Black Males' Perceptions of Their Teachers' Curricular Expectations in Culturally Sustaining Mathematics Classrooms

by

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ABSTRACT

This study investigates Black male students' perceptions of their teachers' curricular expectations in mathematics classrooms. Curriculum in this study refers to what knowledge students are expected to learn, and the manner in which they are expected to learn it. The topic of this dissertation is in response to persisting and prevailing achievement disparities experienced by secondary Black male students in mathematics. These disparities exist at the school, district, state, and national level. Utilizing an action research methodology, multiple cycles of data collection led to the final iteration of the study, collecting strictly qualitative data and drawing from *critical race methodology* to address the three research questions.

The three research questions of this study seek to address how Black male students perceive their mathematics teachers' curricular expectations, what practices they have found to be effective in meeting their teachers' higher curricular expectations, and to determine how they view the reform practices as part of the intervention. Research questions were answered using one-on-one and focus group interviews, classroom observations, and student journals. An intervention was developed and delivered as part of the action research, which was an attempt at curriculum reform influenced by *culturally relevant pedagogy, warm demander pedagogy,* and *youth participatory action research.*

Findings from the qualitative methods, led to four assertions. The first assertion states, despite achievement disparities, Black male students care very much about their academic success. Second, a primary factor hindering Black male students' academic success, as communicated by participants, is what they are learning and how they are

learning it. Speaking to teachers' expectations, participants believe their teachers want them to succeed and think highly of them. Additionally, participants preferred interactive, enthusiastic, and caring teachers, even if those teachers are academically demanding. Finally, participants found learning mathematics addressing a problem that affects them, while incorporating components that address their invisibility in the curriculum, increased relevance, interest, and academic self-awareness.

DEDICATION

I dedicate this dissertation to my mother and father. They ventured out in their youth to foreign countries, far from their families, in search for better lives, only to face obstacles I am not sure I can overcome twenty years farther in life than the age they set out. To ensure the best outcomes for me and my brothers, they put their lives aside, worked long hours, and sacrificed so much. They taught us the value of a strong work ethic and always doing our best. This is for you.

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TABLE OF CONTENTS

Page

CHAPTER Page

CHAPTER Page

LIST OF TABLES

CHAPTER 1

INTRODUCTION

By the early twentieth century, children of all races were attending state-funded, public education (Au, Brown, & Calderón, 2016). This was a major triumph, as this form of education was previously available only to White students (Valencia, 1997). However, schools were still segregated due to *Plessy v. Ferguson*, and one pervasive thought of the time that was widely adopted, informed by pseudoscience, claimed that children of color, including Black children, are intellectually inferior (Valencia, 1997). Explicitly maintained *deficit thinking*, which places blame on students, their families, and social class, persisted for much of the twentieth century (Valencia, 1997). *Deficit thinking* in the educational context lives today in less blatant forms, but the effects of such a paradigm still influence institutional, social, cultural, and individual practices.

Since the Coleman Report of 1966, achievement disparities between Black and White students have been frequently documented as the "achievement gap" (Hanushek, 2016). Closing the "achievement gap" will not be the purpose of this action research. Even the term employs deficit language and ideologies. Eliminating the "achievement gap" requires addressing the opportunity gap (Carter & Wellner, 2013), which encompasses a number of factors outside the scope of this study including, but not limited to, educational funding, teacher training and hiring practices, educational standards, local, state, and national policies, socioeconomics, and racism. Instead, this action research will focus on curriculum reform that sets high expectations through rigorous curricular practices and increased student support.

Statement of Problem

When formulating expectations for students, high school teachers rely on previous assessment results to determine what curriculum is appropriate for each student (Muller, Katz, Dance, 1999). As mentioned earlier, Black students experience glaring disparities dealing with academic achievement. Consequently, Black students are placed in lower-track courses, exposing them to reduced or remedial curricular materials beginning in elementary school and continuing throughout their high school experience (Oakes, 1992). Early stratification of students, supposedly based on ability, disproportionately affects students of color (Oakes, 1992), especially black males (Noguera, 2003), and teacher expectations and differentiated curricular materials exacerbate any differences in ability, if they ever existed (Rist, 1970; Oakes, 1992).

The topic of this action research is the current state of Black male students' experience in mathematics, specifically their teachers' expectations and the mathematics curriculum they are expected to master. By the time Black students complete the eighth grade, they are enrolled in pre-algebra and algebra less frequently than their White counterparts, and a majority of the Black student population tests below proficiency on mathematics assessments (Flores, 2007). In high school, Black students are more likely to enroll in mathematics courses that only meet high school graduation requirement, while their White and Asian counterparts enroll in college preparatory courses more frequently (Woolley, Strutchens, Gilbert, & Martin, 2010). Black students, especially Black males, are excessively enrolled in lower-ability mathematics courses, where they

experience lowered teacher expectations and less challenging curricular materials (Dumas & Nelson, 2016).

High teacher expectations and engaging curriculum is a mediator for positive student behavior and engenders a sense of belonging in the mathematics classroom (Noguera, 2003; Woolley et al., 2010). The absence of engaging curriculum that is culturally sustaining for students of color (Rowser & Koontz, 1995; Ladson Billings, 1997, 1995; Paris, 2012) is worthy of serious consideration when the Black male school suspension is 15%, Latino males 7%, and White males 5% (Schott Foundation, 2015). In addition, the Black male expulsion rate is 0.61%, Latino males 0.29%, and White males 0.21% (Schott Foundation, 2015). Students facing suspension and expulsion miss instructional time, increasing the likelihood of reduced academic achievement.

Purpose of Study

The purpose of this study was to investigate through qualitative measures, how Black male students in my context perceive their teachers' curricular expectations in mathematics classrooms. Moreover, this study investigated what types of curricular materials and practices have been helpful in meeting high teacher curricular expectations. In addition to qualitative measures, the study delivered an intervention that required the involvement of the study's participants in activities influenced by *youth participatory action research* (YPAR) (Cammarota, 2014; Cammarota & Fine, 2008; Bertrand, 2016). Students used elements of YPAR to investigate the educational disparities in their context by analyzing disaggregated state assessment data, with an intent to present their findings to school leaders with recommendations for curriculum reform. A discussion of the intervention and YPAR is presented in chapter 3.

Local Context

I am currently a school administrator at a high school in Northwest Glendale. The school I work at, which I will call Northwest high school (pseudonym), is comprised of 0.4% American Indian or Alaskan Native, 8.2 % Asian, 2.5% Black, 11.5% Latinx, 0.2% Native Hawaiian or other Pacific Islander, 3.3% two or more races, and 73.8% White (U.S. Department of Education, Office for Civil Rights, 2015). We have approximately 2400 students attending Northwest high school, and 48.9% are female and 51.1% are male (U.S. Department of Education, Office for Civil Rights, 2015). Northwest high school has a small Black student population, typically hovering around sixty male and female students, combined. The school has 12.5% of students currently on Free and Reduced-price Lunch (U.S. Department of Education, Office for Civil Rights, 2015). Northwest high school is located in a middle-class community with a median household income of $92,875 (United States Census Bureau, 2016).

At Northwest high school and other schools across the state of Arizona, educators rely on Arizona's Measurement of Educational Readiness to Inform Teaching (AzMERIT), for determining mastery and progress of their students in English language arts and mathematics. It was disheartening to find disaggregated AzMERIT results from the 2016-2017 school year that showed Black male proficiency in mathematics was 7.7% on my campus (Smith, 2017). Stated differently, 9 out of 10 students received a label of "partially proficient" or "minimally proficient," which are both below the proficiency threshold on the AzMERIT. For comparison, 37.4% of Latino males and 46.8% of White males were proficient in mathematics at Northwest high school (Smith, 2017). Across

the state, all Black students had a proficiency rate of 26%, Latinx students 29%, and White students 53% (Arizona Department of Education, 2017).

As previously mentioned, there is an association between academic engagement and student behavior (Noguera, 2003; Woolley et al., 2010). Black students are suspended from school 2.5 times their student representation at Northwest high school (U.S. Department of Education, Office for Civil Rights, 2015). Black students represent only 2.5% of the student population but account for 6% and 6.3% of in-school suspensions and out-of-school suspensions, respectively (U.S. Department of Education, Office for Civil Rights, 2015). For perspective, Latinx students represent 11.5% of the student population and account for 14.5% and 20.3% of in-school suspensions and out-of-school suspensions, respectively (U.S. Department of Education, Office for Civil Rights, 2015). Finally, White students represent 73.8% of the population and account for 68.7% and 64.1% of in-school suspensions and out-of-school suspensions, respectively (U.S. Department of Education, Office for Civil Rights, 2015). What stands out is the comparison of student representation to suspension ratios. Latinx students and White students have nearly a 1 to 1, representation to suspension ratio. While Black students have nearly a 1 to 3 representation to suspension ratio.

