up and went to school there in Juvi.

Dean: Yes, I read that on the sheet you filled out—you wrote Jail school. How long were you there? Or if you don’t want to talk about this we don’t have to.

Calvin: Na it’s alright. I was in there till I was 18 then I go out and had to go to [a transitional high school] for two years. (Interview 1)

This short exchange was the only information Calvin gave about his time incarcerated. Perhaps this short exchange that covers on average over two years of each of these four young men’s lives could be interpreted as the same for all: incarceration is a period in their life in which they experienced yet it does not define who they are today.

Number of Years Gang Affiliated

When calculating the mean for gang affiliation it was noted that only half of the participants affiliated themselves with a gang. The mean for the entire group was three; yet again, if you just focus on those who did affiliate with a gang then their mean years spent with gang affiliation was six years.

This study does not focus on gang activities or affiliation; this information was only included to help add to the portrait of a few of the study’s participants. The interviews led to small glimpses into the private lives of these young men: like Jeff paying a thousand dollars to have gang tattoos removed and Tony explaining that he moved to a different part of town, with his sister, to help distance himself from his former gang.

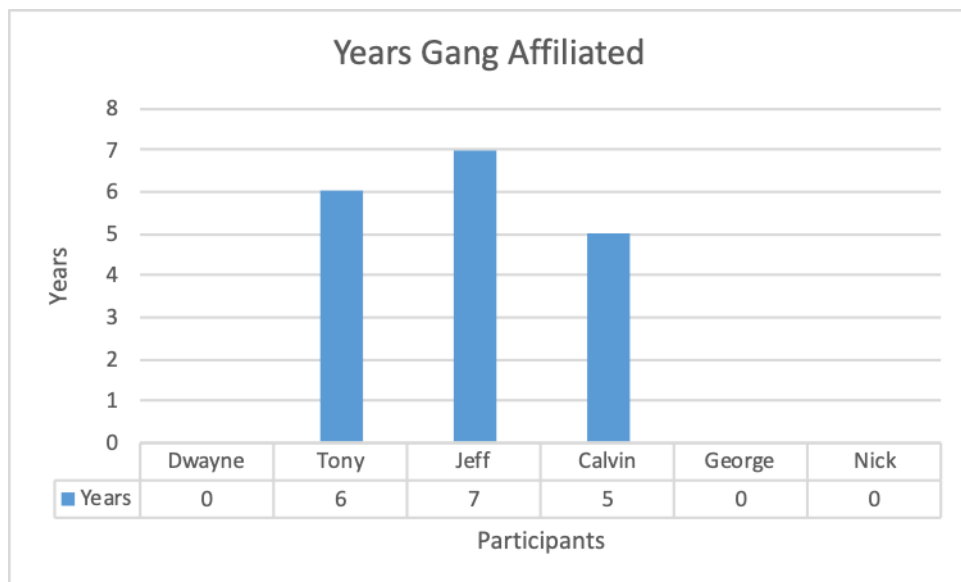


Figure 5. 4 Years gang affiliated.

Number of High School Graduates

The last statistic that must be reported is perhaps the most impressive. These six participants all have one thing in common that sets them apart from many of their peers who attended Benison High School with a less than 50% graduation rate. They completed high school having negotiated great obstacles. The mean for all the participants who completed their high school requirements for graduation was 100%.

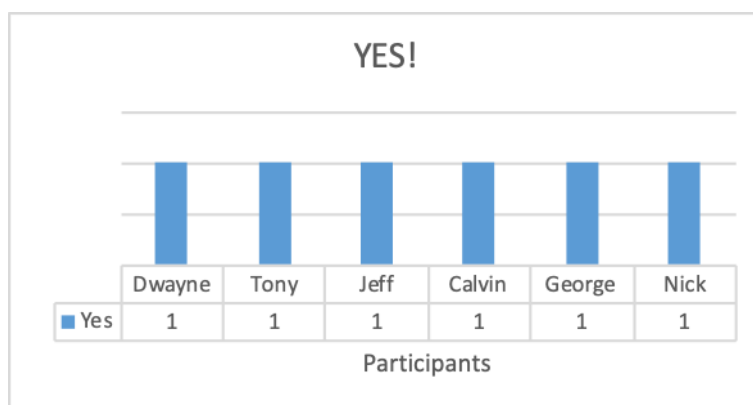


Figure 5. 5 Graduated from high school.

Overarching Codes/Themes and Sub-Themes

The six young black men who participated in this study had many things in common. They all negotiated a number of obstacles and, at different points in their lives, each made a goal to graduate from high school. Their “authentic” relationships, personal changes in “agency,” and their reflections about a social justice article are discussed here.

When compressing the data from the twelve interviews conducted for this research project, it became evident that these young men spoke more about their lives and less about social justice mathematics. Nonetheless, they opened up and shared personal stories covering numerous topics and life experiences. Incarceration, family struggles, drug addiction, racism, homelessness, and abandonment were just a few repeated themes identified. At the time of the interviews, I neither realize nor clearly understand the windows that were being opened. These young men all spoke freely and without reserve. They shared their life stories with me, a middle age White man, who, for many of them, is the only White person with whom they have a personal relationship. These young men did not treat me as an outsider but rather as a teacher, confident, and mentee³¹/mentor. What resulted from the coding cycle was the complex and numerous relationships that these young men encounter and negotiate through every day. Table 3 organizes codes/themes and relationships explored here. Throughout the remainder of the chapter, borrowing from Hunter (2017), I provide tables that display the number of instances that the participants made “significant statements”—statements that were either directly or indirectly related to the research questions—during the interviews. These tables, with their numbers and respective percentages, are not intended to quantify the richness of qualitative data, but rather intended to quantify qualitative “power in reserve” (C. Geertz, as cited in Stinson, 2008, p. 987).

³¹ I include the term *mentee* because these young men have taught me about their social circles, code switch, pop culture, music, and geographical boundaries that I would never have known/learned in my social circles.

Table 5. 3
Overarching Codes/Themes and Sub-Themes – Authentic & Antagonist Relationships

| Theme | <i>Authentic</i> | <i>Antagonist</i> |
|--------------|-------------------------------|---|
| Family | Organic family | Street family |
| Institutions | Educational | Proof of residency Suspension Un-enrollment Course progression |
| | Judicial | Cycle of incarceration Plea deal Public defender |
| Employment | Minimum wage Multiple jobs | Public records Living wage |
| SJML | Agents of Change | Racism Agency Domestic violence Employment |

Paulo Freire (2000) explained that before any true learning can take place there must be a strong authentic relationship between teacher and student. The teacher must move from the traditional role of the holder of all knowledge standing at the front of the room dispersing information for the students to receive. Instead, the teacher needs to take on a facilitator role³² where the students are driving the learning and the teacher becomes an equal in the quest for knowledge.

Developing this authentic relationship is a part of SJML (see, e.g., Chen, 2015; Dewhurst, 2014; Gutstein, 2003; Luke 2004; Tierney, 2006). Often the teacher (turned facilitator) will learn right along with the students. The teacher can now be in the position to gain new knowledge and also better understand the positions and views of the students. These views can be different from those of the facilitator who might have a different background than the

³² Freire cautiously used the term *facilitator*, noting that to be an effective facilitator one must be humble, believe that education should be used to liberate not domesticate people, must have faith in people, and faith in their ability to create change.

students. This difference became evident as all six of the participants shared their own experiences with their organic families³³ verses their street families.³⁴

Family Relationships

Dwayne explained the complex relationship with his half-sister, whom he considers his organic family, and his aunt (a close friend of his deceased mother's) whose address he used for school enrollment. Dwayne explained, "I only rent at my aunts and when I stay with my sister I don't have to pay, just help out during the day with the kids" (Interview 1). Although Dwayne "pays" some form of rent at both houses his use of the phrase "don't have to pay" at his sister's house shows that he considers her his organic family.

Dwayne did experience increased attraction from his street family when his organic family suffered the death of his mother while he was in middle school. Dwayne shared that "middle school is when I really had a hard time with my mom dying and not having nowhere to go. I just stopped going to school and then got caught up with skipping and hanging out" (Interview 1). Dwayne turned to his street family after the death of his mother to fill his newly created family void. They became the protagonist which led him to be kicked out of school because of skipping classes. Dwayne eventually ended up in court for truancy and was placed in a mentor program, which helped him deal with the loss of his mother and re-connect with his half-sister. This separation from his street family led him back to his sister and enrolling back in school. He also had to live with his aunt, using her address for school enrollment, but now that

³³ The term *organic family* is used in substitution of biological family. Some of the participants do continue to live with their biological mothers yet many live with other family members or extended family members/friends. Thus, the term organic family is defined as related to or derived from biological parents.

³⁴ The term *street family* refers to the participants' friend groups, street/neighborhood groups, and organized gang affiliation. All these families are separate from whom the participants would consider their organic family.

he has finished high school, he lives full time with his sister whom he considers his organic family.

Tony also experienced the increased attraction of his street family verses his organic family in the 9th grade. Tony's street family lured him in with money and a rule free environment that he did not experience with his mother and twin sister. His mother did try to keep Tony away from the influences of his street family and was successful for a short period.

When I interviewed Tony about his switching schools after elementary school, he noted:

Dean: To start off would, you talk a bit about your school experiences from elementary school at WW elementary?

Tony: I went there kindergarten through 5th and it was okay. I never got into trouble, just in 5th and that's why my mom switched me to B middle school (charter school). That was different and hard cuz none of my friends were there, but everyone was cool Helpful ... they were helpful. It was a good change for me being in a new environment and not playing in class.
(Interview 1)

When Tony's mother separated him from his street family, he was able to re-focus and experience success at school. Tony's mother was able to see the negative influence that his street family had over him. Tony did re-connect with his street family in 9th grade and after that year ended up homeless. He was kicked out of his mother's home and would spend time over the next 3 years living at different friends' houses.

After a close member of Tony's street family was caught in a police sting, he re-assessed his life's direction. He got back in touch with his organic family and followed his mother's requirements to come live back at home. Yet being back home was not without turmoil. During our first interview, he talked about the struggle of being back in school and not passing all his classes his first quarter back and his mother's reaction:

Dean: Okay, so what was it like being back in school for you?

Tony: It was good. ‘Cept that first term when I failed some classes. I remember that I got focused when my mom threatened to kick me out after that report. I wanted to stay at home and so I stayed in school and passed classes. I stopped hanging out with my friends and just stayed on my own. You know when you are around a fight, they think you are part of it but even though you’re not you still get put out.

Dean: Are you still in touch with your old friends?

Tony: No, I moved in with my sister and we live over on the opposite part of town. I work at a restaurant and I am learning how to fix bikes.

Tony realized that for him to achieve academic success and complete high school he would perhaps be more successful if he removed himself from his street family physically, thus enabling him to better focus on his classes.

Jeff and Calvin both experienced a similar increased attraction for their street families that eventually led to each of them being incarcerated. Jeff explained that the attraction with/from his street family started in 5th grade with playing in class. This behavior continued during middle school with a brief respite during 7th grade when he began inconsistently taking medication:

Dean: Okay well you went there [May Charter School] for middle school and then part of 9th grade—what was middle school like?

Jeff: It was alright. Ya know? All good. Well it got harder and you get more freedom and you know it’s like that dog that been chained up once he gets loose he don’t want to come back or if he does then he don’t want to be caught.

Dean: So, that was in middle school?

Jeff: So ya, see middle school that was my rebellious stage. You feel me? Anybody could see me ... that was my rebellious stage. 5th, 6th, 7th that was my hardest times at May [Charter School]. When I saw 7th I calmed down but 5th and 6th I was crazy, I went crazy. That’s when I got you see there was some adjustments³⁵ you see what I’m sayin’ adjustments. But I was good though. Help me stay focused and calm

³⁵ Jeff’s mother took him to a physician who after two visits prescribed medication for Jeff to take daily.

down.

Dean: So how were you behaving? What was happening?

Jeff: This is what is was I play too much I play too much I was getting in trouble a lot for talking, playin', and stuff like that, ya and, ... distracting others. But they was lookin' to get rid of me, but my mom came in and things settled down and I settled down a bit in 7th cuz they was 'bout to kick me out. Ya feel me? But I didn't always do my medicine and then it was like before, actin crazy and rebellious.

Jeff's middle school experiences, focusing on his group of friends more than his class work, carried over to high school and eventually to his removal from May Charter High School. During his first interview he shared his memories of 9th grade at his charter high school:

Dean: Then you went to high school and it was the same charter school—May Charter School right?

Jeff: Ya

Dean: What was that like?

Jeff: You know it was in a different building—the old June (an old middle school). Pffff (exhaling) with 9th grade I kinda got in trouble with the wrong people. You know what I'm sayin'? They called me and you [the school administration] sayin' I got kicked out. Well I wouldn't say kicked out. Sent to another high school. That's how I got sent to April High School.

Jeff's relationship with his mother became strained as he entered his local high school and he soon dropped out, choosing his street family over his organic family.

Calvin, like Jeff, found himself dropping out of high school and hanging out full time with his street family. He also experienced troubles with his organic family when he was in the later elementary grades and eventually ended up with his grandmother during 7th grade in middle school. He could not adjust to the rules and stricter environment with his grandmother and eventually left school in the 9th grade. He moved in with his street family and explained that

it was just easier: “Ya I was still hangin’ with my crew and didn’t worry. You know it was easy to cut out³⁶” (Interview 1).

George and Nick were not the type of students to skip class, yet it was during class that they both found themselves trying to entertain their friends. Nick explained in his first interview that he was exceedingly social:

You know you friendly and you start talking to that person and then that person and more people and more people and more people. You become a social light. And then you know of course being the class clown. Over there you know joking and talking and whatever—that’s what caused me to fail. (Interview 1)

Similarly, George found himself trying to entertain his friends rather than focus on his class work. It was not until both of them arrived at Benison High School that they became more focused on their schoolwork. According to George, the majority of students at Benison were “all here for the same reason” (Interview 1).

Lukács (1972) wrote that if citizens are responsible for their actions and understand how their actions affect them and others then they would experience a “conscience sense of responsibility” (p. 83). The attraction of the street family had an effect on all the participants and members of their organic families. They all needed either their organic or street family and their relationships with both were tested during their school years. Eventually, all six participants found the correct balance, returning to their organic families and finding academic success at the high school level.

Table 5. 4
Family Relationships – Number of Significant Statements by Participant

| Theme | Dwayne | Tony | Jeff | Calvin | George | Nick | Total |
|---------------------------------|------------|------------|------------|------------|------------|------------|-------|
| <i>Authentic Organic Family</i> | 2 (10%) | 4 (20%) | 3 (15%) | 5 (25%) | 2 (10%) | 4 (20%) | 20 |

³⁶ Calvin’s use of the term “cut out” also can be used for the term *skipping class*.

| | | | | | | | |
|-------------------|-------|-------|-------|-------|------|-------|----|
| <i>Antagonist</i> | 4 | 4 | 5 | 4 | 1 | 5 | 23 |
| Street Family | (17%) | (17%) | (22%) | (17%) | (4%) | (22%) | |

Institutional Relationships

In this next section, I explore the personal and pragmatic relationship that the participants reflected on with both educational and judicial institutions. I then examine the participants' complex relationship with their personal employment. While conducting this research, it was noted that each member experienced institutional oppression either with the educational system and/or the judicial. Other institutions, such as social services, counseling, and housing, were mentioned by the participants but are not explored here as the participants did not expand on their thoughts and experiences as much as their interactions with educational and judicial institutions.

Educational Institutions. All of the participants in this study had complex relationships with the institution of public education. The participants in this study attended approximately 35 different schools in two different states, giving them a wide range of experiences with public school institutions. Fromm (1994) explained that in order for the ruling class to maintain power they must control the masses and have people conform to a group. One method of conformation is to ensure that students are “zoned” for their school. The students in this study often came into conflict with this institutional policy. There is only free education if you can prove³⁷ that you reside within the school boundaries. If not, then you are moved on to another school or you must wait until you can prove your residency. This problem arose several times during the participants' interviews.

³⁷ Examples of proof of residency that schools require are a copy of a lease agreement/mortgage, or a utility bill with your name or your guardians name on it. Staying at a friend's house is not considered a permanent address.

Simply having an address did not necessarily make the participants lives better/easier. Several of the participants in this research struggled or made sacrifices to obtain an address. Dwayne explained that he used his aunt's address but had to sacrifice his food stamps to offset his rent. He shared: "I had to give her my [food] stamps. She wanted the money from the state but did not want me" (Interview 1). Tony had similar difficulties obtaining an address and the associated free education. For a short period of time before he enrolled at Benison High School, he found himself homeless. He explained that his mother "wouldn't let me back until I was in school and I needed an address to enroll" (Interview 1).

Calvin and his mother experienced this same issue when she pulled him out of the 3rd grade mid-year. Calvin explained that they moved around a lot and at one point did not have an address and the result was him having to repeat the 3rd grade. In his first interview, he stated:

Dean: Okay, well I see from the sheet you filled out that you repeated 3rd grade. Do you remember that?

Calvin: Ya that was cuz we moved. Ya 3rd cuz we moved before Christmas and my mom didn't put me back in till the next year. We really didn't have an address so she couldn't bring the papers to school for me.

Dean: Oh, okay so third grade you repeated, and do you remember why you moved during the school year?

Calvin: Well my mom see, we was movin' all the time. She really didn't stay in one place long. Ya know? she has a drug thing and you know? that's it we just movin. Then one day the teacher call and the phone don't work and they the school is like we need your address. And we don't have one, so my mom tried to, but it just took a minute. So, I stayed out until the next year.

The McKinney-Vento Homeless Assistance Act (1987) allows students to enter and attend schools if they are homeless; however, there is still paperwork that the parent/guardian or student has to fill out explain their homeless status. This process is yet another oppressive barrier and embarrassment that parents and children must face when homeless.

Several of the participants discussed their relationships with school suspensions. School suspensions differed from school experiences, yet all involved removing the participant from the traditional classroom for a period of time. Jeff recalled his middle school in-school suspension experiences during our first interview:

Dean: Okay, well what do you remember about your teachers from middle school?

Jeff: I spent a lot of time in ISS (in school suspension) with Mr. Blue. He made us sit facing the wall, but he was cool—would play music and we could request if he had it. I gave him no trouble and he was cool.

Dean: Did he teach you a subject?

Jeff: No, he probably was no teacher. You know just someone there to make sure we sat and wrote.

Jeff's description of his experience in ISS seems more like spent time with a prison warden whose job it was to keep the inmates controlled rather than an institution that was built for learning and encouraging students to express their ideas. Yet Jeff's positive description of Mr. Blue and his stating twice that he was "cool" shows a level of respect/fear that Jeff held for him.

Calvin suffered from out of school suspension. On his biographical sheet under the middle school heading requesting any special awards/citations that he received Calvin wrote "none—suspended then kicked out" (biographical information sheet). During our first interview, I asked him about his middle school experience:

Dean: Okay so you were in 7th and 8th grade at York middle school. How was that for you?

Calvin: Not good. I was mad, fighting a lot. I skipped school and stayed in trouble. My grandma wanted to send me to the military, but I was too young.

Dean: Did you get in trouble with the school for fighting?

Calvin: Mr. Potts, I stayed in trouble. I was suspended and kick out three times and never finished 8th grade. Then I got locked up and went to school there in Juvi [Juvenile Detention Center].

Calvin's struggle with his anger issues, his parent's incarceration, his numerous suspensions, and eventual expulsion from middle school led him to turn away from school, his organic family, and entrenched him with his street family. This permanent association with his street family eventually led him to selling drugs and being incarcerated a few years later. In summary, suspensions did not deter Calvin's behavior. Instead, the administrators assigning suspensions, pushed him further from school and closer to his street family.

For Calvin, the incentive that refocused his concentration and energy was not being suspended from middle school but rather his fear of being tried as an adult if he got caught committing any crimes and the shooting death of a close friend. These two deterrents and the desire to live with his grandmother (organic family) is what led Calvin to complete high school. Delgado (1995) and Duncan (2002) would agree that suspending Calvin for his failure to comply with the middle school's code of conduct is just a way to remove the "problem" and not try to solve the problem.

George was probably considered a problem at the numerous middle schools he attended. The middle schools decided to deal with his undesirable behavior through suspensions and then expulsion rather than attempting to address/solve the disruptive behavior. George's first suspensions were for fighting/anger issues in elementary and middle school and then progressed to social and truancy issues in high school. George reflected that the change he felt at Benison High School was due to an older student body and having teachers that cared more about him. He still had lots of energy, but he was able to control it more and not act out. In our first interview, he shared:

So, it was like all this energy and all this hyperness comin' [out in me] but the kids up here were like older and more mature. You see what I'm sayin'? So, like I had no trouble with the work, and we was all here for the same reason. But the teachers here care a little

more. I guess compare to Mary High [School] the math teachers here care a little more cuz you know the class was smaller and not as many actin out here. (Interview 1)

George felt that he benefited from caring teachers or what Freire (2000) might consider authentic relationships with teachers at Benison High School. His modified behavior was self-monitored and not controlled through punitive suspensions that can be typical at learning institutions.

Some schools employ counterproductive policies that pass students on to higher level courses without first passing the prerequisite. Habermas (1989) and Honneth (1991) might explain this form of antagonizing/oppressing policy as a way that the school can force its power upon students by requiring them to make up failed classes on their time either through summer school or online classes. Thus, several of the participants found themselves in their second or third year of high school and in classes having never passed any/all of the previous classes.

During Nick's first interview, he explained how he fell behind and had no other choice but to leave high school:

Dean: Okay, so what happened? Why did you come to Benison High School?

Nick: I honestly made my own decision to come here.

Dean: Because what happened?

Nick: Well you know, I was getting back on track. I was getting back on track at my school, but it was getting too late to get on the stage in May [for graduation]. You know they put me in 10th grade after I failed 9th grade? I never made it to summer school so I was always "I need to make up 9th grade" but I couldn't with 10th grade and then in 11th I had 9th and some of 10th to make up. I was getting further and further behind my grade. You know? So, you know, I was like "well I want to go to a school where I can get my credits" and you know, and graduate. I said I don't care how long it takes me I am willing to do the work. Because everything I failed was from 9th and 10th grade year. So, it was not like I did not know it I just didn't do the work. So now that I know the type of work I need and the work I had done. I could just go right back to it and get it finished. You know? And my school I just could do that at there, so I had to leave. You know?

Nick's explanation suggests that the decision for switching high schools was his own. In reality it was the school's policy that forced him to switch schools, thus keeping his potential late graduation status from counting against the school in state and national rankings.

Dwayne also attended Benison High School through a program that was started to help students who did not complete 8th grade but, due to their age, needed to move on. This program helps the zoned high school reject students who are already behind and potentially will count against them in state and national graduation rankings. Dwayne explained at the end of his first interview that after the death of his mother he fell behind and eventually lost interest in school. After being arrested for truancy, he was partnered with a mentor through a court sponsored program and returned to school:

Dean: Is there anything else you want to add about your school experiences?

Dwayne Earlier when you asked me 'bout math classes and I had [Mr.] Fine. Maybe it's not right cuz I had him when I first got to Benison and I was not ready for school again. I mean, that for me math was hard but not in elementary school. Where one plus one was two and then in high school it was more harder with doin' it in science and other subjects. Middle school is when I really had a hard time with my mom dying and not having nowhere to go. I just stopped going to school and then got caught up with skipping and hanging out. Then when they sent me to Benison, I still was not ready to be in school. So, it took a while for me to get back into it. I was still in 8th grade when I came here and then at Christmas we went to the 9th grade. They sent like two classes of us here called us 8.5s. We were told that we could go back to our high school, but no one did. I was going to but then with the charge with my cousin you know I went from being the good student to being a criminal. I know I could not switch schools. Not with missing so many months. So, I just stayed at Benison and graduated—on time. I finished in like three years and maybe a bit more cuz the jail thing.

Dwayne never had the choice to attend his zoned high school because, as he explained it, "they just sent me to Benison," thus taking away his ability to attend the high school that he lived, at the time, just four houses away from.

Tony also shared during his first interview how he was sent to Benison High School. In addition to having a poor attendance record he missed an additional 2 weeks after his emergency surgery. During this time, some of his friends were arrested. Then, when he attempted to return to school, he was told that he had been un-enrolled and was to now attend Benison High School:

Tony: Arrested—I was sick and at the emergency—I had my appendix out so I was not there, but I would have been if not for the appendix.

Dean: Oh, I did not know—is that how you ended up at Benison High School?

Tony: Ya my old school sent me there and said cuz I had not been in school and I was behind I had to go to Benison. They said I could get caught up and come then come back. I never did. I also had to enroll myself cuz I could not use my mom's address cuz she wouldn't let me back until I was in school and I needed an address to enroll.

Tony was never given the chance to get caught up or have a conference to see if he could continue to attend his zoned high school. The school simply transferred him. Perhaps in the school's eyes he had "aged out" and could not recoup enough credits to graduate with his class.

All of the participants in this study experienced some form of antagonizing institutional oppression while in the public school system. The oppressions that were forced on the participants took on many different forms such as out-of-school suspension, in-school suspension, forced-school transfer, and proof-of-address requirement. For the participants in this study, Benison High School was their last chance to obtain a high school diploma and avoid a general education diploma (GED) or dropping out. The alternative setting that Benison High School offered appealed to several of the participants. Benison High School offered different choices and paths toward graduation, thus helping the students form a positive relationship with the school. Some of the positive relationship building programs included the quarter system, smaller class size, and 9th and 10th grade classes that are taught in a condensed format. These 9th

and 10th grade courses can be condensed because the majority of the students attending Benison High School are repeating these classes for the second or third time.

Dwayne and Nick are the two participants who benefited from Benison High Schools quarter system and graduated on time, four years after entering 9th grade. They both decided to stay at Benison High School and graduate. Either one could have transferred back to their zoned high school for graduation, yet they chose to stay at Benison and finish their classes. At the end of Dwayne's second interview, I asked him about his thoughts on attending Benison High School:

Dean: Ya great hey what do you think about Benison? I mean did you like going there?

Dwayne: For me it was good. Being able to take classes faster and going there instead back to 8th grade was really good for me. I was not big, but you know I was older than the other kids in middle. Well older until I graduated at Benison then everyone was older than me.

Benison High School's quarter system helped Dwayne get caught up after repeating a couple of grades in the elementary/middle school years. Nick shared similar attitudes about Benison's quarter system at the end of his second interview:

Dean: Hey, what would you say about going to school at Benison? Like, was it good for you?

Nick: Oh yes, most definitely. The classes were fast—twice as fast as other schools and you know the teachers were good. Well some good and others not so much but most were good. They seem to care about you and want you to pass. The smaller classes were good to. You don't get lost like my other school in a class of 35 kids.

Nick was able to take advantage of the quarter system at Benison High School and make up the 9th and 10th grade classes that he failed at his previous high school.

Benison High School also offered flexible time schedules that appealed to several students who worked while attending high school. Calvin worked during his time at Benison

High School and was able to balance both his later school schedule and his evening work schedule. He was able to take classes later in the day therefore avoiding being late for early morning classes. In our second interview, he explained:

Dean: Hey one more question before we finish up. What would you say about Benison? Like was it good or bad for you?

Calvin: Well, it was alright. Ya, well you know I worked while I was there. At school. Like five, six night a week. I was at [a shipping company] and they have lots of hours. So, going to Benison was good cuz I took classes later. Not the mornin' times but closer to lunch. That way I was not late—too much but you know there for school.

Having the option to come to school later in the day or earlier in the morning was another way that Benison High School developed positive relationships with its student body.

Creating an authentic positive experience for all students can be challenging. At times, it seems that the schools might try to manage students through deterrents like suspensions and detention. It could be that if a student does not respond right away to these deterrents the student might escalate the situation, ultimately finding themselves removed from the school by school officials/policy. All the participants in this study did struggle to find a positive relationship with the educational institution at their respective high schools. Eventually all six found a positive experience and success at Benison High School.

Table 5. 5
Educational Institutions – Number of Significant Statements by Participant

| Theme | Dwayne | Tony | Jeff | Calvin | George | Nick | Total |
|---|------------|------------|------------|------------|------------|------------|-------|
| <i>Authentic</i> Middle School | 2 (20%) | 0 (0%) | 3 (30%) | 1 (10%) | 2 (20%) | 2 (20%) | 10 |
| <i>Authentic</i> High School | 4 (25%) | 2 (13%) | 2 (13%) | 1 (6%) | 4 (25%) | 3 (18%) | 16 |
| <i>Antagonist(s)</i> Suspensions Administrative placement Ignoring pre-requisites Un-enrolled | 6 (14%) | 6 (14%) | 6 (14%) | 8 (19%) | 9 (22%) | 7 (17%) | 42 |

Judicial Institutions. Gramsci (1971) himself experienced the inner workings of the judicial system in Italy during the late 1920s. He was arrested and incarcerated as a means to control and silence his voice. Although none of the participants in this study were incarcerated for political reasons, half did spend time in the correctional system. Gramsci explained that the incarceration system was part of the institutional superstructure that the ruling class used to help enforce a culture of hegemony. This cultural system is installed by the ruling class and it creates a dominant ideology with respect to perceptions, values, and beliefs. This status quo becomes the accepted view of the masses and is believed to be for the benefit of everybody. Yet it truly only benefits the ruling class.

Three of the participants in this study all received charges for the sale of illegal drugs. This charge could face future challenges if the legalization of marijuana is passed at the state or federal level. This possible legalization could potentially negate the charges brought against these young men. None of the three participants actually discussed their charges or their experiences while incarcerated. Yet these charges follow them today and impact their day-to-day lives. One participant, Dwayne, openly and at length discussed his experiences with the justice system. His personal court battle had been going on for over six years and was nearing an end.

When Dwayne met me for our first interview, he had just about four months left to complete his plea bargain deal. Over the past 6 years, Dwayne had faced many different antagonistic parts of the criminal justice institution. Interestingly, perhaps as a sign of his acceptance of institutional oppression, when I asked him how he felt the whole experience had

been handled he responded, “I like the way it was handled” (Interview 1). He further explained that at times his multiple court hearings dragged on but, in the end, he felt that his case was handled well, and it went like he expected:

Dwayne: For me that [court] kinda dragged it out for a while. I think everything was handled the way it should have been.

Dean: Yes, it did seem like a long time. I definitely agree with you on that one.

Dwayne: Ya I was 16/15 when it happened, and it’s resolved when I am 20?

Dean: That is a long time. Do you think that’s pretty typical? Or going in did you think something different?

Dwayne: Ya, going through the process I was hearing people tell me that it was going to take a while.

Dean: Yes, because I did not expect that.

Dwayne: Yes, I started to expect it at some point so when I was going to court, I was like ya, I’m going to go there for nothing today and then one day I was like oh this is it.

Dean: Yes, like today is the day.

Dwayne: Ya, that was the day that I had been waiting for.

In this brief exchange, Dwayne explained how the past 4 years of life have been tied up in numerous court appearances and his case experienced numerous delays. Then as suddenly as the charges were levied against him, it was all over. Dwayne did not know that when he walked into the court room 8 months ago that his case was about to be settled. It seems that Dwayne’s monthly visit to court became what Honneth (1991) would describe as his personal form of survival. Dwayne’s numerous court appearances became his self-preservation. He was financially unable to afford personal representation and therefore had to rely fully on the criminal justice system to resolve his case.

Later in Dwayne’s first interview, he further explained other delays that his case endured:

- Dean: That was the one thing that really surprised me about was how long it took. Do you think that is for everyone or just your case and using a public defender?
- Dwayne: I think it depends on the person—my brother had a situation. With him everything was done in a 5-month span. You know?
- Dean: So, do you think it was the charge? Or where it happens? Or being charged for you as both an adult and a juvenile?
- Dwayne: Well, it happened when I was a juvenile and she was too. But when we got to court, I turned 18 and they had charged me with both. My brother had more evidence against him, so he pled guilty. He accepted the first offer they gave him. You know. It depends on the research of what happened, where it happened? Who it happened to, what they can find? Where all of it is right there in front of them with him. With me it was are they going to come to court? Can they find them? Will the investigator show up on time?
- Dean: Yes, I remember that. Are the people going to show up? Can they find the accusers? Do they know where the accusers are?
- Dwayne: Ya, and I need to get another public defender cuz he left then the prosecutor left and then another prosecutor came in.
- Dean: Yes, that was a long process.

Public defender/prosecutor turnover, police investigators not showing up to court, not being able to locate the accusers, were just a few issues that lengthened Dwayne's case³⁸. These oppressive/antagonist delays are what Unger (1983) might consider methods that keep the non-ruling class oppressed. According to Unger the current justice system is set up to serve the ruling class and keep the current power structure intact.

After all the delays the judge in Dwayne's case finally forced the prosecutor to choose one of the three following options: go to trial, drop the case, or get a plea deal. Dwayne had the opportunity to take his chances and go to court but, in the end, he chose, on his public defender's advice, to take a plea deal. He explained in his second interview that "everybody pleas out. Look

³⁸ Through Dwayne's experiences in the judicial system my personal understanding of this system has changed. His experience helped me see firsthand how there are two different court systems: one for people who have the means to hire private representation and a second court system where the accused rely on a public defender.

it up you will see” (Interview 2). Although Dwayne’s case is closed, and he has almost completed his probation terms, he still experiences biases and un-fair prosecution from his peers:

That’s the problem, people hear you got locked up and they think you did it. When it all ends, I take a deal and it’s all he said, she said. But she never came to court to say anything. I spend the next 2 or 3 years paying for court and probation and people still think I am guilty and don’t know the truth. (Interview 1)

The charges that were filed against Dwayne when he was just 16 years old will continue to define (by others) him and follow him for the rest of his life. It is a relationship he will always have to deal with and explain.

Bell (1992) explained that education within any institution leads to enlightenment.

Dwayne has gained significant enlightenment over the last 4 years as to the workings of the legal system. He shared, in his second interview, some of his substantial insight when I asked him what he took away from his whole experience. I asked him if he had learned anything new from his experiences, he responded:

Not much new. I mean, you know the [criminal] system is not on your side and you need to step up if you want to get it right. You need to be good at explaining cuz even though the public defender is there to help you, she is busy and when your turn comes around you need to be ready. (Interview 2)

This statement shows that Dwayne has become enlightened by his educational experience progressing through the criminal justice system.

Table 5. 6
Judicial Institutions – Number of Significant Statements by Participant

| Theme | Dwayne | Tony | Jeff | Calvin | George | Nick | Total |
|---|-------------|-----------|------------|------------|-----------|-----------|-------|
| <i>Authentic Reform Deterrent</i> | 5 (72%) | 0 (0%) | 1 (14%) | 1 (14%) | 0 (0%) | 0 (0%) | 7 |
| <i>Antagonist Plea Deals Cycle of Incarceration</i> | 10 (40%) | 2 (8%) | 6 (24%) | 6 (24%) | 0 (0%) | 1 (4%) | 25 |

Employment Relationships

The participants in this study had varying relationships with employment institutions.

Table 5 shows the breakdown of different types of businesses/industries and employment (i.e., full time or part-time).