Conceptual Framework

The axiological disposition of this study was to respect the cultural background and perspectives of all participants, in an effort to realize social justice within the educational context. Great value was placed on the lived experience and knowledge of all participants. Ontologically, this action research attempted to solicit and validate Black males' perceptions of their reality in the mathematics classroom as well as the

educational setting (Mertens, 1998), as voices of marginalized groups are often absent in educational discourse (Ladson-Billings, 1998; Au et al., 2016). Furthermore, voices of marginalized people have historically been viewed as illegitimate. Epistemologically, the goal was to establish a researcher-participant relationship based on trust, mitigating any power imbalances that might result due to my position as a researcher and school administrator. It is important to ensure a researcher-participant relationship that results in collecting valid qualitative data and legitimizes knowledge shared by participants.

In all aspects of this action research, the knowledge that participants possess was recognized and leveraged to support their academic pursuits. Methodologically, this is an action research influenced by *critical race methodology*, to provide a mechanism through which Black male students can utilize their voices to describe their experiences in mathematics classrooms as a form of counter-storytelling (Solorzano & Yosso, 2002). The four basic beliefs of this study describe a transformative paradigm (Mertens, 1998), as the disparities that Black male students endure in mathematics education was the focus of this action research. Additionally, the ultimate goal of this action research is to influence positive change in meeting the academic needs of Black male students in my context.

Definitions of Relevant Terms

Many terms will be defined throughout the remaining chapters. However, two terms need to be defined here, since they have been used several times already and will continue to be used throughout this action research. The first term I will define is curriculum. Au defines curriculum as "the ways in which we structure knowledge in environmental form, but also the ways in which such knowledge is selectively

communicated to students" (Au, 2013, p. 55). Another definition of curriculum is "a body of knowledge that is taught in schools and supported by texts in wider society" (Au et al., 2016, p. 120). Informed by the aforementioned definitions, in this action research, curriculum refers to what knowledge is selectively taught, how it is taught, and the opportunities for students to access this knowledge.

The second term that needs to be defined is high teacher expectations. I will define high expectations through *warm demander* pedagogy (Kleinfeld, 1975), which communicates both demand and warmth towards students in meeting high expectations. The demand portion refers to "academic press," where students are expected to learn at high levels (Bondy & Ross, 2008; Ware, 2006; Delpit, 2012). The warm portion represents the social supports that teachers provide their students, as they reinforce high expectations for academic achievement by creating a culturally aware and nurturing environment (Bondy & Ross, 2008; Ware, 2006; Delpit, 2012)

Research Questions

This action research on Black male students' perceptions of their teachers' curricular expectations in culturally sustaining mathematics classrooms will address three research questions utilizing one-to-one, semi-structured interviews, a focus group, student journals, and classroom observations. Three research questions will guide this study:

> RQ1: How do Black male students describe their teacher's curricular expectations in grade level(s) mathematics classrooms?
>
> RQ2: What are the effective curricular practices that Black male students perceive to be helpful in performing to teachers' higher curricular expectations for mathematics achievement?

RQ3: What are Black male students' views of the reform practices as part of the intervention?

Previous Cycles of Action Research

Leading up to the current iteration of this action research, two previous cycles were completed. The initial cycle included two participants, a school principal and a classroom teacher. The school principal is White and the classroom teacher is Latina. Even though semi-structured protocols were used and transcripts were coded, this cycle was informal. The subsequent cycle was more formal, and after IRB approval, two mathematics teachers were recruited to take part in a pre- and post-intervention survey, along with semi-structured interviews. The two mathematics teachers from this cycle are both White male teachers. The initial cycle, which we called cycle 0, confirmed others also recognized the existence of disparities with Black male students' current educational experiences. At the time of cycle 0, the direction of the study was not solidified, and the only thing that was certain is the need for an intervention. This led to the subsequent cycle, which we called cycle 1. This cycle focused more on the possibilities of curriculum reform through incorporation of *culturally relevant pedagogy* in mathematics classrooms.

Table 1

Previous cycles of action research

Cycles	**Purpose of this cycle and Interview and survey objectives**	**Methods utilized in this cycle**	**Key findings**
Cycle 0	**Purpose of this cycle**: Exploring whether participants are aware of academic disparities experienced by Black male students and what	Semi-structured interviews were conducted with	Three themes emerged from the two 40-minute interviews:

	participants believed were the sources of academic disparities experienced by Black male students. **Interview objectives**: Questions explore educators' perceptions of Black male students' academic experience in my context. Interviews posed questions about the influence of race in schools and whether current educational practices are meeting the needs of Black male students.	the two participants.	centrality of race in persistence of the problem, lack of cultural competence in our teacher force, and student disengagement and loss of interest in classroom tasks.
Cycle 1	**Purpose of this cycle:** The focus of this cycle was on mathematics curriculum and the possibilities of curriculum reform. **Survey and interview objectives:** The survey questions gauged teachers' perceptions of using culturally relevant practices in their classrooms. Their opinions of this type of pedagogy, whether they thought it could be beneficial, and their willingness to incorporate it in their daily practices were measured. Furthermore, semi-structured interviews were used as a follow-up and offered triangulation to the findings from the survey.	Semi-structured interviews and surveys were given to the two teacher-participants	The two mathematics teachers in this cycle answered in the affirmative on the possibilities of incorporating culturally relevant practices to better meet the academic needs of Black male students. However, they indicated a lack of proficiency in including this type of pedagogy into their current practice. They recommended additional professional development on *culturally relevant pedagogy*.

The most salient findings of cycle 0 include one of the participants stating how the current educational system was not designed for students of color, it was initially intended for White, privileged males. Furthermore, another participant discussed what she believed to be stereotyping of Black students. More specifically, a fear of Black male students in the educational setting. This sentiment was accompanied by both participants expressing concern that most of the teacher workforce is female and White, a possible explanation for insufficient cultural competence to meet the needs of Black male students in public schools. Germane to the most current iteration, one of the participants asserted that Black male students' experience compounded frustration in the educational setting, leading to disengagement and eventually exhibit what she called a "self-defeating prophecy." The current cycle of this action research is concerned with the association between teachers' curricular expectations and students' educational outcomes, as self-fulfilling prophecies (Rowser & Koontz, 1995; Jussim & Eccles, 1992). Especially lowered teacher expectations for Black students as a significant contributing factor in restricting access to challenging curriculum, which in turn establishes and exacerbates gaps in proficiency, resulting in reduced academic achievement in mathematics (Gershenson & Papageorge, 2018; Pringle, Lyons, & Booker, 2010; Tenenbaum & Ruck, 2007; Strayhorn, 2008).

Cycle 1 utilized both quantitative and qualitative measures. The quantitative portion of this cycle, a pre- and post-intervention survey, showed participants responding in the affirmative, with very little change from pre- to post-survey. The findings demonstrated participant beliefs that *culturally relevant pedagogy* could be beneficial in the mathematics classroom. The participants expressed a willingness to incorporate this

pedagogy into their daily practices. However, participants communicated a deficiency in sufficient understanding of *culturally relevant pedagogy* for successfully integration into current classroom practices. In the process of developing and delivering the workshop to the two mathematics teachers, I realized the need for further development of a possible intervention that could create the conditions for optimal curriculum reform. In addition, I developed a belief that the first implementation of any curriculum reform needed to be experienced by me, before I could effectively engage other teachers in future professional development on this topic. Taking on the role of educator in the intervention was not too far of a stretch, because I taught mathematics for eight years before becoming a school administrator.

Organization of the Study

In the remaining chapters I will present a literature review, which includes research on teachers' expectations, Black students perceptions of their teachers' expectations, how teacher expectations are communicated through curriculum in general and towards Black students, Black students experiences with mathematics and mathematics curriculum, and an introduction of the theoretical frameworks guiding this study. In the methods chapter I will present the research design, information about the participants, the setting of the study, data collection and analysis, introduction of the intervention, and the qualitative instruments used in the study. The final chapters of the study will include findings of the data collection and analysis, along with discussions, conclusions, and implications of the study.

CHAPTER 2

LITERATURE REVIEW

Black male students experience academic disparities in secondary education, evidenced by state assessment proficiency rates, graduation rates, disproportional suspension and expulsion rates. The topic of this action research is teachers' curricular expectations for Black male students in mathematics classrooms. This chapter will explore six sections that will underpin this action research: literature on teacher expectations, Black students' perceptions of teachers' expectations, how teachers communicate expectations through curriculum, how Black students experience teachers' expectations through curriculum, Black students experience with mathematics curriculum, and a section on the theoretical frameworks guiding this study.