Table 5. 7
Types of Businesses/Industries

| Type of Employment | Number of Participants | Full time | Part-Time |
|--------------------|------------------------|-----------|-----------|
| Warehouse | 3 | 1 | 2 |
| Food Service | 2 | 2 | |
| Cashier/Stocking | 1 | 1 | |
| Acting | 1 | 1 | |
| Parking Attendant | 1 | | 1 |

One of the biggest barriers that the participants faced when trying to obtain employment was the background check. Dwayne shared that he has to gather all his case information together to present when he applies for a job to try to explain the charges against him. Crenshaw (2002) might explain the slow removal of charges on Dwayne's criminal report as a form of suppression that keeps him contained and tied to the judicial institution. Incorrect and high-level charges appearing on his record is an antagonist relationship that Dwayne had to deal with for several years until he got them removed. While he was waiting for the charges to be corrected, he explained the other tactics that he had to engage in to find employment during our first interview:

Dean: How does that make you feel? Or how does the plea deal affect your life?

Dwayne: I don't know. Well it's hard to get a job. I can't keep a job, you know it's like 9 months and I leave or get left off the schedule. The job I just finished at [a pizza chain] was cuz we are not suppose to date fellow workers, but the manager goes out with another server. I date a server and they are like break up or one of you has to leave. That's why now I am at [a local sub shop] now.

Dean: Does your record make it hard for you to get a job?

Dwayne: Not really, restaurants are always hiring but sometimes I have to go to a few before they will interview me. But I get my stuff together so I can explain the charge and I have the court papers to show what happened and now it's easier

once I got the right charges put on my record.

Dean: The right charges?

Dwayne: Ya cuz my plea deal was for less charges, but they took a while to put the lesser charges on my sheet and take off the bigger charges.

Other participants also spoke of the difficulty of passing background checks. Several said that they were put on a probation period and that there were several jobs in warehouses and the food industry that they could find work fairly easily.

The one antagonist relationship that all the participants agreed on was low pay. Some of the participants worked two jobs while all of the participants lived at home with their organic families to help reduce cost. Tony explained that he works two part-time jobs to get extra hours: “I used to work at [a fast food restaurant] but they never would give me more than 30 hours. So, I went and got two different jobs to make more” (Phone Interview 2018). Jeff works full-time and also has a part-time job. His hope is to secure a full-time position at the higher paying warehouse job where he would then be able to leave his part-time job. He explained that there are lots of jobs, but the pay is low: “Nobody want to pay you. Ya know? They want to give you all these hours but no pay. I can’t work for no 7 a hour” (Phone Interview 2018).

The last antagonistic relationship that several participants discussed was their travel time to work and for some, completing their shifts early in the morning when public transportation is no longer available. In Calvin’s second interview he described his antagonistic relationship with public transit and the limited hours that they worked:

Dean: So, do you still ride (Public Transit) even after the (social justice) lesson?

Calvin: I ride cuz I have to not cuz I want to. I Uber when I can and now I use Line (Lyfts’ carpool service) cuz it cost less. Most the time [Public Transit] is not running when I get out of work. They stop at 12. So, I try to get a ride, but you know I work far from where I stay. So, most of the time I take Line.

Calvin is working to change his transportation challenges by saving up for a car, which will give him more freedom and flexibility. He will be able to work more hours and also greatly reduce his commute time. During our second interview, he explained perhaps the biggest benefit to him having a car is to reduce his commute time. He shared that “it’s over an hour to my work on the bus but I can get a [car] ride there in 20 minutes” (Interview 2).

Table 5. 8
Employment – Number of Significant Statements by Participant

| Theme | Dwayne | Tony | Jeff | Calvin | George | Nick | Total |
|--|------------|------------|------------|------------|------------|-----------|-------|
| <i>Authentic</i> High School Diploma | 0 (0%) | 4 (31%) | 4 (31%) | 1 (7%) | 4 (31%) | 0 (0%) | 13 |
| <i>Antagonist</i> Living Wage Multiple Jobs Minimum Wage Background checks Transportation | 4 (27%) | 3 (21%) | 2 (13%) | 4 (27%) | 1 (6%) | 1 (6%) | 15 |

Mathematics Relationships

In this section, I investigate the relationships that the participants had with various mathematics (and social studies) topics in both SJML and “traditional” mathematics lessons. The participants were asked to reflect on their mathematics and general education throughout school at all grade levels. Although the SJML were experienced at the high school level, the participants were asked to recall any learning experiences throughout elementary and middle school as well.

Gutstein and Peterson (2006) believe that when students connect mathematics with their own culture and understand that mathematics is a method to analyze social injustices or social oppressions, they will utilize the power of mathematics to become agents of change. This form of critical mathematics instruction can motivate students to learn and also *self-empower* students

to develop a relationship with the world as active citizens. It is with the power of mathematics that they can create social change and help create a better democratic society.

Traditional lessons. The participants had varying levels of recall when expressing their relationship with mathematics taught in a traditional, non SJML format. Calvin had no response to his learning experiences during elementary and middle school. Dwayne also never responded directly to the question but rather discussed his treatment by middle school teachers and what he expressed as hard times for himself dealing with the loss of his mother. When asked again to reflect about the mathematics lessons he experienced in high school (non-SJML) he again focused on his treatment by his teachers and not the mathematics he experienced:

Dean: Do you remember any of the math from your 9th grade class or any other math classes you took?

Dwayne: Well I guess we did math. I never really liked going to class cuz after I came back to school people either thought I was not wrong or that I should be locked up. You were one of the only teachers who never treated me different. Remember I thought of switching schools? It was the teachers who thought I was wrong but most of the students were on my side.

It seems that for Dwayne two major life events framed the majority of his schooling narrative.

The death of his mother dominated his discussion of his elementary and middle school years; his discussion of his high school years was predominately about his incarceration.

Similar to Dwayne, Tony did not share any elementary or middle school experiences. His only narrative about non SJML was in 9th grade where he described the class graphing for the entire year: “I remember the whole 9th year. All we did was graph. I never did it. I would just copy the person beside me” (Interview 1). Tony’s honesty in disclosing his method of completing his class work might explain why he has no other recall of topics covered in his 9th grade year. If he was copying work then he was not engaging with the mathematics, and thus was unable to recall other topics covered during 9th grade mathematics.

Jeff had only one memory of mathematics from elementary school which was the 3rd or 4th grade skill of memorizing the multiplication tables. Through his brief narrative of learning (i.e., memorizing) the multiplication table, it seemed that he enjoyed the experience:

I remember we wrote the times [tables] out. Ouuuuu (inhaling) we must have wrote that 10 times a day. Nothin' but your times [tables]. I do remember them though. That's the one thing I remember. Don't think we did much else but them times. (Interview 1)

Jeff had a more detailed memory of one teacher he recalled from middle school. He explained that she was a social studies teacher who was always dressed up and playing different roles. He described the day his teacher dressed up as Rosa Parks and they learned about an event during the Civil Rights movement:

Ya one time she was [Rosa] Parks and she did a whole bus thing with not movin.' She even had another teacher act like the bus driver and get mad at her for not movin.' Then she dressed up as a science person and she did all these things with shrinking balloons and putting them in bottles without popping them. She used dry ice—I remember that. You could not touch it, but it was all smokin' and stuff—like Halloween. (Interview 1)

Although Jeff did not explain the concept of expanding and contracting air molecules, he did recall the lesson and spoke enthusiastically about his experience with this teacher. It seems that she engaged Jeff with her re-enactments and perhaps discussed topics that were culturally relevant to him.

When George was asked about his memories of previous mathematics lessons, he immediately responded with several 10th grade geometry concepts. His geometry concepts included circles, angles, and triangles:

We did geometry with the circles and makin' angles. I really did well at that.... Angles and triangles. I liked makin' those and solving what angle was missing. For me it was like a puzzle that has a few clues and you need to finish the picture so you can see what it is. (Interview 1)

He also explained the differences between right, obtuse, and acute angles, describing each one correctly. George mentioned several hands-on components of geometry. Constructing

angles with a protractor or compass, using the triangle theorem to find missing interior angles, and measuring the different interior angles of a triangle to properly classify the triangle can all be hands-on learning experiences.

Nick, on the other hand, did not recall any specific mathematics lessons but did describe his classroom experiences during his mathematics courses. He shared that he had good attendance, but was rarely focused on the lesson:

I really was not paying attention—you know? Once I went to class all the time and I did some work I was able to pass but I really did very little work. Well, I mean we did math and stuff, but nothing really like focused? You know? Mostly just solving for x and graphing. We joked in class a lot and clowned. We would do a little work because the teacher would not teach the whole time, so it was easy to just do a bit of work and then play for the rest of the period. (Interview 1)

Although Nick did not successfully pass Algebra I the first time he took the course, he did describe two concepts—solving for x and graphing—that shows he indeed recalled some of his 9th grade mathematics (graphing is a large portion of the Algebra I curriculum).

The mathematics concepts that were positively recalled from the participants were ones that were taught either hands on or with some theatrics. Other concepts were remembered in a less favorable manner: Jeff spoke about rote learning of the multiplication facts; Tony recalled graphing, while admitting that his work was not his own; and Dwayne deflected the question altogether, remembering instead his treatment by teachers and not the mathematics being taught.

Social justice mathematics lessons (SJML). Exploring the mathematics the participants recalled from the SJML in which they participated was more direct. Each participant was asked to recall any of the SJML they remembered as well as the mathematics they remembered being taught with each specific lesson recalled. This questioning was repeated during the second interview after the participants were asked to read an article about a social justice lesson.

When Dwayne spoke about the School Crossing lesson, he explained how data analysis/comparison was used during the lesson. He recalled that he “measured the distance from the sign to the school. And it was too short compared to Smith High School” (Interview 1).

When describing the Water Scarcity lesson, Dwayne discussed the ratios that he calculated to compare the cost of water to other commodities. He shared that he often tells other people about the high cost of water. He explained that he “still tell(s) people ‘bout how [bottled] water cost more than gas. They never believe it until I show them” (Interview 1). Years after Dwayne completed the water scarcity lesson, he is still able to complete the mathematics involved in ratio comparison.

Tony explained from The Real Cost of Fast Food lesson the process that he used to calculate the amount of sugar in a meal and then using unit analysis he calculated how long it would take to consume a larger amount of sugar. He recalled: “[I] did that lesson ‘bout (A fast food chain) and all the salt in the food. I remember that, and you brought in that bag of sugar and we check to see how long it would take us to eat it” (Interview 1). He next recalled that he used the unit analysis information to help him create a line that displayed the amount of sugar, salt, and the cost of a set meal over a period of time. The group he was working with graphed the lines and defined the slope of all three lines: “We made a graph showin’ the cost of a visit over like a month and the amount of sugar that you would eat in the month. Salt too” (Interview 1).

Tony went into some detail about how he calculated the slope:

Dean: Okay so do you remember how to make the graph?

Tony: The one we made?

Dean: Yes

Tony Ya, just get the amount for every visit ... it was like 5.80 something or maybe 5.83 and then just add that three times and then that your money that you spent for the week.

Then we did that four times on the graph for the month.

Dean: Oh, okay I remember so the amount every week would represent what part of the line in your graph?

Tony: Awww Mr. Potts you know I don't remember it was like 17 something a week and that is the number you add to every bar. We didn't do no line we used bars.

Dean: Yes, a bar graph instead of a line graph. So, would the 17 and change be the slope of the line?

Tony: Ya, sure slope I remember that how slanty [*sic*] the line is: 5.83 or the 17 every week.

Although Tony was reminded of the term slope, he did immediately remember it and then gave an internalized personal definition for the term "how slanty the line is."

Tony also recalled the mathematics involved with the Not My Stop lesson. He recalled his map reading skills and the calculations he performed to find the distance from Benison High School to different subway stops. It was with these skills that he discovered that the bus was not going to the closest stop to the school. In a slightly raised voice with perhaps a touch of anger he shared, "we looked at the public bus and how it took us past the other stations. Took us downtown and not near the other [closer subway] stations" (Interview 1).

Jeff, like Tony, also spoke passionately about the CEO Pay lesson that he participated in. He explained how his group compared and contrasted the different levels of income/pay to different employees in the same company:

We looked at what the worker makes and then compare it to what the CEO gets paid. The cashier [is] makin' 8 [dollars] a hour and then the CEO was makin' like 400,000% that? Like over 3 million! Then we made the triangles to show the level of pay difference. (Interview 1)

Jeff also shared the difficulty his group had making a triangle that represented a 400,000% increase. He explained how his group struggled to find a sheet of paper large enough and in the end had to tape several sheets of paper together: "My group had to tape three big

pages together to show the pay difference. It was unreal—it was like I want to make that for just one year just one year and I would be good” (Interview 1).

Calvin recalled The Real Cost of Fast Food lesson and his surprise at the amount of sugar and salt that he consumed on his trips to fast food restaurants. He remembered working with unit analysis and the graphs his group created. Although he did not give the detail that Tony did in calculating/defining slope, he did demonstrate the lasting impression that the lesson left with him by his “maybe more” comment at the end:

I remember all that stuff we did ‘bout the salt and sugar in all their [a fast food restaurant] food. We made the graph showing all the amount in the food. We did this line graph and it went up. But it got really high after just one month. I was surprised ‘bout the salt. I knew salt was not good for you, but they had it in everything. And remember all that sugar you poured out? I was thinkin’ ‘bout that and how we eat all that in just a month—or it was 2 months. Ya, I ate that [sugar]. Maybe more. (Interview 2)

It seems that, for this lesson, using unit analysis and creating graphs were not the only lessons that Calvin took away from The Real Cost of Fast Food lesson.

George recalled the Saturation of Liquor Stores lesson and the mathematics associated with the SJML such as finding the area, saturation calculation, comparing/contrasting saturations rates, map reading, and scale reading. George explained how the saturation of liquor stores was greatest in urban areas and he recalled that several students were surprised at the number of stores that sold liquor in their own neighborhoods:

I remember that some kids were all ‘bout their neighborhood bein’ clean and nothing there. Then when all the red dots pop up, they all like—oh ya, they sell 40s there and that’s where my mom get her stuff. You had to watch cuz sometimes the screen would be off, and your area would be bigger, then you had to change the screen to get the right count. It was hard to count the dots sometimes there were right on top of each other cuz stores be beside each other or it’s on a corner and everybody be selling. (Interview 1)

George also shared similar memories of The Real Cost of Fast Food lesson as both Tony and Calvin with respect to the time it would take to consume a large amount of sugar when eating at a fast food restaurant several times a week:

George: We did that lesson on fast food and you had us measure all that sugar. Remember that big bag you poured out? And it only took us like two weeks to eat all that. I remember that. A whole bag of sugar.

Dean: Two weeks? Are you sure it was that quick?

George: Mmm ya cuz of the milkshake and coke and desert. And we went more times a week than the other groups. Remember? Our group too had the highest sugar cuz we did desert and two drinks? We joked that we won the sugar contest.

Dean: You're right you were in that group that was just a couple of weeks and everybody else was like a month. I do remember that.

It had been over a year since George participated in this lesson and he still vividly remembered the different result for his group compared to other groups.

Similar to Dwayne, Nick also recalled the School Crossing lesson and the exercise of comparing Benison High School's signage to another nearby high school. He shared this memory of the comparing and contrasting part of the lesson, "we measured the distance from the light to the school signs and then we went to Smith High [School] and measured their signs and they had more signs and painted school signs on the road" (Interview 1).

Nick also recalled several geometry terms from a lesson that focused on the Arab Spring in Libya. Specifically, he recalled terms that relate to a circle:

Tangent, Radius, Diameter, cord, center of the circle, circumference, secant, I remember all the parts of a circle and also, I can find Libya on a map which most people can't. That was a good lesson—we drew those circles on the map and then made up all the meanings for the different parts of a circle that had to do with Libya and their Arab Spring. (Interview 1)

Nick mentioned at the end of his circle vocabulary that he also retains the knowledge of where Libya is on a map. This extension is a positive side effect of the SJML where students often gain more knowledge than the mere mathematics associated with the lesson. Gutstein and Peterson (2006) explained that mathematics is an essential tool for understanding our world and connecting mathematics with students' cultural/community histories will help them understand their power as active citizens.

Nick also shared a specific definition from the lesson he participated in just over two years earlier. He explained that he “also remember that the tangent just touches the circle[s] diameter once like when the plane would bomb Libya it never landed it just touched it one time when it dropped the bomb” (Interview 1).

All the participants were able to share different experiences—some mathematical and some not—from their elementary, middle, and high school years. The particulars about specific schooling and mathematics experiences recalled in general were rather sketchy and varied from participant to participant. The particulars and recurring themes that the participants recalled with respect to the SJML, however, were richer, greater in detail, and often shared enthusiastically. Giroux (1996) noted that an enlightened critical pedagogy, which SJML is rooted, can challenge oppressed students and remain engrained in their memory long after the lesson has ended. The SJML, grounded in critical pedagogy, embraced not only complex topics (Giroux and McLaren, 1986) but also complex mathematics in order for students to make sense of the oppressing forces that they were investigating.

Table 5. 9
SJML vs. Traditional Lessons – Number of Significant Statements by Participant

| Theme | Dwayne | Tony | Jeff | Calvin | George | Nick | Total |
|-------|------------|------------|------------|-----------|------------|-------------|-------|
| SJML | 8 (18%) | 6 (14%) | 7 (16%) | 4 (9%) | 8 (18%) | 11 (25%) | 44 |

| | | | | | | | |
|---------------------|--------------|------------|------------|-----------|------------|------------|----|
| Traditional Lessons | 2 (12.5%) | 3 (19%) | 3 (19%) | 1 (6%) | 3 (19%) | 4 (25%) | 16 |
|---------------------|--------------|------------|------------|-----------|------------|------------|----|

Reflections on Social Justice and Agency

In this final section of Chapter 5, the participants' reflections on SJML, agency, and a social justice mathematics article are presented. The section starts with the participants' personal stories of how they might have become more socially aware (a critical awakening of sorts) of different oppressive forces acting against them and others. These critical awakenings are followed by memories of different SJML. The section concludes with probable changes in agency toward social issues as a result of the SJML, and the participants' reactions and reflections on a social justice article that they were requested to read.