Literature on Teachers' Expectations of Students

Weinstein (2009) credits works of sociologists William Isaac Thomas and Robert King Merton for influencing research on teachers' expectations and ensuing students' self-fulfilling prophecies. Thomas is responsible for a classic essay where he outlines behaviors induced by false perceptions of individuals, and Merton is responsible for defining this phenomenon as self-fulfilling prophecies, "a false definition of the situation, evoking new behavior which makes the original false conception come true" (Weinstein, 2009, p. 41). In addition, Weinstein outlines the importance of Robert Rosenthal's 1956 dissertation, which hypothesized and studied the existence of experimenter bias leading to an expectancy effect.

Rosenthal eventually teamed up with elementary school principal, Lenore Jacobson to test Rosenthal's previous research on the topic of expectancy effects in the

school setting (Rosenthal & Jacobson, 1968). Rosenthal and Jacobson set out to study the effects of teacher expectations by initially testing (nonverbal intelligence test) all students at the elementary school the May prior to the year of experimentation. After an intelligence test in May, Rosenthal and Jacobson randomly chose 20% of the tested students to be the experiment group. They told teachers in the study, the selected students had a propensity for higher academic achievement based on their supposed superior performance on the pre-assessment. This design increased the chances that any difference in student treatment and outcomes would be a result of teachers' beliefs about the experiment group, labeled the bloomers. Bloomers were tested twice in the experiment year and again two years after the study. The results showed that students made significant growth in the early grades. The fact that students increased their performance based on falsely determined teacher expectations was evidence of students' self-fulfilling prophecies. However, the absence of sustained growth across grades failed to support the existence of long-term expectancy effects.

Brophy and Good (1970) begin their article by questioning Rosenthal and Jacobson's (1968) conclusion of an expectancy effect; specifically their interpretation of the achievement data, and not going far enough to establish a causal relationship between teacher expectations and student outcomes, due to the absence of classroom observations. Part of Brophy and Good's study on teachers' expectations was to address these deficiencies in Rosenthal and Jacobson's research design through an observable model that paid closer attention to teacher behaviors, which influence academic expectancy effects in the following progression:

> (*a*) The teacher forms differential expectations for student performance; (*b*) He then begins to treat children differently in accordance with his differential expectations; (*c*) The children respond differentially to the teacher because they are being treated differently by him; (*d*) In responding to the teacher, each child tends to exhibit behavior which complements and reinforces the teacher's particular expectations for him; (*e*) As a result, the general academic performance of some children will be enhanced while that of others will be depressed, with changes being in the direction of teacher expectations; (*f*) These effects will show up in the achievement tests given at the end of the year, providing support for the "self-fulfilling prophecy" notion (Brophy & Good, 1970, pp. 365-366).

Brophy and Good (1970) chose four out of nine first grade teachers to participate in their study. They began by asking teachers to rank their students based on academic ability. After ranking students in each class, the top three boys and girls were labeled as "highs" and the bottom three boys and girls, excluding students with limited English proficiency, were labeled "lows." Stratified ability groups were established to make more manageable, classroom observations focused on dyadic student-teacher relationships, investigating whether differential student treatment was present in the four classrooms across the two groups of students (highs and lows).

The findings of Brophy and Good's research showed that the highs, students for whom teachers held higher expectations, raised their hands more frequently and engaged in more content based interaction. Teachers in the study called on highs more frequently than the lows, but teachers had more contact with lows in procedural communication. In addition, lows had more behavioral based criticism and interaction with teachers. This type of control-based interaction was more pronounced for male students. Highs also outperformed lows on all achievement measures including answering correctly more often during class and on the Stanford Achievement Test at the end of the school year.

Brophy and Good also found that highs were criticized less and praised more than the lows. Even as highs gave more correct answers than the lows, in instances where highs struggled to provide a correct answer, teachers provided them more opportunities to respond by rephrasing questions and giving hints. Conversely, when lows experienced similar situations, teachers were quick to provide an answer or call on another student. In addition, teachers gave highs feedback more consistently than lows. Based on the data that Brophy and Good collected, they concluded that:

> teachers do, in fact, communicate differential performance expectations to different children through their classroom behavior, and the nature of this differential treatment is such as to encourage the children to begin to respond in ways which would confirm teacher expectancies. In short, the data confirm the hypothesis that teachers' expectations function as self-fulfilling prophecies, and they indicate some of the intervening behavioral mechanisms involved in the process (Brophy & Good, 1970, p. 373).

Good (1981) later summarized what he and Brophy found in the subsequent decade of research conducting similar studies on teacher expectations and self-fulfilling prophecies with the following 12 statements:

1. Seating slow students farther from the teacher or in a group (making it harder to monitor low-achieving students or treat them as individuals).
2. Paying less attention to lows in academic situations (smiling less often and maintaining less eye contact).
3. Calling on lows less often to answer classroom questions or making public demonstrations.
4. Waiting less time for lows to answer questions.
5. Not staying with lows in failure situations (providing clues, asking follow-up questions).
6. Criticizing lows more frequently than highs for incorrect public responses.
7. Praising lows less frequently than highs after successful public responses.
8. Praising lows more frequently than highs for marginal or inadequate public responses.
9. Providing low-achieving students with less accurate and less detailed feedback than highs.
10. Failing to provide lows with feedback about their responses more frequently than highs.

11. Demanding less work and effort from lows than from highs.
12. Interrupting the performance of low achievers more frequently than that of high achievers (Good, 1981, p. 416).

Rist (1970) conducted a longitudinal study over the span of two and one-half years, following students from kindergarten to second grade at a school with all Black students. Rist aimed to study the development of teacher expectations, by observing a kindergarten teacher stratify students into two distinct groups based on four student data points. These points include demographics, welfare status, medical information, and previous academic histories of siblings. None of these considerations are indicative of academic aptitude. Therefore, Rist concluded the basis for stratification of students into learning ability groups was subjective and influenced by perceived social class. The kindergarten teacher labeled students as either "fast learners" or "slow learners," and placed students accordingly into reading groups based on those ability labels.

Rist's observation of factors that determined placement into the two groups (fast learners and slow learners) included how students dressed (neat, dirty, old clothes, etc.) and whether they spoke Standard American English. Additionally, Rist believed that the teacher had a normative reference group that she used to determine whether students possessed necessary qualities for academic success. This reference group resembled the teacher's background, mixed Black-White, educated, and middle class. Stratification of students into reading groups was solidified by the eighth day of school, and these groups remained unchanged for the duration of the school year.

Students received differential treatment based on their assigned reading group. "Fast learners" received more academic attention, while "slow learners" received less instructional time and more teacher interactions focused on behavior correction.

Furthermore, Rist stated that a caste-like system was established in the classroom, where students form the 'fast learners" table ridiculed students from the "slow learners" table. Based on the type of attention the two groups received from their teacher, Rist noted a gap that formed and widened in the completion rate of academic materials as the year progressed. When students moved from kindergarten to the first grade, the first grade teacher based her expectations on student groupings that were determined by the eighth day of kindergarten. Rist observed that groupings stayed mostly the same in the second grade. He summarized his findings of the two and one-half year study by stating:

> the expectations of the kindergarten teacher appeared to be fulfilled by late spring. Her description of the academic performance of the children in June had a strong "goodness of fit" with her stated expectations from the previous September. For the first- and second-grade teachers alike, there was no need to rely on intuitive expectations as to what the performance of the child would be. They were in the position of being able to base future expectations upon past performance. At this point, the relevance of the self-fulfilling prophecy again is evident, for the very criteria by which the first- and second grade teachers establish their three reading groups were those manifestations of the performance most affected by the previous experiences of the child (Rist, 1970, p. 160).

Weinstein (2009), in her book *Reaching Higher: The Power of Expectations in Schooling*, states that expectancy effects have been "misunderstood" and "underestimated," limiting progress on mitigating the consequences of negative self-fulfilling prophecies. She cites scholars such as Lee Jussim and others who have minimized expectancy effects, claiming these effects are not powerful and/or teachers' expectations are accurate. Weinstein questions the conclusions of her peers, attributing skepticism of expectancy effects fueled by conflicting studies, to an issue of experimental versus naturalistic studies, which are longitudinal case studies in the subject's natural setting (Oakes, 1992).

In an article by Jussim and Eccles (1992), 1700 sixth-grade students and 98 teachers took part in the study to investigate the accuracy of teachers' expectations, academic achievement due to self-fulfilling prophecies, and the existence of bias in teachers' evaluation of students. Their findings concluded that teacher expectations did predict final grades and standardized assessment scores, confirming self-fulfilling prophecies. In addition, confirming perceptual bias hypothesis, which describes teachers' susceptibility to influence by their own initial judgements of students' performance, teacher expectations were a better predictor of final grades when compared to standardized assessment scores. Teachers made judgements about talent and work ethic of boys and girls without actual data, demonstrating teacher bias. Nonetheless, Jussim and Eccles ultimately conclude that teacher expectations were accurate, while self-fulfilling prophecy effects were small.

Since Rosenthal and Jacobson (1968), researchers have studied the influence of teachers' expectations on students' educational outcomes as self-fulfilling prophecies. Whereas, Rosenthal and Jacobson were more concerned with the existence of an expectancy effect, Brophy and Good (1970) focused on mediating teacher behaviors that result in self-fulfilling prophecies. The importance of Rist's (1970) work rests in the naturalistic approach he took in observing the subjective origins of teacher expectations, ensuing self-fulfilling prophecies, and solidification of perceived ability levels due to a widening gap exacerbated by absence of exposure to challenging curriculum over time.

Ways Black Students Historically Encounter Their Teachers' Educational Expectation in the Classroom

The previous section presented seminal works that have endured the test of time. I want to begin this section with a recent study on teachers' expectations. Gershenson and Papageorge (2018) drew data from the U.S. Department of Education's National Center of Statistics of a tenth grade cohort from 2002. Their study presented two salient findings: when teachers had higher expectations, students graduated from college at higher rates, and White teachers had lower expectations for Black students when compared to their White counterparts. Their study also found that teachers expected 58% of White students to earn a college degree, while predicting only 37% of Black students would earn a college degree. The actual rate of White college graduates to Black graduates turned out to be 49% and 29%, respectively.

Additionally, Gershenson and Papageorge found that Black teachers were more likely to have higher expectations for Black student graduation rates than White teachers, by a difference of 9 percentage points. Germane to this action research, college completion was significantly higher when mathematics teachers held higher expectations for both White and Black students. Gershenson and Papageorge concluded, "in sum, our analysis suggest that teacher expectations do not merely forecast student outcomes, but they also influence outcomes by becoming self-fulfilling prophecies" (Gershenson & Papageorge, 2018, p. 70).

In a qualitative study of 48 Black students at a high school with predominantly Black students, Pringle, Lyons, and Booker (2010) determined a majority of the participants believed their race was a factor in differential teacher treatment. Participants

stated that their teachers had lower expectations for them, and reported being discouraged or not recommended to enroll in advanced placement or honors classes. Furthermore, communicated in implicit and explicit ways, students stated that teachers expected less quality work from Black students when compared to White students. Two student quotes stood out as they discussed their experience with lack of encouragement to engage in advanced courses:

> I was never discouraged . . . well I would say one time in my 10th grade year I was told that I shouldn't take an AP class. I said "ok, whatever." I made an A in this person's class, so at the end of the year when they sign you up and you go to get your [teacher's] initial, she said that she didn't think that [AP] was right for me. I said ok. I'll just take honors . . . I thought about it later. My GPA was a 3.8 but it could have been a 4.0 if I had taken that AP class (Pringle, Lyons, & Booker, 2010, p. 38).

Another student expressed a similar frustration with a counselor, stating:

> in my senior year before school really began, I went to my counselor and said "I think I want to do AP [Subject]." She replied "I just don't think you're ready for all that workload." That really hurt me.... The counselor did not base her answer on anything, even after I told her to pull up my record and get some of my teachers' comments about my attitude towards class and what I do ... I'm a good student (Pringle et al., 2010, p. 38).

According to Pringle et al., other students in the study "tied teacher expectations to whether or not their teachers genuinely cared about them or even liked them. For example, one female student stated that an English teacher did not like her; therefore, she did not encourage her" (Pringle et al., 2010, p. 35).

Tenenbaum and Ruck (2007) conducted four separate met-analyses studies to investigate whether (a) teacher's expectations, (b) discipline rates, referrals into advanced, remedial, and special education programs, (c) frequency of positive and neutral speech, and (d) frequency of teachers' negative speech towards students, differed for

ethnic minority students when compared to European American students. Tenenbaum and Ruck used 32 different samples to study teachers' expectations, 15 samples from 10 articles to study teachers' referrals, 11 qualitative studies for teachers' positive and neutral speech, and 10 articles for negative speech.

Tenenbaum and Ruck concluded, "the findings of three of our four metaanalyses [sic] suggest that teachers favor European American students more than African American and Latino/a students" (Tenenbaum & Ruck, 2007, p. 271). The effect sizes of the four meta-analysis were small but demonstrated more favorable teacher expectations for European Americans when compared to Black and Latinx students. However, it should be noted that this portion of the meta-analysis indicated more favorable expectations for Asian students over European American students. In addition, effect sizes showed that European American students received more positive referrals and less negative referrals, along with more positive and neutral speech when compared to their Latinx and African American counterparts. The last meta-analysis, focused on differential frequency of negative speech, did not indicate that teachers used negative speech more frequently with ethnic minority students.

In a study utilizing the NELS:88/00, a large database of surveys from students, teachers, parents, and administrators, Strayhorn (2008) used a stratified sample of 24,599, eight graders to address two research questions: (a) what is the level of teacher expectations for Black students, and (b) what degree of correlation existed between teachers' expectations and students' achievement scores? This data is especially valuable in investigating expectancy effects because it followed up with students up to eight years after students graduated from high school. After computing descriptive statistics,

correlational statistics, and least squares regressions, Strayhorn concluded that teachers had lower expectations for Black males when compared to White males and Black females. It was surprising to discover that 16% of Black male students reported that teachers recommended work over school for them post high school, while White male and Black female students reported the same at 4.8% and 8%, respectively.

Another interesting finding by Strayhorn was on the survey item, "in class, I feel put down by my teachers." Black male students responded in the affirmative 20% of the time, compared to 4% for White male and 4.8% for Black female students. Surprised by this finding, Strayhorn conducted interviews with five Black male students from the study. One student confirmed differential treatment by recounting how his teacher addressed all other students in the class using the label Mr. and Ms., but when it came to him, it was always Darren, his first name. Another student told a story of a time when he felt put down by his teacher:

> I got an 'A' in AP Chemistry once and my teacher accused me of cheating. Rather than celebrate my success, he assumed that I wasn't smart enough to get an 'A' on my own so I must have cheated. He asked other students about my performance on the exam… called my parents… it was so humiliating" (Strayhorn, 2008, Discussion section, para. 6).

In this section, the studies showed more favorable expectations for White students than Black students. Pringle et al. (2010) found that White teachers had lower college graduation expectations for Black students when compared to expectations of their Black colleagues. Tenenbaum and Ruck (2007) found that teachers had less positive expectations, referrals into advanced and honors curriculum, and positive and neutral speech for Black males when compared to their White counterparts. Finally, Strayhorn's (2008) study showed that Black males expressed being put down by their teachers more

frequently, and their teachers chose work instead of continued education for them. These studies indicate that Black students encounter their teachers' classroom expectations in ways that reduce motivation and confidence to succeed in the educational setting.

Ways Teachers' Expectations of Students are Communicated Through School Curriculum

Discussing the role of curriculum in how teachers communicate their expectations to students, Weinstein (2009) asserts that "differential curricular exposure may be among the strongest mediators of expectancy effects" (p. 59). In addition, as previously discussed, Brophy and Good's model includes a discussion on how teachers' expectations directly influence achievement through exposure to certain types of curriculum and indirectly through diminishing student motivation (Good, 1981; Weinstein, 2009). One of the primary roles of a teacher is to determine which students gain access to more challenging curriculum, as well as remedial curriculum. Hence, directly influencing immediate student achievement and long-term academic trajectories.

Teachers' assignment of differentiated curriculum based on students' perceived academic abilities is part of *tracking* practices (Oakes, 1992). Oakes (1992) outlines three levels where this practice takes place: (a) kindergarteners are exposed to a "two-tiered" curriculum based on being "ready" or "not ready", (b) more differentiated curriculum and stratification in junior high school based on ability, and (c) finally students are guided to "curricular trajectories" in high school, enrolling in courses based on postsecondary aspirations. Oakes states that *tracking* has shown little to no benefit in increasing achievement through ability-based stratification. Furthermore, the stratification increases disparities in academic achievement, which widen over time.

There is debate on the validity of promotion into higher tracks based on schools' definitions of ability and the tools used to measure aptitude. Nonetheless, *tracking* in high school ultimately leads higher-tracked students to an increased likelihood of college attainment and securing higher status occupations.

Oakes (1992) states that in the early grades students are exposed to similar content covered at different rates. In his longitudinal study, Rist (1970) presented an account of kindergarten students placed in ability-based reading groups and their teacher's expectations becoming self-fulfilling prophecies over the two and one-half year study. Oakes (1992) states that solidification of ability groups and the resulting expectancy effects are dictated by differing curriculum that high groups cover in comparison to curricular materials presented to low groups. The lower groups never have a chance to catch up; on the contrary, if there was ever a difference in ability, over time differences in achievement are exacerbated due to lower groups engaging with less rigorous curriculum. Weinstein makes the same conclusion stating, "differential exposure to curriculum and instruction carries critical implications for opportunities further along the educational pipeline" (Weinstein, 2009, p. 59). Additionally, repetition of basic curriculum in place of opportunities for enriched learning not only limits mastery of content, it also leads to decreased motivation.