Table 5. 10
Frequency of SJML Recollection – Number of Significant Statements by Participant

| SJML | Dwayne | Tony | Jeff | Calvin | George | Nick | Total |
|---|-------------|-------------|-------------|------------|-------------|-------------|-------------|
| Real Cost of Fast Food | 0 | 8 (34%) | 3 (13%) | 2 (9%) | 5 (22%) | 5 (22%) | 23 (31%) |
| Not My Stop | 0 | 5 (63%) | 0 | 3 (37%) | 0 | 0 | 8 (11%) |
| Water Shortage | 5 (71%) | 0 | 2 (29%) | 0 | 0 | 0 | 7 (9%) |
| Saturation of Liquor Stores | 6 (60%) | 0 | 2 (20%) | 0 | 2 (20%) | 0 | 10 (14%) |
| What Do Gaddafi, Libya, and Oil All Have to Do With a Circle? | 0 | 0 | 1 (25%) | 0 | 1 (25%) | 2 (50%) | 4 (5%) |
| School Crossing | 4 (40%) | 0 | 0 | 0 | 0 | 6 (60%) | 10 (14%) |
| CEO Pay | 0 | 0 | 6 (86%) | 0 | 1 (14%) | 0 | 7 (9%) |
| Mortgage Fraud | 1 (20%) | 0 | 3 (60%) | 0 | 1 (20%) | 0 | 5 (7%) |
| Total | 16 (22%) | 12 (16%) | 17 (23%) | 5 (7%) | 10 (14%) | 12 (16%) | 74 |

Critical Awakening

Marx and Engels (2008) explained that in order for the ruling class to maintain their power and private interest they would need to distract the working class. These distractions can come in the form of spiritual, immoral, or irrational acts and events. The working class can also be distracted by material objects or other wants that are sold as “must haves” for the working class. Thus, a change in agency must occur for the oppressed working class to make effective change to their world. Gutstein (2003) discussed the necessity for students to become critically aware through developing positive cultural and social identities. Ladson-Billings (1997, 2011) explained that students must develop a critical consciousness to challenge the current power structures and begin the steps to become agents of change. To create these agents of change a culturally relevant pedagogy must be utilized. Culturally relevant pedagogy is committed to all students and not just one individual or a group of students.

While Dwayne was incarcerated waiting to make bail, he reflected on the inmates and recalled a SJML that looked at the concentration of liquor stores in different neighborhoods:

Well, I remember being in jail and thinkin’ that there are all these people in here who are in here cuz their area is bad and full of crime—remember from the liquor stores that we looked at. The crime rate is higher when there are more liquor stores. And I was thinkin’ that many of these people probably hung out on the corner and got into trouble cuz they was there and looking to hustle people to make money. (Interview 1)

Dwayne was recalling a SJML that he participated in where groups of investigating students found that crime rates were higher in areas with liquor stores. He showed further critical thinking skills when he shared his thoughts about a recent water crises in a northern city:

Dwayne: The water scarcity lesson—I remember that one too.

Dean: Why do you remember that one?

Dwayne: You know, I thought of it last year when that city had all that bad water. You know it was Detroit or near there [Flint, Michigan]. They had bad water and

they had to get water bottles. I thought they were lucky. Well, not cuz they got sick, but they had water brought to them. Cuz the people in Africa walked two miles to get their water. Also, India they had to walk. My group look at Manipur and the women and kids who got water every day. I think the average was 1.5 miles or maybe 2—really far. We only walked a half of a mile and it was hot—I think you picked the hottest day to get that water. All those elementary kids were out and some of them walked back with us. The one we had wanted to drink the water, but we didn't let him. We made him get it from school. I was not going back to refill our jug.

Dwayne understood the necessity for water and the privilege that some people have with it being available and at times delivered to them. Through a SJML, he experienced the struggle to obtain water and to transport it himself. It seems that Dwayne is no longer a passive listener to the news, but rather he is internalizing the information he receives and applies it to his own experiences.

Tony shared an experience of his critical consciousness when he discussed an interaction between a classmate and himself. The classmate of Tony's was on a data gathering trip at a public transit station:

Ya, there was like three kids who got in trouble for hangin' out at a station by school. Lisa told me that the cops told them to move cuz they was countin' people at the stop and he said they was loitering. Even when they said it was for class, they [the police] didn't care. They [the police] made them move.

Tony recognized that the students would not have been harassed by the police if they were at the station closer to downtown, one they used on regular bases. The station that Lisa and her two classmates were counting people was in a predominantly white part of town. Several of the students felt that they were discriminated against at these stations while trying to gather passenger counts and there was classroom discussion about the students' discomfort. Tony remembered those conversations years later and the exercise has remained with him as a reminder of his critical consciousness growth.

During Jeff's first interview he reflected on the vast discrepancies between hourly wage earners and the chief executive officer (CEO) of a company. Jeff participated in a SJML that looked at the differences in pay and how working as a cashier for a large national grocery chain he is struggling to make ends meet. He has taken on a second job that pays more and showed his critical consciousness of the struggle to earn a living wage:

Oh ya, it was crazy how we looked at what the worker makes and then compare it to what the CEO gets paid. Ya, it's not right that they make so much and we workin' all day and they just sittin' up there makin' all the money.

Jeff is working to obtain a job that has a higher hourly wage than he currently earns and with time he has the potential to earn over three times what he currently makes. It could be said that he is becoming critically conscious of the physical work he performs while others in the store and in managerial positions make a considerable larger wage than he does.

During Calvin's first interview he shared several moments that seemed to show his critical development. It was not until our second interview, however, that he took ownership of his critical thinking. During the first interview, he framed his reflections about the SJML as simply complying with the teacher's directions to complete the task. His responses reflected passive learning experiences with comments such as "counting people for you" (Interview 1). When he was pressed further about the lesson and asked how he felt about the bus going to a longer stop or the police following their bus he shared his memory of the lesson:

Calvin: Well there was that bus lesson. You know we looked at the bus and. Ya, the bus thing.

Dean: What about the bus thing?

Calvin: Mmm the bus. How it was like going long or not to the right place—I remember you being all worked up—mad that it was being followed by the police.

Dean: Oh ya, that's right the public bus used to be followed by a police car until it

took you to the train station. How did you feel about that?

Calvin: It don't matter—they weren't there for me.

Dean: Why were they there?

Calvin: Ahhh, you know to watch us.

Dean: But not watch you?

Calvin: I don't know Mr. Potts you know they always got the police behind us.

Dean: Alright—well do you remember anything from that lesson about the bus?

Calvin: Ya, we went to the station and we were told to leave.

Dean: By who?

Calvin: The police, who else?

Dean: Well, I mean do you remember why you were there? What you were doing there?

Calvin: Ya, counting people for you.

During our second interview, Calvin again shared his memories of his time at the public transit station counting people and clarified his thoughts and explanations:

Calvin You know we went to the station and they took us to the black stations not the white or mixed ones. That's what that lesson was about for the [public transit] project. I thought you wanted the math stuff like counting the people. I don't even like to ride [public transit] cuz of what they did to us with the police following us and taking us to the [further] stop.

Dean: Okay, so you do remember the [public transit] project—you said that you don't like riding [public transit] is it because of the project we did?

Calvin Ya cuz, you know we found out they was takin' us to a station skippin' two or three closer ones and it's cuz we were Black. They didn't want all those Black kids at the stop with the White people.

Calvin took ownership of his learning and experiences in his second interview. He demonstrated his critical consciousness by explaining the reason, in his view, of why the bus skipped closer stations.

George demonstrated his deep understanding of critical social issues by adding in a few words at the end of his comment. His reflection was about a SJML that investigated the saturation of liquor stores in different zip codes:

Well, you had us doin' that Google Map thing and finding the area. Then we counted the liquor stores and we saw how many there were by the school but not up in the suburbs. They don't have as many liquor stores. Not like us. (Interview 1)

Three small words at the end of his reflection, just nine letters, demonstrate George's deep and critical understanding of the complex issues of race and stereotypes surrounding alcohol and poor communities. Another example of George developing critical consciousness occurred when he was discussing The Real Cost of Fast Food lesson. George recalled a follow-up discussion when a 5-pound bag of sugar was dumped onto a desk and the students had to calculate how long it would take to consume that amount of sugar in their regular weekly fast food diet:

We did that lesson on fast food and you had us measure all that sugar. Remember that big bag you poured out? And it only took use like two weeks to eat all that. I remember that. A whole bag of sugar. (Interview 1)

George's statement at the end of his recollection, "a whole bag of sugar," may shed some light on his critical understanding of the effects of a high sugar diet and the potential addictive properties that are attached to processed sugar.

Nick showed his critical consciousness when he shared his thoughts about the School Crossing lesson. In just three short responses, he explained his critique of the local government, the school board, and the police force all not caring about lower income students' safety. His critical consciousness was evident through an exchange during our first interview:

Nick We measured the distance from the light to the school signs and then we went to Smith High [School] and measured their signs and they had more signs and painted school on the road. We had none of that.

Dean: What did you think about that difference?

Nick We a hood school Mr. Potts you know that! They don't care about us. They don't care if we get hit or cars race through the light and hit kids.

Dean: Who is they?

Nick The government, you know the people who run the school and the police.

Nick's critical statement of "we a hood school" demonstrates his knowledge that schools in different areas have different amounts of funding and even schools in the same district—as Smith High School is—can have more funding and resources than other schools.

Later during the interview, Nick again showed his understanding how income can affect the resources that a school receives. He wrote a personal letter to the school superintendent outlining the unsafe crossing by his school and never received a response that he felt was deserved. He explained his disappointment:

Because I worked hard on that letter! And he (the school district superintendent) is supposed to listen to students and should have answered us. I sent him all the different measurements that we took showing how the signs were too close and how two were missing and the flashing light did not flash. But then you know it came from our school, so nobody is listening. (Interview 1)

Nick felt he was silenced by the lack of response to his written letter, yet he did understand the power of that letter when later during the summer the school received new signage on the streets in front and beside the school.

Change in Agency – Reflections Post SJML

Ladson-Billings (2011) explained that the best way for students to learn is to have the lesson connected to their culture. When students learn through their culture it brings meaning and value to the lessons that are being taught. Lessons that are culturally rich and encourage

students to challenge social norms will engage the learner at higher levels than traditional lecture style teaching.

Gutstein (2006b), similarly, explained that a curriculum rich in social justice lessons could produce more critically aware and engaged students. During Nick's first interview, he shared that he was able to help out a neighbor's daughter with the different terminology for parts of a circle. He shared that he "remember(ed) that lesson [about the different terms for a circle] and I helped my neighbor when she couldn't remember the difference between the radius and diameter for her homework" (Nick, Interview 1). This recall of difficult/confusing mathematical terms shows that the SJML Nick participated in assisted him in internalizing the mathematics and at the same time raised his awareness of world events that were covered in the SJML. Nick commented on the same SJML focusing on Gaddafi and oil. He explained that his perceptions might not have changed but he is now more aware. Nick said: "Maybe not change the way I look at stuff but maybe more like now I understand. I never thought about the news when it was on. You know? It was just background noise" (Nick, Interview 1).

Through his participation in SJML, it seems that Nick has become critically aware and better understands the world that he lives in. He also became an agent for change when he marched in a women's rights and social justice demonstration. Nick excitedly exclaimed, "[I] was at the parade for social justice and women's rights last month" (Nick, Interview 1). He further shared that marching is something that he probably would never had done in the past, but he wanted to participate in order to be an active member of society.

Perhaps Tony has also become a more aware member of society after the SJML about the amount of salt and sugar in fast food meals. Giroux and McLaren (1986) encouraged educators to engage in critical pedagogy that explored controversial topics. Tony shared in his second

interview that he recalled The Real Cost of Fast Food lesson and that he was surprised at all the salt and sugar in food. He also remembered that as an extension of the lesson groups of students were asked to bring in health food alternatives to fast food:

Tony: I know we just had to read and then write 'bout all the stuff in the food that was not good.

Dean: Is there anything else you remember about the lesson?

Tony: We made food I remember that you made smoothies that were good.

Dean: Did you change your eating habits at all after that lesson?

Tony: No, I still eat at (fast food chain) but I do like smoothies. I make them at home for my little cousins and me.

Tony may not have changed his fast food habits but he has embraced a healthy snack alternative and he is modeling his healthy diet alternative to his younger family members.

Calvin had an impassioned strong reaction to the SJML, Not My Stop. He explained in his second interview that he does not like riding public transit due to the discrimination that he felt while riding the bus after he participated in the Not My Stop lesson: “I don’t even like to ride the train cuz of what they did to us with the police following us and taking us to the [main] stop.” (Calvin, Interview 2). Calvin also shared during his second interview that he and some fellow employees were being wrongly accused of messing up the break room at work. Calvin employed one of the strategies he developed during a SJML to inform the manager at work. The interview went as follows:

Calvin: I was at my work right? And they was like sayin’ that we had to keep the eatin’ area clean and that we was always messin’ it up and stuff. They said they was going to close it cuz we always leave it messy. But it wasn’t us. See, I work at nights with the stocking and I don’t eat there. It’s the drivers who go in there and eat—they not with the store. So, I went to my boss and told him, and he said that its us not them—then I showed him the pictures I took of them in there and with their food all open and out and he was like, “Oh you right.” Now they not allowed in the lunchroom no more and they wait outside in their truck.

Dean: That was a good idea to take a picture Calvin—and showing it to your manger—I guess you didn't get blamed any more for the break room being messy. Hey that was like gathering evidence to defend or prove that it was not you.

Calvin: Ya, I always remember you telling us how do we know it's true and you would be all like prove it to me—don't say it—prove it.

Dean: I still tell students that today in class when they do any project—can't just make stuff up you have to have evidence to back it up.

Calvin: True, True ...

Calvin gathered the evidence that he needed to alter the blame for the messy break room. Some might consider this a minor event yet for Calvin the false accusation against him and his fellow employees bothered him enough to motivate him to gather evidence and present it to his manager. Essentially, Calvin created effective change for himself and his fellow workers.

Dwayne shared in his first interview that he is using the skills that he developed in his social justice mathematics lesson to help him with the current criminal charges on his public record. He had several charges remain as charges after his plea deal. They were supposed to be taken off, but they kept showing up in background checks:

Dwayne: Ya, that happens a lot, but I just wrote it all down and sent it to the judge and the DA until they corrected it. I email it every week and even went down there on my off days.

Dean: That was a good strategy. I am glad it has worked out.

Dwayne: We did the same in your class—remember the speed signs and the cars running the lights? When Tom got hit by that car and we went out and counted all the cars that ran the light then we wrote those letters to the police, and the mayor. You had us write to everyone.

Dean: That's right I remember that lesson. We gathered data on the law for school crossings and also counted the cars running the lights. Would you say the lesson helped you with the process of getting the correct charges on your record?

Dwayne: It was not like counting cars or measuring but I wrote the letter(s) with the information I got 'bout the charges and how you can't have other charges on

your record after you have plead out.

Dean: Where do you get that information?

Dwayne: On-line. The state has all that information.

Gutstein and Paterson (2006) explained that students can understand their own power as active citizens in building a democratic society. Dwayne is doing this through his process of completing his probation and also taking the necessary steps to clear his record. He continues to apply the skills he developed in his SJML to become an agent for change and his own legal advocate. He explained:

The system is not on your side and you need to step up if you want to get it right. You need to be good at explaining cuz even though the public defender is there to help you, she is busy and when your turn comes around you need to be ready. Get all your stuff together in a folder and have copies and think of stuff that will help the judge be on your side. I am getting ready to file to get my record cleared—that was part of my deal so that this will be over—five years later. (Interview 1)

Dwayne is taking control of his future by ensuring he will have a clear record after his probation is complete. He is utilizing the same skills and tools he developed during the SJML in which he participated. The SJML gave Dwayne exposure to evidence gathering skill and also the confidence to make positive change in his life.

George shared that he has some lasting effects from some of the SJML he participated. Similar to Tony, he has also made changes to his dining-out choices. George explained how he was skeptical about a juicing sample that was brought in as an alternative to unhealthy eating:

George: I remember you brought in the juice maker and you made juice for all of us—it looked nasty all green and thick, but it was good. I'm not gonna lie to ya Mr. Potts I was like ain't nobody gonna eat that but then it was good it was like ginger right?

Dean: Yes, I do remember bringing in a juicer and ginger was one of the things we juiced.

George: Ya, and you said it was all the vegetable and fruit you need in a day in just

one drink. I liked it. You know I went to a juice place over by (a large mall)—it was good. My ma was all like not wanting to go but I told her about the juice you made, and it was alright. It was more like ice cream, but you know what I mean? It was still good.

Dean: Would you say that lesson changed your eating habits at all?

George: I stopped going to [a fast food restaurant we studied]. I mean I still eat some fast food [a deli shop] and grilled chicken salad at [a fast food restaurant] but I don't go, too much sugar—I mean that whole bag.

Dean: So, it sounds like you are saying that the lesson did change your eating habits or maybe your choice of where to eat.

George: Oh yes. I was out with Tina, 'bout a month ago, and we both laughed how we met up at [a noddle restaurant] and not [the fast food restaurant we studied]. She said she also doesn't go there after that lesson we did. We talked 'bout your class and how it's different.

Over a year after George completed The Real Cost of Fast Food lesson, he and a former classmate are still influenced by the results they discovered when investigating the amounts of sugar and salt in some fast food meals.

Later, toward the end of George's first interview, he explained how he questions different events that he encounters on a day-to-day basis. He described how he looks through a questioning critical lens when he observes these events. He explained that they "made me think like why is this happening? Or can they do that, and nothing happen to them?" (Interview 1) Perhaps George's previous critical investigations of different social issues such as healthy eating, wage discrepancy, the Arab Spring uprising in Libya, or the predatory lending that led to the real estate collapse in 2008 has helped George develop his critical questioning lens that shapes his thoughts today.