The type of curriculum offered to students in different tracks is strikingly incongruent. While students in high-tracks are exposed to curriculum that requires critical thinking and challenging problem solving, lower-tracked students engage in curriculum that teach low-level skills, and teachers spend more time going over rules and classroom behavioral expectations (Oakes, 1992). Immersion of lower groups with

behaviorally based or control-oriented teacher behavior was also documented by Brophy and Good (1970) and Rist (1970). Relevant to the topic of this action research, Oakes (1992) states that high-track mathematics curriculum utilize inquiry based problem-solving to increase interest in mathematics and science, while low-track curriculum is dominated by tasks such as completion of worksheets. In addition, high-track teachers create a supportive environment for student learning, while lower-track teachers focus more on classroom management.

Curriculum differentiation as part of *tracking* is a way teachers communicate their expectations, and these expectations result in direct influence on student achievement (Good, 1981). As discussed previously, teachers' indirect influences through curricular expectations could diminish student motivation and self-perception (Good, 1981). There is agreement in the research presented by Rist (1970), Brophy and Good (1971), Good (1981), and Weinstein (2009), demonstrating how expectations are communicated through differentiated curriculum and how the effects of this differentiation directly influences student achievement. In addition, Rist (1970) and Weinstein (2009) state that students are well aware of differences in curricular materials presented to them and their peers. Weinstein asserts that awareness of differentiated curricular materials is one way students establish how smart they are. Student awareness of differentiated curriculum is a nexus between teacher expectations, the role of curriculum, self-fulfilling prophecies, and students' achievement trajectories.

Ways Black Students Historically Encounter Their Teachers' Expectations Through School Curriculum

Early U.S. curriculum presented an image of Black people as being inferior, and minimized the role of racism in shaping the history of Black Americans (Au et al., 2016). This was accomplished through children's literature and textbooks of the early twentieth century; with works such as *Ten Little Niggers*, a counting book that was in production until 1980 and was sold in the U.S. and other countries. In textbooks of early twentieth century, Au et al. discussed the presence of Anti-Black ideologies that promoted two central themes: (a) absence of the African American experience, while portraying African Americans as not having a history, and (b) declaration of uncivilized origins of African American people, proselyting this narrative as a reason for their inability to contribute positively to society.

By 1910, most Black children were attending schools in the U.S., and a prevalent narrative from 1890 to 1930 was *genetic pathology* (Valencia, 1997). A set of pseudoscientific explanations for supposed inferiority of non-whites utilizing measures like I.Q. tests in the school setting (Valencia, 1997). Results of these tests led psychologist of the time to declare Europeans from certain regions more intelligent, and people of color unintelligent (Valencia, 1997). Au et al. (2016) state, "racial theories prevailed with the intent of producing an educational system specifically tailored for the so-called capacities of the Negro" (p. 131). Furthermore, Au et al. contend that assessment and determination of Negro capacities were not empirically valid. Nonetheless, falsely established capacities of Black people supported a belief that Blacks were incapable of surviving without the institution of slavery.

This serves as explanation to why curriculum for communities of color were typically designed to meet low-skill labor demands, evident at high schools in cities such as Los Angeles, offering up to 70 vocational programs by 1929 (Valencia, 1997). By 1932, some of the schools serving communities of color were receiving up to five and one-half hours of vocational training and one and one-half hours of academic instruction (Valencia, 1997). Conversely, Valencia claimed that vocational programs were not part of the curriculum in White schools. This brings back the prevalence of *tracking* practices and what factors are considered in placing students in differentiated curriculum. Oakes (1992) questioned the validity of the measures that defined academic ability and the differentiation of curriculum that ensues.

Just as vocational training resided predominantly in communities of color in the early twentieth century, *tracking* practices stratify students along racial and socioeconomic lines (Oakes, 1992). At the high school level, Non-Asian minorities, including Black students, enroll in vocational programs and lower-track courses, while being underrepresented in college-preparatory courses (Oakes, 1992). Furthermore, Black students experience disproportionate placement in special education courses (Noguera, 2003; Brown, 2011). The aforementioned successfully restrict Black students from college readiness courses with rigorous curriculum, which prepare students for high-skill career options.

As previously cited, Brophy and Good's model showed that teachers communicate their expectations directly through curriculum differentiation (Good, 1981). The progression outlined in this section demonstrates curriculum that intentionally left out the experience of Black Americans, even promoting negative narratives about Black

Americans. Black students' intelligence was constantly under assault and said to be inferior. These perceived cognitive abilities, tend to position Black students and other students of color in curricula that prepare students for low-skill occupations, decreasing the chances of a future with limitless life opportunities. The parallels between curriculum for communities of color from the early twentieth century and curriculum differentiation as part of *tracking* continue to limit students' academic trajectories as well as entry into the middle-class.

Black Students and Their Experiences with Mathematics and Mathematics Curriculum

In his article, Flores (2007) discusses disparities experienced by students of color through an opportunity gap lens. Flores begins by pointing out that Black students have a 91% non-proficiency rate in mathematics by 8th grade; compared to a significantly less, 63% non-proficiency for White students by 8th grade. This disparity is partially due to only 47% of Black students taking pre-algebra or algebra by 8th grade, while 68% of white student take pre-algebra or algebra by 8th grade. It is evident how these two statistics highlighting an alarming non-proficiency rate for Black students in mathematics, and a lower percentage of Black students enrolled in grade appropriate mathematics classes by 8th grade, influence one another.

Flores states that an opportunity gap exists in the differences observed between schools serving predominantly students of color and schools serving predominantly White students. Some of the differences are noticeable in the curricula, adding Black students are less likely to have teachers who emphasize problem solving, and these same teachers are more likely to be less experienced. These factors demonstrate the barriers

Black students face as they attend schools with fewer resources than their White counterparts. Nonetheless, schools serving underserved communities have been successful when they focus on the following: high teacher expectations with support, challenging mathematics curriculum, and strong relationships (Flores, 2007). Even as Black students experience an opportunity gap, high expectations, increased rigor, and caring adults act as mitigating factors in addressing academic disparities.

The five-year longitudinal Stanford Mathematics Teaching and Learning Study of 700 students across three schools presented exciting findings based on mathematics curriculum reform (Boaler & Staples, 2008). The study presents significant growth at Railside high school, the more racially diverse school out of three high schools in the study (Railside, Hilltop and Greendale high school), due to differences in mathematics curriculum presented to students. Based on a pre-test, students at Railside started high school achieving at lower levels in comparison to the other two high schools, in mathematics achievement. However, after one year, students at Railside outperformed their counterparts, and this success continued in the subsequent years of their high school experience.

Boaler and Staples (2008) state, "students' opportunities to learn are significantly shaped by the curriculum used in the classrooms and the decisions teachers make as they enact curriculum and organize aspects of instruction" (p. 1). The difference in student achievement at Railside corresponds to the learning activities teachers emphasize and how knowledge is disseminated to students. At the two schools utilizing traditional curriculum (Hilltop and Greendale high school), 21% of class time was spent on lecturing, 15% on whole-group questioning, 48% on bookwork, 0.2% on student

presentations, and the class spent 2.5 minutes on average per problem. In contrast, Railside high mathematics classes spent 4% on lecturing, 9% on whole class questioning, 72% on group work, 9% on student presentations, and spent 5.7 minutes on average per problem. This is consistent with the ICAP model presented by Chi and Wylie (2014), where learning outcomes increase when students move from passive and active states, where lecturing and note-taking is the primary mode of instruction, to constructive and interactive states, where students engage with the material independently or in a collaborative structure to (co)construct higher levels of mastery.

The most glaring contrast between Railside and the other high schools is how students acquire knowledge. At Railside, students engaged in less teacher led lectures and independent student work. Railside students spent more time in collaborative structures explaining how they arrived at solutions, playing a larger role in knowledge production. Furthermore, apparent in the length of time it took Railside students to complete a problem, it is reasonable to infer that students engaged in more challenging mathematical tasks. The results of Railside's reform efforts are noticeable in comparison to the other two high schools in the following areas: a larger percentage of students enrolled in advanced mathematics classes by senior year, students outperformed their counterparts in the curriculum-aligned California Standards Test, and a larger percentage of students indicated they enjoyed mathematics. However, there was one measure where Hilltop and Greendale students outperformed Railside students, the CAT 6 (California Achievement Test). Boaler and Staples believed it was possibly due to the CAT 6 having more linguistic and cultural bias.

In another article making a case for reform practices and high teacher expectations, Woolley, Strutchens, Gilbert, and Martin (2010), used surveys from 933 Black middle schools students (521 girls and 410 boys) who were part of the 2004 Transforming East Alabama Mathematics (TEAM-Math). The researches sought to investigate the relationship between teachers' expectations and teachers' use of reform practices, and student motivation and student achievement outcomes. Woolley et al. found that students who perceived positive expectations from their teachers had increased confidence and interest in mathematics, while lowering mathematics-related anxiety. In addition, students who reported their teachers had used the reform practices saw increased confidence and interest in mathematics.

Reform practices referred to recommendations by National Council of Teachers of Mathematics to boost student motivation and exposure to more challenging mathematics curriculum. Woolley et al. strongly argue that teachers working with Black students focus on three areas: use of reform practices in the classroom, high expectations for students while expressing confidence in their mathematical abilities, and communication of high standards for mathematics achievement. Nonetheless, the researchers also cautioned, "the focus on an achievement gap as defined by test scores is not a solvable problem, but students who experience learning environments characterized by neither effective instruction nor social interaction that advance learning are solvable problems" (Woolley, et al., 2010, p. 44). The intervention of this study will aim to accomplish this recommendation, by creating engaging curriculum that sets high expectations with social supports for students.

In their article on how mathematics classrooms can be more inviting and conducive to the learning needs of Black students, Rowser and Koontz (1995) recommend three areas of focus: learning styles, "culture-fair curriculum," and teacher expectations. As far as learning style, Rowser and Koontz insist teachers present mathematical concepts through a holistic approach, instead of presenting concepts in discrete segments. This allows students to see the bigger picture, and provides more opportunities to make inferences, another recommendation of Rowser and Koontz. Furthermore, Black students are more successful when they have the ability to demonstrate mastery using a variety of assessments. Especially real-life projects that make connections to students' lives. One example required students to collect data, analyze data, and present their findings. The same concept underpins the intervention for this action research.

According to Rowser and Koontz, and consistent with Ladson-Billings's (1995) work on *culturally relevant pedagogy*, Black students find relevance in mathematics content when curriculum is "culture-fair." The three factors that constitute "culture fair" curriculum include recognition of minority mathematics scholars, the curriculum lending itself to learning and accepting others' cultures, and valuing lived experiences while addressing the learning needs of Black students (Rowser & Koontz, 1995). Finally, Black students receive lowered teacher expectations through subtle and overt teacher behavior. In response to this disheartening reality, Rowser and Koontz demand that teachers base their treatment of students on objective information, and strive to meet the needs of each student considering their current ability level.

This section began with Flores (2007) presenting the proficiency disparities of Black students in 8th grade mathematics and lower percentages of Black students enrolling in grade appropriate mathematics classes. Additionally, Black students were more likely to have inexperienced teachers, who deliver less quality mathematics content. Flores recommended practices that have improved mathematics achievement in underserved schools. These practices include high teacher expectations, challenging curriculum, and strong relationships. Woolley et al. (2010) stressed the importance of positive teacher expectations as a mediator for increased mathematics confidence and reduction of mathematics related anxiety in students. Rowser and Koontz (1995) echoed the importance of high teacher expectations for Black students. Furthermore, they add that mathematics teachers need to ensure "culture-fair" curriculum, while paying attention to different learning styles that Black students possess. Boaler and Staples (2008) highlighted the findings from implementation of mathematics curriculum reform that emphasized reduced teacher-led activities and spent more time engaging students in collaborative structures, co-constructing higher levels of mathematics understanding. Many of the components from this section influenced the intervention of this action research.

Critical Race Theory

One reason for using *critical race theory* (CRT) in this study is best described by Yosso (2005), in declaring that CRT has the ability to inform pedagogy, curriculum and policy among other areas. Yosso's statement was referring specifically to Solorzano's five CRT tenets (Solorzano, 1998):

1. *The centrality and intersectionality of race and racism:* Critical race theory asserts that race and racism are central to naming and addressing the disparities that exist in the educational context. In addition, critical race theory confronts educational disparities considering the intersectionality of race and other forms of subordination such as gender, which is germane to this study.
2. *The challenge to dominant ideology:* Critical race theory in education rejects notions of meritocracy and colorblindness (this term will be replaced with color-evasiveness in subsequent usage). This includes interrogation of claims made about the neutrality of curriculum and pedagogy. Additionally, these claims of neutrality further reinforce self-interest, power, and privilege of the dominant group. Challenging dominant ideologies also includes rejecting deficit thinking, which blames Black males and other students of color for the educational disparities they experience.
3. *The commitment to social justice:* Critical race theory is committed to the elimination of all forms of subordination. In this study, subordination based on the intersection of race and gender within the educational setting.
4. *The centrality of experiential knowledge:* Experiential knowledge of marginalized groups, in this study Black male students, is critical to understanding and addressing racial subordination in the educational context. As will be elaborated in chapter 3, this study utilizes counter storytelling to give voice to Black male students, better informing mathematics curriculum reform.
5. *The interdisciplinary perspective:* Critical race theory allows for incorporation of different disciplines in assisting marginalized groups name race and other markers of subordination as factors that sustain oppression.

Theoretical Frameworks Guiding the Intervention

The term *colorblind* essentially argues that fairness in the educational setting could be realized if we ignore race as a factor in our institutional practices. Annamma, Jackson, and Morrison (2017) assert that this term is problematic because it negates racism experienced by people of color and minimizes opportunities that educators have to reflect on classroom practices that could perpetuate racism. More importantly, they contend the term fails to describe the problem of not acknowledging race, by conflating it with a descriptor that insinuates ableism pertaining to people with loss of vision. The authors suggest an alternative to using *colorblind*; "by naming this racial ideology as *color-evasiveness*, we demonstrate the social construction of race and ability while simultaneously confronting the social and materialized consequences of racism and ableism" (Annamma et al., 2017, p. 8). As I work to address *deficit thinking* associated with Black males in schooling, it is important to guard from language that maintains deficit in other people. For this reason, I will substitute the use of *colorblindness* with *color-evasiveness*.

Practices claiming to be *color-evasive*, a term used to describe a commitment to race-neutrality within the educational context (Annamma et al., 2017; Parker, 2015; DeCuir & Dixson, 2004), along with notions of meritocracy as the primary determining factor in assessing academic ability, achievement, and other synonymous terms that lead to differentiated curriculum and educational outcomes, are examined in this study. Furthermore, individuals who champion meritocracy and *color-evasive* practices, wittingly or unwittingly, must accept implications of cognitive inferiority associated with achievement disparities along racial lines. This action research and the intervention of

the study, vehemently reject all forms of *deficit thinking*, as it pertains to Black male students.

This dissertation posits that students of color have historically experienced curriculum aligned to White, middle-class norms (Ware, 2006; Ladson-Billings, 1997, 1998). Additionally, invisibility within the curriculum (Au et al., 2016), absence of relevance and cultural congruence (Ladson-Billings, 1998), has made engagement in academic tasks challenging for Black students. Finally, there is extensive research indicating lowered academic expectations for Black students when compared to their White counterparts (Gershenson & Papageorge, 2018; Pringle et al., 2010; Tenenbaum & Ruck, 2007; Strayhorn, 2008). Hence, the focus on designing and implementing an intervention that seeks to address the aforementioned gaps in traditional curriculum.

The sum of these persisting deficiencies in meeting the educational needs of Black male students and all students of color is of paramount concern, as I delve into an action research aiming to improve my practice. This is the impetus for an intervention focusing on mathematics curriculum reform influenced by *culturally relevant pedagogy* (CRP), *warm demander pedagogy*, and *youth participatory action research* (YPAR). The use of CRP, *warm demander pedagogy*, and YPAR standalone based on their body of literature. However, their use in conjunction is further justified through research demonstrating that Black students have succeeded in mathematics when schools focus on different learning styles, "culture-fair" curriculum, high teacher expectations, reform practices, challenging curriculum, and strong classroom relationships (Woolley et al., 2010; Rowser & Koontz, 1995; Flores, 2007).

Culturally Relevant Pedagogy. Culturally relevant pedagogy "is a theoretical model that not only addresses student achievement but also helps students to accept and affirm their cultural identity while developing critical perspectives that challenge inequities that schools (and other institutions) perpetuate" (Ladson-Billings, 1995, p. 467). Ladson-Billings (1995) identified three desired student outcomes of CRP teachers: academic achievement, cultural competence, and providing students with the skills necessary to analyze, understand, and address social injustices that affect them. CRP proposes three major tenets: *conceptions of self and others, social relations,* and *conceptions of knowledge*. *Conceptions of self and others* begins with the unwavering belief that CRP teachers possess of their students' abilities to attain academic success. CRP teachers achieve this objective through dynamic pedagogy that adjusts to fit the needs of their students. These teachers make efforts to become members of their students' communities, and see their pedagogy as a way of giving back to these communities. They also reject the "banking" method, "in which the scope of action allowed to the students extends only as far as receiving, filing, and storing the deposits" (Freire, 1973, p 72.). On the contrary, CRP teachers view "teaching as mining," soliciting from students their experiences and knowledge, in an effort to share, recycle, and construct knowledge collaboratively (Ladson-Billings, 1995).