Freire (2000) noted that the problem posing method of teaching will take the students from a docile state of listeners and turn them into critical co-investigators along with their teacher. The participants in this study all experienced SJML and they all had lasting memories of

their mathematical research. Whether it's making better choices when eating out, creating safer school crossings, or realizing the saturation of liquor sales in urban settings, all these social issues had an impact on their lives. With the power of mathematics all six participants engaged in activities and became agents for change.

Article Reflections

The second interview, as noted previously, was set up after the participants had been given an article about a SJML. The article "Toys for Boys? Challenging Domestic Violence Using Mathematics" (Stocker, 2012), touched on the topics of gender identity and domestic violence, among others. The participants were asked to read the article and then meet up for a second interview to reflect on gender identity, domestic violence, and if SJML are an effective way to instruct.

The reading of the article varied among the participants from Calvin's declaration, "Ya know, it's not me to be reading all that" (Interview 2); to Tony's confession, "I wanted to read it, but it was too long. It was a lot like school" (Interview 2). Nonetheless, Dwayne, George, and Jeff were able to read some of the article. Jeff explained that his work commitments interfered with reading the article completely: "It was hard, and I was busy with work and stuff" (Interview 2). While Dwayne and George were deterred by the length of the article, both did read some of it. Dwayne shared, "I read most of it but towards the end I was tired of reading, so I read 'bout five, six pages" (Interview 2). Nick was the one participant who read the entire article—and connected with it.

Nick shared that he "found it interesting. It was hard to read some times like when they had all the graphs. It was hard to follow but it was good to read about students talking about the different types of violence, and how they keep track of violence against men too" (Interview 2).

Although full participation for this activity was not achieved, the participants still had some interesting insights and reflection about the article.

Gender Identity Bag Reflections. When the study participants were asked to reflect on a section of the article where middle school children were asked to fill bags with toys for boys and girls, four of the study participants had noted different responses. All four of the responses, however, could be linked to media influence. Habermas (1989) explained that the public sphere, created by the ruling class, was developed and utilized as a tool that has great control/influence over the masses. He theorized that the growth in consumer goods leads to the growth of the capitalistic economy. People become more concerned about consuming goods and pay less attention to political events and happenings. Thus, media influence becomes a tool to control the masses through driving the consumer economy through advertising.

In George's second interview, he appeared to echo Habermas's (1989) concerns of media control over the mass when he explained his younger brother's short-lived love for a stuffed animal. The interview went as follows:

George: TV. They all watch TV and all you see are the toys for kids, so they want those things. You ever watch it on Cartoon Network or Nick? It's all they show toys. That way your parents have to buy the stuff they are showing.

Dean: So, you think that the kids choose what was in the bags because of what they saw on TV?

George: Ya, that's the way it's always is. They sell the toys by showing them on TV and kids think they need to have that toy. I remember that tickle Elmo toy. It was big, my little brother wanted it—not cuz he watched Sesame Street but cuz he saw all the ads on for it. If he didn't watch TV then he never would have wanted one. Cuz he didn't watch the show he was on. Really, it's just a stuffed animal. I remember my mom bought him one then after 'bout a week he no longer plays with it or carry it around. (Interview 2)

George recognized that kids today are greatly influenced by what they see on television and that advertisers match their products with television shows. George's ability to recognize this

form of control gives him the power to rebuff this type of media advertising/influence. He explained that when he has children of his own, he will not get the toy of the moment. He plans to have them work for their toys in hopes that they will appreciate them more:

True, true they make them expensive (toys) and then the kids don't even play with them for a long time. Not me, I am not buying that stuff for my kids. They want a toy they can go get a job—earn some money and buy it them self. That way they will keep up with it and not lose it the first day. My little brother should have done chores and have to wait to get the toy not just be given stuff. (Interview 2)

Dwayne's reflection on the gender bags was in line with George's in that they both believed that the students were influenced by the media. Dwayne also felt that the toy selections of the students in the article reinforced stereotypes. When I asked him to explain what he meant he shared his deep understanding of the stereotypes that he and his sister's boyfriend encounter every day:

Dwayne: Kind of like how, you know, people look at each other just by how they look. Like if you came to my sister's place her boyfriend is always wearing a bowtie sayin' that he wants to be respected. That's what it look like but those who know him know that he be a banger.

Dean: He was in a gang?

Dwayne: Ya, he was but now he's got a job in the office and he's working to finish school so he can be a nurse like my sister.

Dean: Wow that's impressive—he wants to be a nurse?

Dwayne: Ya, well he has to get rid of some tattoos and stuff be he is doin' alright. My sister helps him a lot with the school stuff.

Dean: Well that's a gender role reversal or stereotype reversal—I think that most people think of nurses being women. So, he is going into a female dominated profession? What do you think about that?

Dwayne: It don't matter. I mean if that's what he wants then that's him. It's good money. It would not bother me if he was my nurse even knowing his past—I mean I got a past and most people don't know 'bout it. They would look at me different if they knew my charges.

Dwayne's understanding of society's view of tattoos, gang members, and criminal charges shows, as Freire (2000) would explain, his emergence of consciousness. Dwayne acknowledged how society would judge him in regards to his criminal charges, thus he works to clear his record in accordance with his probation. Dwayne also did some fact checking with respect to the gender bags. He explained that he "did that search on Google and they was right all the girl stuff came up pink and the boys stuff came up with guns and Captain America" (Interview 2).

Dwayne noted that guns showed up in his Google search, but he did not choose to add them to the gender bags when asked if anything was missing. Both Jeff and Nick felt that guns were the one thing missing from the gender bags. Jeff would have added guns to the bags explaining that guns are:

No big deal. It's like everywhere and you really need one to be safe. Everybody has one. Even two [guns] and you need to protect yourself. Or you gonna be walked over. Yeah, you need a gun to be safe. (Interview 2)

Nick agreed that guns were missing from the gender bags and expressed that he would have put guns in both bags:

You know if you asked these kids they would say guns. Toy guns but probably in both you know the way girls are today there ready to shoot it up just as fast as these little thugs running around. In my neighborhood, there are always little kids running around playing pimps and cops but nobody want to be the cop, so they play pimps and robbers. (Interview 2)

The gender bag contents shed some light on the influence that the media has on diverse populations. The participants in the article were from an affluent, mostly White urban school in a large Canadian city and yet four young black men from a southern American city all agreed that the contents of the bags were correct, except maybe for a weapon.

Domestic Violence Reflections. Two of the participants shared their recollections of domestic violence. Both defined domestic violence as commonly considered male to female and

Dwayne shared a personal experience to this effect. Tony had an expanded definition of domestic violence to include male to male domestic violence. Dwayne shared a personal story of an acquaintance of his older sister. In his opinion, she was wrongly charged with domestic violence:

That's what is wrong with you know, the way the courts are and all. I mean sometimes you get that charge and that's all they have cuz there is not a charge for you. My sister has a friend who got charged with domestic violence and she was just hittin' back the guy who hit her. She got a black eye in her mug shot and the guy never gets charge. She hit him with a pan and threw hot oil on him. But the police come and see him on the ground and later tell the DA that the swelling was not up in her eye yet [at the time of the mug shot]. That they didn't see it. You see they just see what they want. They don't care 'bout her, they just see some guy burnt and hit and they got to lock up someone (Interview 2).

When Dwayne was asked what he thought the police should have done he explained that the man should have been charged and not the woman. According to Dwayne, the boyfriend had previously been arrested for domestic violence twice. Dwayne reasoned that the boyfriend had probably made a deal and plead to lesser charges:

Dwayne: Well you know he probably pled out but to lesser charge cuz she was probably all wanting him back. I think she has two kids with him and one by another guy.

Dean: So, it seems like you're saying domestic violence is complicated.

Dwayne: Well yes and no—I mean you hit someone then you should go to jail but there are always two sides to the story and often they don't want to hear the guy's side. But if the guy is laying hands on her then he should be arrested. And she should not take him back. But they like always do, you know? Father of my child and I need him for protection. Protection until he start hittin' her. (Interview 2)

When Nick was asked about his definition of domestic violence he, like Dwayne, felt that it was mostly men hitting women. He also felt that most men would not report domestic violence if they got hurt as the police tend to just lock men up. Nick shared:

At first everyone thinks that domestic violence is men hitting women, but it also goes the

other way around but they don't charge girls—too often. And also, how they talked 'bout men to men violence with hitting and fighting. Nobody thinks of that violence. One of the kids said that a lot of men would not report if they got hurt and that is so true. I mean just because I get in a fight and I hurt myself I am not going to go to the police and tell them. Even if the police show up most of the time they don't care if you hurt yourself. They are just going to arrest you. (Interview 2)

Both Dwayne and Nick had personal reflections of domestic violence that occurred to their friends and within their families. Both also stated that stress can lead to domestic violence and that the police often do not come to solve a problem but to simply, according to Dwayne, “lock someone up” (Interview 2).

Learning through Reading Reflections. When the participants reflected on the effectiveness of the article's lessons, and their overall reflections of the SJML that they participated, they all agreed that the lessons taught through a social justice lens were more engaging and a better way to study mathematics than a traditional teacher lead education model. Freire (2000) stressed the importance of educating a marginalized group of people in order for them to change their world and free themselves from oppresses forces acting against them. Dwayne reflected that teaching mathematics by interpreting domestic violence graphs is—

better than doin' the math. I mean it was interesting and the kids can learn 'bout how it works. He should also have them look into how many people get charged and then plead out. It might be different in Canada—where you're from but here its lots I mean everyone in jail was just waitin' for their court date to come up so they could plea and get out. (Interview 2)

Gutstein and Patterson (2006) explained that students who examine their lives and community through critical mathematics can “deepen their understanding of important social issues” (p. 2). George exhibited this deepened understanding of domestic violence when he explained that teaching mathematics through a social justice lens is—

better than askin' what's your favorite shoe Jordan reds or the Lebron Soldier. Looking at violence against women will make them know that it's wrong and that they can get in

trouble doin' it. It[s] like more than just teaching graphs but graphs and makin' them aware. (Interview 2).

Nick, who recalled many of the SJML that he participated, believed that mathematics taught this way gives students a voice and can also raise awareness of many issues in today's culture. Gutstein (2006a) explained that reading the world in mathematics is “understanding the socio-political, cultural, historical conditions of one’s life, community, society, and world” (p. 24). Nick echoed this sentiment when he explained that mathematics taught through a social justice lens—

Can really help these kids see that there is a problem and get them to talk about it. So many of my friends have seen their mamas get hit. My mom never dated a hitter—she probably shoot him—but lots of people get hit and so teaching about the statistics will help the students see how widespread it is. And not just women getting hit boys too (Interview 2).

Concluding Thoughts

Gutstein (2006a) noted that mathematics taught through a social justice lens can aid students in developing positive cultural and social identities. Becoming critically aware and understanding the forces that oppress one’s life can be freeing. Using mathematics to understand relationships of power, discrimination based on race, and resource inequality can lead to critical consciousness. Dwayne demonstrated his critical consciousness when talking about his own experience in the penal system and the stigma that legal charges can carry even after your release:

People are gonna think no matter what they think. Like you and me here they see a White guy talking to a young Black kid. They all probably thinkin' you are my mentor—you are sorta—but they would not think we was just hangin' talking 'bout a science or math article. Like we could just be friends and maybe I am giving you advice on how to do something ... Rapist? Child Molester? I'm not any of them but that's what my sheet say. It's not right but I'm lucky in a few months that will be gone as part of my deal. But they hold on to you while they have you and you always in their system. (Interview 2)

These interviews seem to show that mathematics taught through a social justice lens had a positive effect on these young men's lives. They all seem to have become more socially aware and also more critically conscious. Although not all at the same level, nevertheless, these young men are taking control of their lives, making positive changes all while trying to define their identity and their position in a society in which they are more socially aware.

CHAPTER 6

SUMMARY AND DISCUSSION

In this last chapter, a final closing interview is conducted and presented at the beginning of the chapter. Next, I summarize the study and share some of the difficulties that occurred while conducting the study. I concluded the chapter discussing some limitations of the study, suggesting different future research possibilities, and providing some probable implications for mathematics teachers and teacher educators.

Summary in Context

For the last chapter, I conducted the final closing interview for this study by interviewing myself. I asked (and answered) three questions that are most often asked when I talk about teaching mathematics for social justice (TMfSJ). On a rainy Saturday afternoon, I went to a local coffee shop where I met myself. After hot coffee was ordered, sipped, and everyone was seated comfortably at a table, the interview began.

Dean: Thanks for meeting me here today.

Dean: Oh, no problem, well I can't be too long my wife is home and Aidan, my son, wants to practice pitching—he is working on his cutter pitch—he has a baseball game tomorrow.

Dean: Okay, well I will keep this short with just three questions. How does that sound?

Dean: Great—let's start.

Dean: Right. How did you come up with your social justice lesson ideas?

Dean: The best lesson ideas come from the students. However, you must first build a relationship with the students and engage them in authentic conversations about their daily lives to discover/uncover any oppressing forces that might be acting against them. Benison High School started utilizing a social emotional learning (SEL) curriculum a couple of years ago. For 20

minutes every day the entire school engages in SEL activities. One of the weekly activity options is a conversation component.

The conversation component in my classroom evolved into a SEL Friday sharing circle. The students and I talk about our week in a safe space that is free from judgment about anything that is on our minds. The SEL circle at times has turned into a social justice lesson generator with students posing questions and/or situations that the class can investigate.

Once students begin to notice oppression that they face in their daily lives, those experiences can be named, and possible solutions developed to reduce/eliminate the source of oppression. Of course, there is not always a solution. An example of this is the Not My Stop lesson. This lesson was an eyeopener for my students that showed hidden oppression which impacts them. Yet, after the investigation, the mathematical computations, and a letter writing campaign were all done, the bus from Benison High School still continued to take the students past three closer stations. Transit officials did respond to our students' letter writing campaign, explaining that the "express" bus³⁹ drops the students off two stops away from the main hub/connecting station for their convenience. The bus route might not have changed but at least now the students are aware of the hidden assumptions the transit authorities have made about them.

The first SJML that I engaged in was developed with another teacher. We were enrolled in the same graduate course and decided together to try to teach⁴⁰ a social justice lesson. Similar to Tate (1994), we explored the idea of investigating the number of liquor stores around the

³⁹ An express bus does not make any stops between the pickup point and the drop off point.

⁴⁰ I use *teach* here because, originally, I thought I would be teaching this lesson not co-learning as I have since learned. TMfSJ is a joint adventure with both students and teacher learning together.

school. We completed that lesson together with our students and then later I developed and extended the lesson that I now use: The Saturation of Liquor Stores in My Neighborhood.

Another source of SJML besides students and co-workers is the news. Some of my bigger lessons have come from events that happen locally, nationally, and internationally. The world is extremely connected today with 24-hour news stations, a video camera in every cell phone, and social media that connects thousands of people and images instantly. Students today have a greater awareness of news and events that can be confusing and complex to understand. Social justice lessons can be a great avenue to investigate and deconstruct these complex issues.

Dean: Okay great—now the second question. What is the hardest part of TMfSJ?

Dean: With every new class of students, it's always the same thing. Getting students who have never participated in a SJML to engage in what they consider “not math.” Reading articles or watching/listening to news stories are not what students are accustomed to in their previous mathematics courses. Every SJML begins with some form of presentation that typically reflects other subjects such as social studies or language arts. This presentation confuses some students who come to class expecting a traditional mathematics course. However, this confusion does not last long and soon word gets out amongst the student body that the social justice mathematics class is—and I quote— “dope.”

Dean: Ah yes, “dope,” as in a cool or good class. Anything else hard about TMfSJ?

Dean: Yes, I would say two more things come to mind: giving up control of your classroom and complying with administration requirements. When you engage in SJML the students take control of their learning. You might begin by teaching/reviewing some mathematics concepts that might be utilized during the data gathering portion of the social justice lessons, yet the majority of the lesson is student driven. Additionally, I find it challenging at times to comply

with the requirements of the administration. I have often heard that hands-on mathematics is rigorous, engaging, and an optimal result outcome. Although, social justice lessons are considered hands on, the difference is that they uncover and name oppressive forces. While I have not been fired for engaging in social justice lessons, I have had my TMfSJ course taken away from me. I was told that the strongest teachers were to teach at the lower grade levels due to end of course testing. Luckily, administrators tend to switch schools faster than teachers and after a 2-year break, I was able to begin my TMfSJ course again.

Dean: Well that's good news. Did you stop all social justice lessons for that 2-year period?

Dean: No, I just didn't do any investigations or SJML that had anything to do with the school.

Dean: Oh, okay—well now to my third question. Has TMfSJ or this study changed you?

Dean: Completing this study has been a goal of mine (and my wife's) for a while now. Upon reflection, I would say that this study has truly humbled me. Meeting up with my former students and hearing about their successes and thinking that I might have played a small role in those successes really hits home to me the importance of the SJML that we engaged. I am also humbled that all six of these young men who participated in this research met and opened up their lives to me. I cannot express my gratitude to them enough.

I also feel that TMfSJ has made me a more compassionate teacher, compassionate toward my students and the topics that we engage in or investigate. These lessons have opened my eyes to some of the struggles that my students and other people around the world face. I really don't think I would have experienced (and continue to experience) this level of compassionate teaching traditional mathematics such as the slope of a line on a Cartesian plane with graph paper, a ruler, and a smart board. I really feel that these lessons made me a more enlightened and caring person.

Dean: Well okay—thanks for all that. Do you have anything else you want to add about TMfSJ?

Dean: Well, yes—I would encourage every mathematics teachers to just try one social justice mathematics lesson in her or his classroom. What’s the worst that could happen? I have had good and bad social justice lessons. I have had moments of feeling most uncomfortable. Yet, at the end of the day, you might find that the mathematics you engage in will have a deeper meaning and stay with all the co-learners for the rest of their lives.