Culturally relevant teachers structure *social relations* to ensure positive student-teacher interactions with all members of the classroom, and foster collaborative environments where students learn from one another; including instances where students play the role of teacher (Ladson-Billings, 1995). These teachers engage all learners by highlighting a broad collection of expertise possessed by their students. The third

component, *conceptions of knowledge*, describes how CRP teachers view knowledge. CRP teachers demonstrate a passion for acquiring and disseminating knowledge to students, while viewing knowledge as a dynamic, frequently exchanged and constructed between all members of the classroom. These educators view knowledge through a critical lens, allowing students to interrogate what is taught and the resources they are taught from. CRP teachers achieve knowledge acquisition by any means necessary, and assessment of knowledge is not one size fits all; students are provided opportunities to demonstrate mastery of content using a variety of assessments.

Warm Demander Pedagogy. There are close parallels between *warm demander pedagogy* and *culturally relevant pedagogy*, interchangeably referred to as culturally responsive pedagogy, evident in the following quote. According to Ware (2006), "cultural/racial identity, *warm demander pedagogy*, and *culturally responsive pedagogy* can be represented as intersecting circles. Each construct stands alone, but once these attributes are combined, it is difficult to know which idea influences or modifies the other" (p. 453). This quote is included to establish how many components of *warm demander pedagogy* coincide with CRP. Consistent with CRP, *warm demander pedagogy* emphasizes the significance of positive student-teacher and student-to-student relationships in all classrooms. Both pedagogies require teachers to achieve cultural competence within their classrooms, by taking genuine interest in the backgrounds of all their students. Academically, *warm demander pedagogy*, similar to CRP, communicates a belief that all students can be academically successful (Ware, 2006; Bondy & Ross, 2008). However, even with all the similarities between *warm demander pedagogy* and CRP, it is still important to include both, because *warm demander pedagogy* not only sets

high expectations for students, teachers who espouse this type of pedagogy insist that students meet their expectations (Bondy & Ross, 2008).

Inclusion of *warm demander pedagogy* in the intervention is necessary due to the prominence of teachers' expectations in this action research. In chapter one, high teacher expectations is defined through *warm demander pedagogy*, because this pedagogical approach communicates both demand and warmth towards students as it relates to academic success (Ware, 2006; Bondy & Ross, 2008). *Warm demander pedagogy* has two important components, which are both important to this study: academic press and social support (Delpit, 2012). Academic press is the demander portion, setting high academic standards for students to meet. However, not only are high expectations set for learning, there is an insistence that students meet these expectations (Delpit, 2012). An objective accomplished through teacher persistence, and a commitment to offering social support by fostering strong relationships and constantly showing students they are cared for (Delpit, 2012; Ware, 2006; Bondy & Ross, 2008). This is the warmth portion of the pedagogy.

Youth Participatory Action Research. Cammarota and Fine (2008) state, "youth participatory action research (YPAR) – provides young people with opportunities to study social problems affecting their lives and then determine actions to rectify these problems" (p. 2). Students typically engage in YPAR projects in tandem with adults, in an effort to actualize social justice addressing oppressive practices within the educational context (Bertrand, 2016). YPAR is a good fit for this action research because it is in alignment with the theoretical framework and research methodology guiding this study, *critical race theory* and *critical race methodology*, respectively. *Critical race theory* and

critical race methodology, like YPAR, emphasize the importance of marginalized people's lived experiences, and in the case of YPAR, focusing specifically on the lived experiences of marginalized youth (Bertrand, 2016).

The intervention will consider four important YPAR principles: (1) commitment to addressing issues affecting youth's educational context; (2) realization of knowledge construction through peer collaboration by analyzing, designing, and executing a project; (3) the project must be transformative, such that students actively work to eliminate all forms of oppression by initiating change within their context; and (4) students are empowered, as a result of playing a central role in shaping how schools meet their educational needs (Cammarota, 2014; Bertrand, 2016). Cammarota (2014) asserts, "the goal of most YPAR projects is to provide pedagogical strategies that promote transformational resistance" (p. 114). Solorzano and Bernal (2001) define transformational resistance as "student behavior that illustrates both a critique of oppression and a desire for social justice" (p. 319).

YPAR's appeal as an influential factor of the intervention is the rigor and relevance required to establish youth both as researcher and the target population of their research (Cammarota, 2014). In a recent YPAR project, students were taught qualitative research methodologies (Cammarota, 2014), and Bertrand (2016) states that YPAR can operate within the confines of the recent data-driven decision making movement in schools. With that in mind, this intervention sought to equip each student with statistical methodologies, which were necessary for analyzing assessment data, illuminating the academic disparities that Black male students experience when compared to their counterparts in mathematics achievement. Along with the qualitative portion that

included semi-structured interviews, a focus groups, classroom observations and student journals, a collaborative, yet mostly student led presentation was created to be delivered to school leaders on our campus. The objective of this presentation is for school leaders to gain increased awareness of the disparities in Black male students' mathematics achievement, and hear student recommendations for curriculum reform, based on the findings of the action research.

CHAPTER 3

METHOD

This chapter presents the methodology that steered the process of addressing the three research questions of this qualitative action research. I will begin by providing details about the setting where the study took place. Following the settings section, I will present the research questions again, with additional information about the objective of each research question. A methodology section will offer justification for using an action research design. The target population of this action research is Black male students in the secondary setting. In the participants section, I will provide information about the selection process and introduce each participant. The methods section will discuss the qualitative measures of this study, which includes 9 semi-structured interviews, a focus group, 19 classroom observations, and student journals. Each of these methods addresses research questions, ensuring alignment between the questions and qualitative measures. Finally, I provide an outline of the intervention along with descriptions of its major components.

Setting

The setting for this study is a high school in North Glendale, and I will refer to the school as Northwest high school (pseudonym). To recap from chapter 1, the student composition at Northwest high School is 0.4% American Indian or Alaskan Native, 8.2% Asian, 2.5% Black, 11.5% Latinx, 0.2% Native Hawaiian or other Pacific Islander, 3.3% two or more races, and 73.8% White (U.S. Department of Education, Office for Civil Rights, 2015). The Black student population is 2.5% and Black males account for approximate 1.3% of the student body. That 1.3% is roughly 30 Black male students at

Northwest high school. Our school has approximately 2400 students, of which 48.9% are female and 51.1% are male (U.S. Department of Education, Office for Civil Rights, 2015). The latest available data from Office for Civil Rights shows that Northwest high school has 12.5% of its students on free and reduced-price meals (U.S. Department of Education, Office for Civil Rights, 2015). The school is located in a middleclass community earning a median household income of $92,875, where 93% of the population is White and 1.5% of the population is Black (United States Census Bureau, 2016).

The topic of this action research is mathematics teachers' curricular expectations for Black male students and the persisting achievement disparities in the subject. Therefore, it is important to provide mathematics achievement results that demonstrate the disparity Black male students experience at Northwest high school, the district level, and across the state of Arizona. On the Algebra I AzMERIT, from 2016 to 2019, our school district's proficiency rate changed from 29% to 28%, the state rate changed from 25% to 27%, and our school saw the greatest increase from 20% to 47% proficiency for all Black students (Arizona Department of Education, 2016, 2017, 2018, 2019). The growth at the school level has been a wonderful development since the alarming proficiency rates at the outset of this study, but disaggregation of the data continues to reveal that Black female students represent a majority of the 47%.

Analyzing data for all mathematics tested areas, Black male proficiency was at 7.7%, compared to 37.4% for Latino males and 46.8% for White males (Smith, 2017). In the second year of the study, I am happy to report the proficiency rates increased to 26.7 % for Black males, 48.54% for Latino males, 59% for White males, and Black females scored significantly higher than Black males at 44.82% (Smith, 2019). Even though

Black male students experienced growth in proficiency, there continues to be noticeable difference in achievement. Additionally, there is a disproportional suspension rate of Black students at Northwest high school when compared to their Latinx and White counterparts (U.S. Department of Education, Office for Civil Rights, 2015). This is included because missing instructional time has direct implications on academic success.