Summary

This research first started to develop nearly 10 years ago when I began to create and modify social justice mathematics lessons (SJML). These modified lessons were adapted from state suggested mini projects for students in Algebra I. The state developed mini projects included topics from developing a personal budget after college, finding the rate at which sand was being loaded onto a barge, and labeling a map to chart possible cancer-causing pollutants. School administration encouraged mathematics teachers to utilize these state-provided resources. These mini projects seemed to be a teacher’s dream as they were “prepackaged and ready to go.” State standards were listed for each project with practice computation questions, handouts, differentiated questioning, and grading rubrics included. The lessons included everything a teacher would need to keep their students working on these 2- and 3-day mini projects. The only thing missing: How to engage students in topics for which they had little to no connection?

The SJML that I developed were an attempt to connect mathematics to the lives of the students I taught. My lessons were inspired by mathematics for social justice educators/researchers (see, e.g., Gutstein & Peterson, 2006; Gutstein, 2006a; Ladson-Billings,

2009; Stocker, 2007, 2012; Wager & Stinson, 2012). These researchers inspired me to become a more authentic teacher for my students. The students I taught were not the children of barge captains nor do they have parents who were cancer research scientists. The children I taught were in my class (and at Benison High School) because it was their last chance to obtain a high school diploma. Almost all of them had been “kicked out” or transferred from other high schools and sent/transferred to Benison High School. These “forgotten” kids had been given up on and really, if not for Benison High School, they would have either been working minimum (or less) wage jobs, hanging out on the street, or incarcerated. Most of these students came to Benison High School with significant knowledge gaps in most subject areas and most had not had positive learning experiences at their previous high schools.

The goal of this study was to investigate what effects a social justice pedagogy in mathematics would have on a small group of young Black men who all participated in two or more SJML. Specifically, the research examined the experiences that this group of young men had during the SJML and their experiences since graduating from high school. A guiding question for the project was: What short- and long-term effects (if any) do SJML have on a group of young Black men with respect to their perceptions of mathematics and the way that they interpret their lives and experiences.

Three research questions were originally developed to guide this research and after the participants were interviewed, a fourth research question was added. The research questions were:

1. What effects (if any) did social justice mathematic lessons have on the short- and long-term attitudes and agency of young Black men high school graduates?

2. How might a mathematics lesson taught with a social justice lens alter the environmental and world perceptions of young Black men?
3. What reactions (if any) will young Black men, who experienced social justice mathematics pedagogy, have regarding their environment and agency after reading a social justice article addressing a present-day injustice?
4. How might the effects of a social justice mathematics curriculum influence a young Black man's relationships, specifically, focusing on family, institutions, employment, and mathematics?

The first two questions were specifically focused on the SJML that the participants engaged in during my mathematics course at Benison High School. The third question proved to be a little more difficult to investigate as the participation in reading the articles was not 100%. (This limited participation is discussed later in the limitation section of this chapter.) The fourth question arose from the results of the interviews when I realized that I could not limit this research to just the participants' SJML experiences. By adding the fourth question, the complexity of the participants' relationships could be examined and thus allowed their stories to be shared and their voices to be heard.

This qualitative research was grounded in an eclectic theoretical frame (Stinson 2009) that included critical theory (e.g., Horkheimer, 1987) and critical race theory (e.g., Bell, 1992). Critical theory, which was developed from the Frankfurt School, enabled me to examine the social and cultural relationships that the participants engaged. These relationships included examining the participants' organic families, street families, educational relationships, and judicial relationships, to name a few.

Critical race theory as developed by Bell (1987), Delgado (1995), and Ladson-Billings (1997), to name a few, provided me a frame to analyze how the discourse of race and racism influenced the participants' perceptions of social justice versus traditional mathematics pedagogy. CRT framed the research study beginning with the participants recalling previous non-SJML and recognizing the negative relationships that the participants developed with those experiences.

The method for data gathering for this research was twofold. Initially, the participants completed a demographic and schooling questionnaire. Secondly, all the participants participated in two or more interviews (see, e.g., Douglas, 1985; Holstein, & Gubrium, 1995). These interviews originally were all planned to be in a face-to-face setting with the second interview occurring after the participant read the article "Toys for Boys? Challenging Domestic Violence Using Mathematics" (Stocker, 2012). Even though not all the participants read the article, there were two face-to-face meetings. There were some follow-up interviews to clarify comments and to gain greater background information. These follow-up interviews were conducted via phone or text conversations.

Once all the data had been gathered and transcribed, an eight-step systematic process was used to analyze the textual data (Tesch, 1990). This process began with reading all the transcripts and placing notes in the margins. Next, the notes were collapsed into clusters of similar topics and later overarching topic headings were developed. The data were read over again (repeatedly) to look for missed coding opportunities. Finally, all the data were organized under headings and the arching themes were developed.

In an effort to improve my interviewing skills, all the interviews were transcribed directly after the interviews. Thus, the coding process was on going and led to improved interview

questions and methods (Strauss & Corbin, 1998). This process also assisted in allowing the participants' voices to come through during the data collection process and in the final reporting. By transcribing each interview myself, I became most familiar with the data, which aided in managing my subjectivities (Peshkin, 1988). It also gave me the opportunity to reflect on my interview style and my questioning. After my first interview with Dwayne, I noticed that I cut short my questions about his middle school experiences and transitioned to his high school experiences rather abruptly. I was able to capture more of his middle school experiences later during a follow-up phone interview and during our second face-to-face interview.

All the interviews were recorded, which gave me the opportunity to fully engage in the interview process. I had briefly considered video recording our interviews, yet I felt doing so could lead to the participants being less forth-coming with their responses. Video recording would have added a visual record of the interviews, yet it would have also created a more formal setting. By using only voice recordings for the interview process, a more relaxed environment was created for the former students in a neutral location. During the transcribing of the interviews, the exact verbiage and language of the participants was recorded, allowing their voice—their language—to come through in the transcribed interviews.

Discussion

The six young Black men who took time out of their busy lives to participate in this study all completed a demographic and school survey, two face-to-face interviews, and some follow-up phone interviews over a 12-month period. The paragraphs that follow provide a brief summary of their responses.

All the participants of the study were asked to define SJML through their experiences. These definitions varied from a simple response of “good” to one participant explaining that he

probably would have attended the TMfSJ course even if his grandmother had not forced him to come to school (Calvin, Interview 1). Six young men with six different definitions of SJML, yet they all agree that the SJML made them think differently about mathematics. The SJML also made them question their beliefs and, as a result, some began to change their agency toward the forces that work to oppress them.

One SJML that many of the study's participants agreed had a profound effect on their agency was the Not My Stop lesson. Many of my students, and some of the participants themselves, experienced racial profiling, discrimination, and discovered prejudiced attitudes toward behaviors that none of them had ever portrayed. It seemed that the public transit system authorities decided that taking a bus full of high school aged Black students to the closest subway station might upset the predominately White patrons at the subway station. The students of Benison High School and the patrons at the closest stop were never given the chance to intermingle. Tony described this social oppression as “the bus skipped the stations to take us to the Black stations cuz the (transit company) didn't want us scarin' the White people” (Interview, 1). This division of race was a glaring example of how the students were subjected to racially motivated and prejudicial actions that they had no knowledge of until the SJML was conducted. Bell (1992) might connect these behaviors from the authorities as a throwback to the Jim Crow Laws that plagued the southern states up until the late 1960s—and still do today!

The participants of the Not My Stop lesson became critical thinkers when armed with mathematics that showed them the differences in distance between the stations. This type of empowering mathematics (see, e.g., Adams et al., 2007, Gutstein, 2006a; Frankenstein, 1983; Stinson, 2004) can awaken students and encourage them to look at the world around them through a critical lens.

The critical awakening that all the participants experienced during SJML was most profound when two participants discussed domestic violence and the injustices often done to the victims that go ignored by authorities. Nick, during his second interview, shared his change in agency from when he was younger to his current views. He explained that when he was younger, he never “really considered hitting another boy [as] violence” (Nick, Interview 2). Yet, while talking about the Stocker (2012) article he mentioned that there is a lot of “domestic violence in the gay community that is not reported” (Nick, Interview 2). Nick’s change in agency and critical view of the gay Black community shows that he is becoming an agent for change when he expressed that Stocker (2012) left out the often one area of forgotten domestic violence, male-on-male domestic violence.

During Dwayne’s second interview he shared his critical analysis of the injustices carried out by some authorities. He explained that the authority’s willingness to charge someone at a domestic disturbance scene before getting all the necessary information was wrong. He shared a personal reflection of a friend who he felt was wrongly arrested for domestic violence who was only fighting back to protect herself. Even with a black eye the police did not believe her story and arrested her. Dwayne explained in our second interview:

She was just hittin’ back the guy who hit her. She got a black eye in her mug shot and the guy never gets charge. She hit him with a pan and threw hot oil on him, but the police come and see him on the ground and later tell the DA that the swelling was not up in her eye yet that they didn’t see it. You see they just see what they want. They don’t care about her. They just see some guy burnt and hit and they got to lock up someone. She even called the police three times for him hittin’ her and twice they arrested him. But now she’s the one with the record.

Dwayne used the evidence building skills that he partially developed from SJML to support his argument. The boyfriend who had previous domestic violence charges against him

and the police who claimed not to have noticed a black eye in a mug shot, supported Dwayne's claim that the police might not have charged the right person.

Not only did the participants share their SJML experiences but also their life experiences. They shared their complex relationships as well as the different antagonists that impact those relationships. They gave insights into the lure of their street families in contrast to their organic families, the institutional oppression they experienced, and their employment struggles due to the stigma of incarceration. These young men continue to try to strengthen and build on their positive relationships while minimizing the antagonistic forces that continue to affect those relationships. The skills that they learned and developed during SJML have helped them become more critical, more informed, and more adept at gathering data to support their agency. A beneficial and authentic effect of a social justice pedagogy can be one where the co-learners (i.e., student and teacher) both grow intellectually. Students and teachers can also develop a more critical agency toward the world around them. Stocker (2012) explained that during a SJML there can be a "clear ebb and flow between student and teacher-directed exploration of the topic" (p. 122). But the most important aspect of SJML, according to Stocker, is when students and teachers come to learn that they can have a direct positive impact on their communities and that they have agency.

Limitation and Considerations

Before I discuss the limitations of this study, I need to address a commonly presumed limitation regarding the study's purpose and conclusions. Did I begin this research already knowing the outcomes? Yes, and no. The foundation for this research was developed after facilitating, observing, and listening to numerous students who participated in SJML for the past several years. I personally believed that teaching SJML was a better mathematics pedagogy than

teaching a non-social justice mathematics pedagogy. It was after these lessons were taught that I realized the SJML had a lasting effect on my students. Previous SJML were often brought up in classroom discussions after completing a new SJML. Former students who returned to visit my classroom would also often reminisce about and share their SJML experiences with me and my current students.

Although I felt that the lessons were more engaging and changed some of the perceptions of the students who participated in SJML, I had no research-based proof. It was not until this project that I had any formal post-SJML interviews/reflections from students who participated in the lessons. The results that I did not expect to obtain was the depth of description that some participants shared about their experiences during the lessons as well as their complex history of their own lives. I was also taken aback by how the participants utilized some of the skills they refined during SJML and applied them in their current lives.

The first limitation I address is the size of the study. The study was limited to six Black male participants who would also be considered a homogeneous group. This study relied on the accessibility of former students who were willing to participate, thus a random sample was not possible (as discussed in the methodology; see Chapter 4). Also, the participant pool was drawn from the limited offerings of the TMfSJ courses at Benison High School. The original study size was nine students but only six of the nine completed the demographic/school survey, two interviews, and the follow-up shorter phone interviews. The student population at Benison high school is mostly Black but it is not entirely male; the study did not include any female participants. The inclusion of female students is an area for future research to compare the reflections and agency of both male and female students who experience SJML.

The second limitation was my limited experience as an interviewer. Prior to this study, I had minimal experience in conducting interviews of research participants or otherwise. The process of transcribing the data, however, did improve my interviewing skills by allowing me to immediately reflect on the interview process. I also found that my interview skills improved as the interviews progressed and the students became more trusting and comfortable talking to me. One factor that interfered with interviews was the participants' work schedules. I attempted to make myself as available as possible, even taking off work to meet with participants. Despite my flexibility, I encountered seven canceled interviews and two no shows. Each participant mentioned that scheduling interviews was difficult due to the hours he worked. Most did not have set schedules, so I often contacted them shortly after weekly work schedules became available to arrange times to meet. Nevertheless, five of the canceled interview meetings were due to participants picking up extra shifts at work.

The third limitation for this study centered on the social justice article that was selected for the participants to read. Only half of the participants read some of the article; Nick being the only participant who read the article in its entirety. The article "Toys for Boy? Challenging Domestic Violence Using Mathematics" (Stocker, 2012) was 21 pages in length. All the participants mentioned the challenging length of the article and the three who did not read the article specifically noted that the article was too long, and they did not have time to read it. To gain greater participation for this portion of the study, a shorter or condensed article might have been more effective. Although three participants did not read the article, all participants still met for a second interview. This second face-to-face meeting led to some deeper reflections on SJML on their part and became an opportunity for me to ask further questions.

The fourth limitation was the variations in time periods between the participants' engagement with the SJML and their participation in the interviews. The range of time from lesson to interview was 4 years for the longest timespan and just 6 months for the shortest. With these timespan variations, there was not an even sampling from each graduation class with respect to SJML experiences. The greater timespan between SJML and interviews for some participants showed an identifiable change in agency and, as would be expected, for others a shorter timespan showed a deeper engagement/recall of the SJML. Ideally, six to ten participants from the same graduation class, or two or three participants from each graduating class over the last several years would have been a stronger sample.

Recommendations for Future Research

Continuing this research through re-visiting these remarkable young men in 5 years' time would add to the body of research on SJML. Interestingly, all the participants of this current study agreed to future interviews so that their stories can continue to be shared, their voices can continue to be heard. Expanding research on SJML to include other marginalized and underserved groups—such as female students, Latinx students (e.g., Gutstein, 2006b), LGBTQ students, students of differing socioeconomic classes, and so on—as well as students from the dominant group (e.g., Stocker, 2012) would provide different understandings to the “empowering uncertainties” (Stinson & Wager, 2012, p. 3) of teaching and learning mathematics for social justice. Given that the theoretical roots, so to speak, of TMfSJ are in critical theory (Stinson, & Wager, 2012), the equitable and just possibilities of a social justice mathematics pedagogy cannot be fully understood unless it is a critical yet all-inclusive pedagogy.

One beneficial result of SJML is the trust that is built and established between students and teacher (i.e., co-learners). Learning how teacher–student relationships develop differently in

and through SJML is an area of research that could benefit all education stakeholders. Often, with many SJML, there are discussions throughout that become uncomfortable for students and teachers alike. Topics such as race, racism, White supremacy, domestic abuse, income inequality, oppression, gun control, women's right to choose, stereotypes, prejudices, and bigotry (to name just a few) are all often prevalent in a social justice oriented pedagogy. There must be an authentic relationship so that students and teachers have a safe space, free of judgment, in which they can authentically express themselves. Research into how these safe spaces might be developed in mathematics classrooms is needed.

Implications for Teachers and Teacher Educators

Engagement, student–teacher (i.e., co-learners) relationships, uncovering oppressions/creating agents of change are just three implications for mathematics classroom teachers and teacher educators I discuss here. In Chapter 1, I shared my experience transitioning from traditional mathematical lessons to SJML. This transition was a process that was supported by fellow graduate students and school administrators yet riddled with uncertainties. These uncertainties reminded me of my first few years of teaching where I often felt like I was teaching a foreign language I did not know. But even as a seasoned mathematics teacher with over 15 years of experience, when I began developing and implementing SJML I began to experience some of those same feelings of uncertainty.

Engaging students in mathematics curriculum can be challenging due to the disconnection some students feel with the subject (Gutstein, 2007). Once SJML are developed around issues that directly affect students, their community, their country, and even their world, the mathematics curriculum is no longer a challenge. The emphasis of SJML is on gathering evidence to expose oppressive forces acting against the students and their lives. The mathematics

becomes the powerful vehicle that the co-learners (students and teachers) use to make sense of the evidence, which, in turn, through this sense making, the co-learners develop the possibilities of becoming agents of change. Teachers who engage in SJML find that their students begin to engage with mathematics at a deeper and higher level because the mathematics now has value, thus eliminating the forever asked student question: “When will we ever use this?” (Nolan, 2009).

A caring and authentic relationship between students and teachers is a benefit of SJML. Ladson-Billings (2009) argued that the affirming effects developed by teachers who build positive relationships with Black students have implications and benefits that go beyond the classroom. Connecting with students can be challenging, especially if the teacher has different life experiences. Race, class, religion, gender, sexuality, and so on can all interfere with developing a connection between the student and teacher. SJML can help bridge barriers between students and teachers. Once the learners (teacher included) are engaged in a SJML, the initial explorations and discussions are often uncomfortable for different people in the class at different times. This desired uncomfortableness is where an authentic, caring relationship benefits the learners (teacher included), assisting all in better understanding themselves and other groups that identify differently than themselves.

My whiteness and starkly different life experiences have often made it difficult for me to relate to the students I teach. Although such differences are not an issue for all teachers, these stark differences continue to be an issue for me at Benison High School. Nonetheless, through SJML, I have developed a more authentic connection with my co-learners. Together, we learned side by side and all have become more effective agents for change. SJML have made me a better

teacher, more compassionate, more caring, and helped me develop true authentic relationships with my students.

The young men who participated in this project shared their experiences and reflections as they related to the SJML. The guiding questions of this study led the participants to share their stories and open a window into the complex lives that they negotiate daily. Their reflections on SJML have proven that they became more engaged in mathematics through a pedagogy that was oriented toward social justice. My hope is that when teachers/readers engage in my SJML and this dissertation, they too might be inspired to develop and incorporate SJML into their own classrooms. All in all, teaching mathematics for social justice is simply a more effective way to immerse students in mathematics, lessons are more engaging for the co-learners, and oppressed co-learners might experience a critical awakening who then have the possibility of becoming active agents of change in the world around them.

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APPENDICES

APPENDIX A

PARTICIPANT RECRUITMENT LETTER

Georgia State University
College of Education and Human Development
Middle and Secondary Education Department

Dean: W. Potts
Doctor of Philosophy Candidate
Current Date, 2017

Mr. Past Student
Home Address
City, State Zip

Hello Former Student Name:

I hope this letter finds you doing well. I am progressing through my doctoral studies, having passed my written and oral comprehensive examinations this past year (Fall/Spring 2016). I am currently at the research stage of my Ph.D. program. I have learned a great many new things here at Georgia State University (GSU) over the past 4 years, becoming more aware of different educational practices, and also developing social justice mathematics lessons.

I am contacting you to see if you are interested in voluntary participation for the research study portion of my dissertation. I am in need of eight (8) research participants for my research study. The (tentative) title and statement of the research problem and questions are as follows:

Title

YOUNG BLACK MEN AND MATHEMATICS: EXPLORING THE INFLUENCES AND PERCEPTIONS OF SOCIAL JUSTICE PEDAGOGY

Statement of the Problem

The purpose of this study is to examine the effects social justice mathematics pedagogy (see, e.g., Gutstein & Peterson, 2006; Wager & Stinson, 2012) has on a group of African American male students who had experienced limited success in “traditional” mathematics classrooms. In particular, the study will examine the participants’ perceptions of and influences (if any) the social justice pedagogy had on their learning and life experiences. A guiding question for the project: What short- and long-term effects (if any) do mathematics lessons taught through a

social justice lens have on a group of African American male high school graduates with respect to their perceptions toward mathematics and its uses to make sense of or transform their lives?

Research Questions:

1. What effects (if any) did social justice mathematic lessons have on the short- and long-term attitudes and agency of young Black men high school graduates?
2. How might a mathematics lesson taught with a social justice lens alter the environmental and world perceptions of young Black men?
3. What reactions (if any) will young Black men, who experienced social justice mathematics pedagogy, have regarding their environment and agency after reading a social justice article addressing a present-day injustice?

Because of my beliefs about education and the tremendous educational experiences I have had (and continue to have) at Benison High School for the past 6 years, I believe (and this belief is supported by many scholars) that your story of schooling experiences, specifically your mathematics schooling experiences, is valuable information for the education community.

Precisely, I am looking for former male students who participated in one or more mathematics lessons that was taught through a social justice lens. The mathematics courses were either an Advanced Algebra Trigonometry A/B and Math IV A/B that were modified to include social justice mathematics lessons.

The www sites of my doctoral committee will illustrate that I have a diverse group of talented and well-published scholars who will be assisting me throughout the research process:

- Dr. David W. Stinson, Committee Chair, Associate Professor–Middle and Secondary Education: <http://education.gsu.edu/profile/david-stinson/>
- Dr. Deron Boyles, Professor–Educational Policy Studies: <http://education.gsu.edu/profile/deron-boyles/>
- Dr. Stephanie B. Cross, Assistant Professor–Middle and Secondary Education: <http://education.gsu.edu/profile/stephanie-behm-cross/>
- Dr. John O. Wamsted, High School Mathematics Educator, Benjamin E. Mays High School, Atlanta Public Schools

The involvement from you during the research study process would include the following:

- Completing a survey instrument that will include basic demographic information such as education, home life, siblings, socioeconomic status, and so on.
- Participating in two audio-recorded, semi-structured, in-depth interviews conducted by me (both in 2017). I will travel to you or the interviews can be conducted over the telephone.
- Reflecting on a published article about social justice teaching in mathematics.

ALL information will be confidential! The university has a rigorous process of approving research (which I have received from GSU's Institutional Review Board), ensuring that research with human subjects maintains the highest ethical standards. All proper names including participant, school, county, state, and so on used in the research study would be pseudonyms. In addition, I respect all my former students from Benison High School, and I would never allow anything that might cause you harm or embarrassment to be included in the final research product (i.e., my dissertation).

I also understand that you are extremely busy. I would try to make the time and effort required by you during the research study to be minimal, but I will be honest in saying that participation in a qualitative research project does require time and effort on the part of the research participant. The time estimation for participation in this research study is about 5 hours over two months. This research study does include two, face-to-face interviews that can be conducted on the GSU campus, coffee shops, public libraries, or other public spaces.

There will be no financial gain from participation in this research study. You will not be reimbursed or provided with financial reward for joining this research study. If you have any questions about participating or not in the research study please email and/or phone to discuss the possibility further. And please, if you chose not to or cannot participate in the research study I do understand. You are under no obligation to participate in this research study. If you want to join the research study you can use the enclosed return addressed envelope or contact me via phone or email.

My telephone number and email address are below; please feel free to contact me anytime.

With warmest regards,

Dean: W. Potts
Cell: (678) 457-1189
Dean: .potts@gmail.com
dpotts2@student.gsu.edu

APPENDIX B**PARTICIPANT CONSENT FORM**

Georgia State University
College of Education and Human Development
Department of Middle and Secondary Education

Title: Young Black Men and Mathematics: Exploring Changes, Influences, and Perceptions of Social Justice Pedagogy

Principal Investigator: Dr. David Stinson

Student Principal Investigator: Mr. Dean Potts

I. PURPOSE:

You are invited to join in a research study. The reason for this study is to look at how your math classes have played a part in your life. A total number of 8 participants will be participate in this research study.

II. PROCEDURES:

If you choose to join, you will be asked to first complete a demographic survey and then be interviewed two times, when you have time. The demographic survey will ask you questions about your personal history and school history. It should take about one to one and a half hours to complete. The interviews will take place over a couple of months and each interview will last about 60 minutes. All the interviews will be conducted in safe and comfortable settings. Local coffee shops, public libraries, public spaces will all be used, or the interviews can be done over the telephone. The interviews will consist of questions about your previous math classes including the math classes you completed that contained an element of social justice. All interviews will be recorded. Before the second interview you will be asked to read an article that will take about 40 minutes to read.

III. RISKS:

In this study, you will not face any risks other than you would in a normal day.

IV. BENEFITS:

If you choose to join, there will not be a direct benefit to you. You will have the chance to share your successes and your feelings on how your math classes have influenced (or not) your life.

V. VOLUNTARY PARTICIPATION AND WITHDRAWAL:

Joining in this study is voluntary. You do not have to be in this study. You can skip any questions or drop out of the study at any time.

VI. CONFIDENTIALITY:

We will keep your information private. Only Dr. David Stinson and Mr. Dean Potts will see your information. Information may also be shared with those who make sure the study is done correctly (GSU Institutional Review Board, the Office for Human Research Protection (OHRP)). We will use a fake name and not your real name on all study records, forms, and published material. The information you provide will be kept on Mr. Potts's password protected computer. Your name and information that might point to you will not appear when we present this study. You will not be identified personally. Audio recordings will be destroyed after they are transcribed and the typed transcript will be destroyed 10 years from the date of each interview.

VII. CONTACT PERSONS:

If you have any questions during the research study, you may contact Mr. Potts at 678-457-1189 or dean.potts@gmail.com or Dr. Stinson at 404-413-8409 or dstinson@gsu.edu. You can also call if you think you have been harmed by the study. Contact Ms. Susan Vogtner in the Georgia State University Office of Research 404-413-3513 or svogtner1@gsu.edu if you want to talk to someone who is not part of the study team. You can talk about questions, concerns, or get information about the study. You can also contact Ms. Vogtner with questions about your rights in this study.

VIII. COPY OF CONSENT FORM TO SUBJECT:

We will give you a copy of this form to keep.

If you are willing to volunteer for this study and be audio recorded, please sign below.

Thank you for participating.

Participant

Date

Principal Investigator or Researcher

Date

APPENDIX C**PARTICIPANT DEMOGRAPHIC SURVEY**

Numeric Code: _____

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1. Name:

2. Address (specify local or permanent):
Street:

City: State: Zip: County:

3. Phone Number(s) (including area code):

4. Email address(es):

5. Provide a pseudonym to be used during the project:

6. Age: Year of birth:

Numeric code: _____

Participant pseudonym: _____

7. Are you currently employed? Yes No

8. What is your profession?

9. How would you describe your present living arrangements? Are you:
Single, never married Single, previously married Married (years) _____

Living with a partner Other _____

10. Do you have any children? If yes, how many and what are their ages?

Primary and High School Data

11. What elementary school(s) did you attend: What State/County:

12. What middle school(s) did you attend: What State/County:

13. What high school(s) did you attend: What State/County:

14. What mathematics course(s) did you take from the researcher?

15. What mathematics courses did you take in middle school and high school: course, year, grades, and teacher?

| Course | Year | Grades | Teacher |
|------------------|------------------|---------|-----------|
| e.g., Algebra II | 10 th | A, B, A | Ms. Smith |

16. What special awards/citations were you awarded (e.g., STAR student, magnet awards, etc.; elementary through high school)?

17. What extracurricular activities were you involved in (e.g., football, band, student council, mathematics team, etc.; elementary through high school)?

18. What after-school, summer, and/or mentoring programs did you attend (e.g., 4-H, Boy Scouts of American, 100 Black Men, etc.; elementary through high school)?

19. What year did you start high school? What year did you finish?

20. High school graduating grade point average (GPA):

21. Any other information you believe to be important from your primary and secondary schooling years.

College Data

22. What college/university do/did you attend?

- a. Undergraduate:
- b. Graduate:

23. Class Level (circle-one):

- a. Freshman Sophomore Junior Senior
- b. Graduated (give semester and year) _____
- c. Graduate student
- d. Post baccalaureate (certification, second-undergraduate, please specify)
- e. Other, please specify _____

24. What mathematics courses did you take in college, year, and grade?

| Course | Year | Grade |
|------------------------|--------|-------|
| e.g., Abstract Algebra | Junior | A |

25. What special awards/citations were you awarded during college?

26. What extracurricular activities were you involved in during college?

27. What mentoring programs and/or internships did you participate in during college?

- 28.** What is/was your college GPA?
- 29.** What is/was your academic major in college?
- 30.** Do/Did you receive any type of federal, state, or college-sponsored student financial aid (grant, loan, scholarship)? Yes No (If yes, please provide dollar amount and source)
- 31.** What is/was your primary source of financial support for college (circle only one item)?
- a. Parents
 - b. Employment
 - c. Loans & Grants
 - d. Scholarships (type) _____
 - e. Support from spouse
 - f. Personal savings
 - g. Other, please specify _____
- 32.** Any other information you believe to be important from your college years.

Family Data

- 33.** How many people were in your family during the majority of your high school years, including yourself (i.e., how many people lived in your home)?
- 34.** Do you have siblings? If yes, how many sisters? brothers?
Where did you rank (e.g., oldest, middle, youngest)?
- 35.** Provide a brief statement of your relationship with your family while you were in high school (one to three sentences).

36. What was your parents' or guardians' source of income?

Job _____ Pension/SSI _____

Public other _____ Other _____

37. What was their profession?

Mother _____ Father _____ Guardian _____

38. Would you describe your family socioeconomic status when you were in high school as (circle one please):

Wealthy Upper-middle class Middle class Lower-middle class

Poor Very poor

39. What was the approximate combined annual income of your parents or guardians before taxes last year (circle one please)?

- a. Less than \$20,000
- b. \$20,000 to \$39,999
- c. \$40,000 to \$59,999
- d. \$60,000 to \$79,999
- e. \$80,000 or \$99,999
- f. \$100,000 or higher

40. What was the approximate combined annual income of your parents or guardians before taxes while you were in high school (circle one please)?

- a. Less than \$20,000
- b. \$20,000 to \$39,999
- c. \$40,000 to \$59,999
- d. \$60,000 to \$79,999
- e. \$80,000 or \$99,999
- f. \$100,000 or higher

41. Educational Level: Please indicate the highest level of your parents or guardians educational background:

a. Mother (circle one please):

No high school Some high school High school diploma or GED
 Some College Bachelor's/Four-year degree
 Graduate/Professional Degree Do not know

b. Father (circle one please):

No high school Some high school High school diploma or GED
 Some College Bachelor's/Four-year degree
 Graduate/Professional Degree Do not know

- c. Guardian (circle one please):
- | | | |
|------------------------------|-----------------------------|----------------------------|
| No high school | Some high school | High school diploma or GED |
| Some College | Bachelor's/Four-year degree | |
| Graduate/Professional Degree | Do not know | |

- 42.** What is the highest level of formal education obtained by a parent or parental figure with whom you lived with during the majority of your high school years (circle one please)?
- Did not receive high school diploma or GED
 - Earned a high school diploma or GED
 - Attended junior/senior college but did not graduate
 - Received an associate's degree
 - Received a bachelor's degree
 - Attended graduate school
 - Received a master's degree
 - Received a doctoral degree (Ph.D., Ed.D., etc.)
 - Received a professional degree (law, medicine, dentistry, veterinary, etc.)

Employment Data

- 43.** List all your employment history from present to former employers.

Current employer(s): Time (years/months)

Former employer(s): Time (years/months) Reason(s) for leaving

- 44.** Provide a brief statement of your employment history and job experiences (one to three sentences).

Numeric Code: _____

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Criminal History

THIS PROTION IS OPTIONAL – YOU DO NOT NEED TO ANSWER

45. If you want to share any criminal history please list any experiences below.

Thank you for completing this form

APPENDIX D**GUIDING INTERVIEW QUESTIONS**

1. Tell me about some of the mathematics courses you had taken besides being a student in my courses?
2. What do you remember from those courses? About the mathematics content? About the learning environment? About you classmates? About the teachers?
3. Tell me about the Social Justice mathematics lessons in which you participated? What do you remember? Why do you remember?
4. Do you think about those lessons today? Have the ideas from the lessons impacted ideas you have today? Decisions you make? How you look at life things and events?
5. Have you made any changes in your life that came about from the social justice lessons?
6. Is there anything else you would like to add?

APPENDIX E**GUIDING ARTICLE QUESTIONS**

1. What were your thoughts about the article titled “Toys for Boys? Challenging domestic violence using mathematics” by Davis Stocker?
2. What would you have guessed were in the bags (similar to the class or different)? Why do you think you chose those items?
3. What was your reaction to the lesson on domestic violence?
4. Do you think this lesson on domestic violence is a better way to teach mathematics? Why?
5. Is there anything else you want to add about what you thought / reactions about / to the article?

APPENDIX F
SOCIAL JUSTICE MATHEMATICS LESSONS

The Real Cost of Fast Food

Grade: 9–12

Periods: 3 to 6

Description: Students will compute the weekly cost of eating the same meal at a fast food restaurant for three months with a set number of weekly visits. Students will track their consumption of salt, sugar, and saturated fat. Students will share their results visually via a graph and algebraically by developing the equation of a line. Students will compare their results to an alternate meal with healthier choices comparing them to a / typical menu selection at the fast food restaurant.

Instructional Plan:

Period 1: Have the class gather data of the top fast food restaurants that they visit most often, the average amount spent, and the frequencies of visits per week. Once the data is gathered then develop the equation of the line for the frequency of visits and money spent.

Period 2: Have the class calculate the amount of money spent by the class in one year. Have them use their data to estimate the amount the student body would spend. Have the students display their estimates.

Period 3: The students will poll as many students in the school to develop school wide frequencies for number of visits a week and the average amount spent. The students will graph the class data along with the school's data. The class can compare on the class results to the school results.

Period 4: The students will create displays of their research to post around the school to inform the student body the average amount of money spent by students as a school. The frequency of visits can also be displayed.

Period 5: The students will calculate the average amount of calories that is consumed in one visit. The students can develop three to four different food orders and display the average intake of calories.

Period 6: The students will create displays of the average number of calories that the class consumes, and the entire school consumes in a week, month, and year at fast food restaurants.

Standards

MGSE9-12.N.Q.1 Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems:

MGSE9-12.N.Q.2 Define appropriate quantities for the purpose of descriptive modeling. Given a situation, context, or problem, students will determine, identify, and use appropriate quantities for representing the situation.

MGSE9-12.A.CED.2 Create linear, quadratic, and exponential equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

MGSE9-12.F.BF.1 Write a function that describes a relationship between two quantities.

MGSE9-12.S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

Objective: Students will be able to: Collect data, find the mean, find the equation of a line, graph results, and estimate a population based on a smaller sample.

Materials: Computer graphing program (like Excel), graph paper, display materials.

Assessment: Students will create displays to represent the data they collected.

Extensions: Students will calculate the amount of sugar, salt, and saturated fat that is consumed by the class and entire student body. The students will calculate the amount of money spent in a year at the fast food restaurant and comparison shop if they had spent the same amount at a grocery store to see if there is a difference in the amount of meals they could have purchased.

Questions for students:

What other options do you have instead of fast food?

Are there healthier options at fast food restaurants?

Will your frequency of visits change after this project?

Reflection: This lesson started out as a slope and equation of a line lesson. It grew into a much larger lesson with the students investigating the amounts of sugar and salt consumed in a week, month, and year. The students also developed and implemented an “Eat Healthy” campaign for the entire school.

Not My Stop

Grade: 9–12

Periods: 3 to 4

Background: This lesson is school specific and is a great example of how the students can investigate school policy and take steps to become agents of change. Benison High School is an open campus and utilizes the public transit system. The school provides weekly bus passes for the students. An express bus picks the students up in front of the school and drops them off at a subway stop.

Description: Students will use an on-line mapping tool to calculate and compare the different distances between public transit stations. Students will use their results and develop a cost analysis of transportation between the school and the different stations. Students will create a bar and line graphs for visual displays. Students will present their findings to their peers and school administration. Students will calculate the closest and most economical bus stop to be dropped off after school. Students will investigate any unusual drop off locations and through research develop theories supporting or disputing the drop off locations that are selected.

Instructional Plan:

Period 1: Students will generating different ideas/theories about why the chartered public school bus drives past two subway stations and drops the students at a third. Students will look at a local subway map to locate stations and then calculate the distances from the school using an online mapping program.

Period 2: Have the students complete the mapping exercise and then present the information / data they gathered. The class will class visit the closer stations and gather data about the stations.

Period 3: Students will organize and analyze the data they collected from the different stations. They complete a report and adjust or develop new theories of why the bus drops them off at the current subway station and not another station.

Period 4: The students will present their results and develop next steps – if any

Standards:

MM1P1. Students will solve problems (using appropriate technology).

MM1P2. Students will reason and evaluate mathematical arguments.

MM1P3. Students will communicate mathematically.

MM1P4. Students will make connections among mathematical ideas and to other disciplines.

MM1P5. Students will represent mathematics in multiple ways.

Objective: Students will be able to: Compare and contrast different distances between subway stops in relation to the school.

Materials: Computer access, calculator, presentation program, & paper / pencil

Assessment: Students will be assessed on their argument supporting the bus route or arguing for change in the bus route.

Extensions: The students will calculate a cost comparison for fuel and maintenance by traveling to different subway stops for the buses. Letters can be written asking for an explanation of the route taken by the bus. Students can include the savings data (if any)

Question for students:

Why do you think you are not dropped off at the closest Subway station?

Do you think it's fair to be judged before you have done anything wrong?

Reflection: This lesson really struck a chord with several of my students. When they realized that the two subway stations that were closer to the school were more racially mixed they felt the

effects of segregation. The first year this lesson was done all my students were harassed by the subway police and made to move on making it harder to get a real picture of the racial makeup of the two stations. The second year I went with one of the groups to the subway stop and we were not bothered by the subway police.

Water Shortage

Grade: 9–12

Periods: 3 to 5

Description: Students will chart their personal water consumption and compare their results to different communities whom experience water scarcity. Students will compile their data and complete a written analysis/presentation sharing their findings with the class. The students will share their personal experiences/reflections of a clean water transportation activity.

Instructional Plan:

Period 1: Students will track the amount of water that they use over a week's period. Have the class share the activities when they use water each day for a week (i.e. shower, cooking, drinking). Once a complete list has been generated, split the class into smaller groups and have them research an estimated amount of water that is used for each activity. Next, the class will track the total amount of water they consume in a week.

Period 2: Once the students gather the data they will chart their water consumption by creating two different data graph displays. They will share their data displays with the class

Period 3: The students will work in small groups to research water shortage issues in different parts of the world and report back to the class the struggles that different communities have to gain access to clean water.

Period 4: The class will pair up and transport four to eight gallons of water over a short distance up to one mile. This activity is a small simulation of what some people must do to obtain clean water. The students are to walk a distance with empty containers and then fill them and return to their starting point. This can be repeated to obtain a desired amount (gallons) of water.

Period 5: The students will write a reflection paper on their experience of carrying water and how they might take steps to consume less water in their daily lives.

Standards

MGSE9-12.A.REI.10 Understand that the graph of an equation in two variables is the set of all its solutions

MGSE9-12.A.REI.11 Using graphs, tables, or successive approximations, show that the solution to the equation are plotted in the coordinate plane

MGSE9-12.S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

MM1P4. Students will make connections among mathematical ideas and to other disciplines

Objective: Students tracked and charted their personal water consumption to compare and contrast their consumption to different communities whom experience water scarcity.

Materials: Computers, graphing material, and gallon jugs

Assessments: Students will be graded on their water consumption graphs and their reflection paper.

Extensions: Students can try to use less water and have a class comparison to see who can use the least amount of water. The class can also take water samples from their homes, school, and other local water sources to have it tested to see the quality of the water they have access to.

Many county water governments will test water for free or you can also utilize the EPA - www.epa.gov/safewater/labs.

Questions for students:

How clean is your water at home?

Would you invest in a water purifier?

How much are different water purifiers?

Are there communities in the United States that have trouble accessing water?

Reflection: I had the students walk about a half mile down the street to an elementary school where they filled three one gallon jugs of waters and paired up with an elementary school child and we all walked back to the school. Each student transported 6 gallons of water – thus completing two trips. This activity was a real eye opener for many students who wanted to quit after just one trip. Transporting water greatly impacts the students and is often the high light of the lesson.

The Saturation of Liquor Stores in my Neighborhood

Grade: 9–10

Periods: 3 to 4

Description: Students will research journal articles that examine the effects of liquor stores in low income areas. Students will write a summary of the positive and negative impacts of stores in these areas. Next, students will use an internet mapping/search engine to tally the number of businesses that sell liquor in different zip codes. Students will develop a ratio to calculate the saturation of liquor stores by zip code. Using their data students will report on the different saturation rates by zip code in relation to the average home price in the same area. Students will share their findings and reflections.

Instructional Plan:

Period 1: Students will read 1 or 2 journal articles about the issues linked with neighborhoods and the sale of adult beverages. Suggested web searches to find articles include, “liquor stores and crime”, “liquor stores and poverty”, and “liquor stores and community health”. After the class has read the articles then begin a conversation about their reactions to the articles. Have the students discuss the atmosphere around any stores that they live by.

Period 2: Have the students work on a mapping program to adjust the viewing window to cover 1, 2, and 3 miles. In the mapping address bar type in “liquor and (school zip code)”. Small markers should appear showing all the stores where adult beverages are sold. Have students find the saturation of liquor stores by finding the number of stores in the different windows. By completing three different window sizes the class can compute the average per square mile. So whole group examples so that students become familiar with how the mapping program operates. Have the students predict the number in their neighborhood and then check their prediction.

Have the students try different zip codes in different cities. This site - <http://www.unitedstateszipcodes.org/> will help students find the zip codes of different cities in the United States.

Period 3: The students will create a report showing the locations that they researched, the saturation of liquor stores by square mile, their mathematical calculations, and any reflections that they have after completing the project.

Standards:

MM1G1. Students will investigate properties of geometric figures in the coordinate plane.

MM1G2. Students will understand and use the language of mathematical argument and justification.

MM1D1. Students will determine the number of outcomes related to a given event.

MM1D3. Students will relate samples to a population.

MM1P1. Students will solve problems (using appropriate technology).

MM1P2. Students will reason and evaluate mathematical arguments.

MM1P3. Students will communicate mathematically.

MM1P4. Students will make connections among mathematical ideas and to other disciplines.

MM1P5. Students will represent mathematics in multiple ways.

Objective: Students will use an internet search engine to determine the number of stores in an area that sells liquor. Students will compare and contrast the number of stores in different zip codes and calculate the saturation rate.

Materials: Computer access, calculator, presentation program, & paper / pencil

Assessment: Develop a presentation rubric to lead the students' research and outline presentation expectations.

Extensions: Have the students correlate crime data in the areas with the most and least saturation of liquor stores. Students can also begin a letter writing campaign to their local politician about the saturation of liquor stores using the data they gathered.

Student Questions

Were you surprised at the number of stores that sold liquor in your neighborhood?

Do you think the higher saturation of liquor stores leads to more crime?

Do you think cities & counties should limit the number of liquor permits that they issue?

What are your personal / families experiences when walking by or visiting the stores in your neighborhood that sell liquor?

Teacher Reflection: This is a great lesson to inform students about crime and liquor stores in current neighborhoods and also what other neighborhoods look like. Students are often surprised at the number of stores that sell liquor and how close they are to each other. It is important to remember that this research can bring up issues in your students' neighborhoods that they live in and experience every day. It is important to listen without judgment. Educate students how to bring change by gathering data, analyzing the data, and then using their results to begin the process to fight any injustice that may impact their neighborhood.

School Crossing

Grade: 9–12

Periods: 3 to 5

Description: Students will gather numerical data of the number of school safety signs in front and surrounding the school. Support data with photographic evidence. The students will construct an overhead map of the school and the exact location (to scale) of the safety signage that is posted around the school. The students will conduct the same process at two different high schools in the surrounding area. The students will then compare and contrast the three schools noting any differences. Upon completion, the students will discuss their results and make proposals on how to bring equity in the safety signage surrounding the different schools (if any).

Instructional Plan:

Period 1: Students will list the different school zone signage around their school that alerts drivers they are entering a school zone. The class will make accurate measurements of the distance signage is from the school. Pictures can also be taken to help with presentations.

Period 2: The students will work in small groups to research the requirements for school markings according to their state law. Then they will check to ensure their school is in compliance.

Period 3: Students will work in small groups to create scale drawings of all the different safety zone markings around the school. If there are any that are out of code or deficient school safety marking then the class can start a letter writing campaign to request changes/updates to their school zone.

Standards:

MAMDM.G.1 Students will create and use two- and three-dimensional representations of authentic situations.

MAMDM.D.2. Students will build the skills and vocabulary necessary to analyze and critique reported statistical information, summaries, and graphical displays. MAMDM.D.3 Students will apply statistical methods to design, conduct, and analyze statistical studies.

MGSE9-12.G.MG.1 Use geometric shapes, their measures, and their properties to describe objects

MMF.G.1 Students will apply the concepts of area, volume, scale factors, and scale drawings to planning for housing.

Objective: Students will gather data in order to check school compliance to state regulations and to compare / contrast two other nearby high schools (within a 7 mile radius) safety signage to Benison High School safety signage.

Materials: Recording materials, camera, distance measuring equipment, and computers for research.

Assessments: Scale drawings and accuracy of measurements

Extensions: The class will explore nearby schools or schools in different districts to compare their school safety markings. If possible have your school resource police office reach out to the local police to see if they are willing to come out and speed check cars driving through the school zone. The class will collect data on the number of cars exceeding the school zone speed limit.

Questions for students:

Why might different high schools have different signage?

Do you think any schools might have more than the required amount of safety signage? Why?

Reflection: This lesson was tremendously disappointing for the class. Several students noticed that our school had surprisingly little school signage as well as broken flashing lights. The students gathered information, checked the state requirements and found that the school was not compliant in its safety signage. The class began a letter writing campaign that was supported by the data they collected yet no response was ever received. Over the summer break new signage was posted and all the warning lights were fixed yet our class never received any response from over 15 letters mailed out. Although there was never any direct correspondence from any of the mailed letters, we felt our voices were heard when the improved signage and the flashing light was fixed. We were able to have the local police come out on three occasions to conduct speed tests on cars passing through the school zone. This was a really good experience for the students as several were allowed to operate the radar gun.

CEO Pay

Grade: 9–12

Periods: 2 to 3

Description: Students will work in small groups to research and calculate the hourly rate of pay for CEO's of popular/well-known companies. The students will convert the yearly pay rate into an hourly rate for a 40, 60, and 80 hour work week. These three rates will then be compared to different pay rates within the same company. The students will calculate, if necessary, the rate of pay for a newly hired employee and a manager. Students will then calculate the percentage of difference between the rates and will attempt to show the difference by constructing a triangle that compares the hourly difference.

Instructional Plan:

Period 1: Discuss with students what the minimum wage is and ask if they feel this is a living wage. Discuss with students different ideas about increasing the minimum wage and what possible impact it could have on them.

Period 2: Have students research what the CEO's of popular companies make in comparison to the minimum wage or the minimum wage that is offered at that company. Students will calculate the percentage of increase from the lower wage to the CEO pay. Students can also calculate the percentage of change from the manager to the CEO pay.

Period 3: Students will create triangles to show the difference in pay from starting pay to CEO pay. They are to calculate the angle of elevation once the triangle is drawn. Each group will present their triangle to the class. One triangle should be made to compare each level of pay that the group calculated. This should be done for yearly pay, monthly pay, and hourly pay. Each group should end up with a minimum of three triangles and three different angles of elevation.

Standards:

MGSE9-12.G.SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.

MGSE9-12.G.CO.10 Prove theorems about triangles such as measures of interior angles of a triangle sum to 180 degrees.

MGSE9-12.G.MG.1 Use geometric shapes, their measures, and their properties to describe objects.

MGSE9-12.N.Q.1 Use units of measure (linear, area, capacity, rates, and time) as a way to understand problems:

MGSE9-12.F.LE.1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. MGSE9-1

Objective: Students will research and calculate the hourly rate paid to CEO's and other company board members.

Materials: Calculator, computers, large paper (or tape to create large sheets),

Assessments: Percentage of change calculations, hourly wage calculation, construction of triangles showing the percentage of change, and group presentation of triangles..

Extensions: Have the students find the pay rate of other officers in the company and compare the top five company earners to the bottom five earners.

Questions for students:

What are the responsibilities of the CEO – do you think they earn their money?

Do all CEO's start companies?

Can you live off the starting pay at the companies you researched?

Does this project change your opinion of the amount you are paid at your place of employment?

Reflection: In my class when I have done this activity the small groups always have picked companies they work for. It tends to give them some inside knowledge of the starting pay and managers wages. It also always brings up the question of what does the CEO do to make all that money? It is important to share with the class the most CEO's work more than a 40 hour week and do have a much greater responsibility. I was able to have a CEO of a local start up computer company visit our class. He was the only CEO who responded to our numerous invitations to CEO's around our area. The first question students asked was "How much do you make?"

Mortgage Fraud

Grade: 9–12

Periods: 2 to 3

Description: Students will work in small groups to gather and interpret data of foreclosures over a ten year period. The data will then be compared to data in different zip codes based on different yearly mean income. The results will be compiled and then the groups will report on their findings. The students will create and share at least three different types of graphs. Each group will build a PowerPoint presentation to share their findings.

Instructional Plan:

Period 1: This lesson will start out with a class discussion from an article about predatory lending practices that were pervasive in the early 2000's. The class might need some explanation of how mortgages work, how people pay them off, and what different types of mortgage have been offered. The movie (or parts of) *"The Big Short"* can help explain the collapse of the mortgage market.

Period 2: Students will continue to gather data from different web sites on foreclosures. The groups will need to have pre-selected different zip codes that they wish to research. They may also search their own zip codes.

Period 3: Have students research the Dodd Frank act (2010) and discuss if it was effective in changing the way banks lend money. Students can include any information that they discover about the Dodd Frank Act into their presentation to the class.

Standards:

MMF.A.1 Students will use basic functions to solve and model problems related to stock transactions, rent and mortgages, and other related finance applications.

MMF.A.2 Students will understand the characteristics of these functions as they relate to financial situations.

MMF.A.3 Students will use formulas to investigate investments in banking and retirement planning

MMF.D.1 Students will use measures of central tendency to investigate data found in the stock market, retirement planning, transportation, budgeting, and home rental or ownership.

MMF.D.2 Students will use data displays including bar graphs, line graphs, stock bar charts, candlestick charts, box and whisker plots, stem and leaf plots, circle graphs, and scatterplots to recognize and interpret trends related to the stock market, retirement planning, and home rental or ownership.

Objective: Students compare different home foreclosure rates by postal code.

Materials: Large paper for graph display, computers for research, access to PowerPoint/Prezi or other presentation program, and movie "*The Big Short*".

Assessments: Students are graded on their presentations, graphs, and reports/findings of mortgage fraud in the areas they researched.

Questions for students:

Who should be responsible for unfair mortgage lending? The homeowner? The bank? The lending officer?

Is it the government's responsibility to monitor mortgage lending practices?

Should banks be allowed to sell bad mortgages that they knowingly packaged to fail? Should they be responsible for their financial loss? Should the homeowners be responsible for the loss?

Should the governments be responsible for the loss?

Reflection: This lesson will most likely spark a lot of conversation and questions. Therefore, it can require the instructor to have a deep knowledge of how traditional mortgages work, lending practices, types of mortgages offered, how banks make money from issuing mortgages, and how mortgages are packaged and sold. Financial mathematics is often not taught in schools therefore student knowledge on this topic may be deficient. Pre-reading might be required to deepen the class knowledge.

What Do Gaddafi, Libya, and Oil All Have to Do With a Circle?

Grade: 10

Periods: 2

Description: Students will take the parts of a circle and connect with different parts of a military/political or current event.

Instructional Plan

Period 1: Students will list and define the different terms associated with a circle. For example: center, radius, diameter, circumference, tangent, arc, secant, major arc, and minor arc. Have the class share their definitions and agree on common definitions for each term. Next, have the students review different news articles, reports, and opinion articles about Libya and take notes. At the end of class have the students share two things they learned about Libya.

Period 2: The students will work in groups to assign a circle term to different parts of the Libya conflict. Each term will need to be assigned and also a short justification of why it was selected to represent a certain part of the Libyan conflict. At the end of the class each group will present their pairings of the circle terms to the Libyan conflicts. The groups will have a handmade or computer generated presentation. Each group will be able to explain the theory behind the pairings. An example of this lesson can be found at the beginning of Chapter 5 of this dissertation: Data representation and analysis in context.

*This lesson can be taught with any current issue. I have completed this lesson with the Michael Brown shooting in Ferguson Mi. and the financial collapse in Greece.

Standards

MGSE9-12.G.C.2 Identify and describe relationships among inscribed angles, radii, chords, tangents, and secants. Include the relationship between central, inscribed, and circumscribed

angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.

Objective: The students will connect vocabulary words with current events, conflicts, or other historical events

Materials: Computer access, paper/pencil, information on current issue, display material or computer program

Assessments: Groups follow a rubric to develop their presentations.

Extensions: After each group has presented the class will debate whether or not they agree on the definitions of each term. Each group will have the opportunity to debate each other and then a third neutral party can decide which group won.

Question for students:

What was the hardest part of this task?

Do you think this activity would be easier in a smaller or larger group?

Did your group connect the term definitions or was each one independent?

Teacher Reflection: I was surprised how the students took the information I gave them and developed their own definitions and associations for each term. They made connections that I had not thought of.