In my capacity as a school leader, I have an opportunity to observe many mathematics classrooms on my campus. In our classrooms, large textbook adoptions drive the curriculum that students are required to master. Au et al. (2016) discuss how textbooks and children's literature have historically left out the experiences of Black people, even portraying Black people in a negative manner. From my experience teaching and evaluating mathematics teachers, alongside the literature on the topic of Black students in public education, textbook adoptions and standardized tests narrow the curriculum, disadvantaging students of color, rendering them invisible in what is taught, assessed, and valued within the classroom (Carter & Welner, 2013; Au, 2013; Noguera, 2003; Yosso, 2002). I argue that use of these textbooks and increased emphasis on standardized tests, which claim to be *color-evasive* resources and practices, are some of the factors that have led to a 7.7% Black male proficiency in mathematics. There is currently an absence of curriculum that is relevant and culturally sustaining to Black male students in their mathematics classes; a curriculum that takes into account the assets these students bring to classrooms.

Background and Role of the Researcher

Positionality statement. My connection to the problem of practice is multi-tiered. As an immigrant from Africa, I experienced challenges Black male students endure in the

educational context, while attending schools in predominantly White communities. The schools I attended were demographically consistent with Northwest high school. As a mathematics teacher of 8 years at a Title I school, I taught many students of color who entered high school mathematics with a history of discouraging educational experiences. In my role as a school administrator and a novice researcher, I am in a position to have significant influence through the findings of this study, which could have a positive impact on the educational experiences of Black male students and other students of color in my context.

Role of the researcher. My primary role in this study is researcher, and teacher in the intervention setting. In the researcher capacity, I designed the study and administered all qualitative measures to participants after securing IRB approval from ASU and my district office. In addition, I was responsible for coding all qualitative data, which aimed to address the three research questions of this study. As a teacher in the intervention, I engaged my participants in reformed mathematics curriculum that communicated high expectations while striving to sustain participants' culturally. These lessons culminated with participants engaging in a YPAR (*youth participatory action research*) influenced project, applying the content they learned, to analyze real-world data and created an artifact of our findings to present to school leaders.

Intervention

Math lessons. By the time students of color reach high school, they are more likely to enroll in courses that meet minimum graduation requirements, never setting foot in a college preparatory course (Oakes, 1992). Furthermore, students of color receive lowered curricular expectations, when compared to their White counterparts (Gershenson

& Papageorge, 2018; Pringle et al., 2010; Tenenbaum & Ruck, 2007; Strayhorn, 2008). The objective of this intervention was to communicate high curricular expectations that sustain students culturally. Due to this goal, I drew from *Using & Understanding Mathematics*, a textbook I used to teach MAT 142, a college-level course at a local community college. The unit of focus includes measures of central tendency, frequency, percentages, and graphical representations of data. Not only are these statistical concepts rigorous, consistent with YPAR, students will learn these methodologies in an effort to study their context and produce an artifact that informs school leaders to inspire institutional change as well as personal growth.

Interdisciplinary perspective of lessons. Influenced by a tenet of *critical race theory*, the mathematics lessons will include contributions by people of color to the field of STEM (science, technology, engineering, and math). Au et al. (2013) discuss the historical absence of people of color in textbooks, and Ladson-Billings (1995) explicated the need for relevance in meeting the needs of students of color. By beginning every mathematics lesson of the intervention with a historical discussion about a scholar of color in the STEM field, I am aiming to increase a sense of belonging and cultivation of positive academic identities of Black male students within mathematics classrooms. In addition, incorporation of this type of education honors early Black curriculum scholars who were advocates of highlighting contributions by Black people to U.S. society (Au et al., 2016).

Intervention outline. The intervention included five meetings with participants spanning from October 3 to October 31. The meetings took place during a built-in 40-minute period, intended for students to attend club meetings as well as academic

interventions. We held our meetings on Tuesdays and Thursdays in one of the conference rooms on campus. Delivery of the intervention followed the structure presented in Table 2. The general structure of our five meetings began with introductions, review of the objectives, followed by questions guiding our data analysis, a group discussion after the introduction of a scholar of color, a brief lesson on statistical methods, participant collaboration in application of the lesson, discussion of what we worked on, and finished up with a journal entry using remind.com.

Once we began to look at the AzMERIT spreadsheet, I asked participants to think about how we can process large amounts of assessment data. Our first step was to determine whether it made sense to use mean, median, or mode to establish how different student groups performed. After completing each calculation using Google Sheets, we established that measures of central tendency were flawed due to stark differences in representation of demographic groups within our school. For example, 15 Black male students took the mathematics AzMERIT compared to 522 White male students.

It was important that participants understood how data could be misrepresented when the wrong functions are utilized. Since we had the raw scores for every student in the selected demographic groups, and one of those groups included 1600 students, we leveraged the power of Google Sheets to calculate the frequencies for how many students scored *highly proficient*, *proficient*, *partially proficient*, and *minimally proficient* in each demographic group. This allowed us to complete the next step, which was to calculate the proficiency percentages for each of the four previously mentioned labels. Since our goal was to create a concise artifact we could present to school leaders, we settled on translating these proficiency percentages into a bar graph.

The goal of this portion of the intervention was to instill a sense of authentic achievement in doing work that even adults from our setting had not done, let alone other students. As educators, we typically rely on our district office to provide synthesized assessment data. I wanted my participants to understand the magnitude of their achievement and possible contribution. Participants were constantly reminded how their work could have significant implications in helping school leaders better understand how the current curriculum is not serving all students well. Additionally, along with the graphical representation of disaggregated proficiency data, we planned on leading a discussion that includes recommendations for curriculum reform. These recommendations were established through the interviews of this action research. Due to school closures and adherence to COVID19 social distancing, this portion of the intervention was suspended until we resume regular school scheduling.

Table 2

Intervention schedule

Session	Session Objectives
Session 1: 10/03/19	• Introductions • Objectives for the meeting • Interest survey • Present Benjamin Banneker and student discussions – Scholar of color • Pose questions that will guide our work for the day and discuss how we can best answer the questions (using mathematics) • Introduce measures of central tendency • Apply what students learned on actual student data • Students shared their initial thoughts on the data • Discussion of the day's lesson and journal entry using Remind.com
Session 2: 10/22/19	• Objectives for the meeting • Present David Blackwell and student discussion - Scholar of color • Review the original five questions that will guide our work. Review of our last meeting • Continue measures of central tendency and also introduced frequency

	• We went around the room to hear students reflections on the data • Apply what students learned on actual student data. • Discussion of the day's lesson and journal entry using Remind.com
Session 3: 10/24/19	• Objectives for the meeting • Present Elbert F. Cox and student discussions - Scholar of color • Focused on the first three questions guiding our work • Reviewed frequencies from last meeting and transitioned to using them to find percentages • After finding percentages, we discussed what they mean • Discussion of the day's lesson and journal entry using Remind.com
Session 4: 10/29/19	• Objectives for the meeting • Present Kathrine Johnson and watched a clip from Hidden Figures the movie, followed by a discussion • Revisited the three questions that have been guiding our work • Reviewed our work with percentages from last meeting, and worked on the day's objective of creating graphical displays with our percentages • After participants worked collaboratively to create charts, we discussed why it is important to use a chart to display our findings • Discussion of the day's lesson and journal entry using Remind.com
Session 5: 10/31/19	• Objectives for the meeting • Watched a video from the *Weekly* on school integration led by students in New York • Revisited the three questions that have been guiding our work • As we wrap up our work, we discussed what we thought would be important to share with school leaders • We made our decision by reviewing the artifacts we had created in our previous meetings • We also took time to complete member checking by discussing the findings from my interviews with them • In place of a journal reflection we had a group discussion utilizing two questions

Research questions

The interview protocols, observations, student journals, and the intervention of this action research will serve the objective of addressing three research questions. These qualitative methods will specifically address how Black male students perceive their teachers' curricular expectations and what curricular practices have influenced positive

educational outcomes in their mathematics classrooms. Furthermore, qualitative methods will also address how Black male students experienced the intervention of this study, focused on mathematics curriculum reform. The three research questions of this action research are:

RQ1: How do Black male students describe their teacher's curricular expectations in grade level(s) mathematics classrooms?

RQ2: What are the effective curricular practices that Black male students perceive to be helpful in performing to teachers' higher curricular expectations for mathematics achievement?

RQ3: What are Black male students' views of the reform practices as part of the intervention?

Through solicitation of participants' perceptions, this study examined teachers' curricular expectations, classroom practices, student-teacher relationships, seating arrangements in the classroom, frequency and quality of teacher praise and criticism, opportunities to engage in classroom activities, including being called on to answer questions. Additionally, this action research considered the standard of quality expected by teachers in completing academic tasks and relevancy of curriculum presented to Black male students. While addressing the aforementioned areas of focus, the study gathered students' perceptions of best practices in the area of teachers' curricular expectations. Along with the findings of the qualitative methods, the outcomes from the intervention could inform educators in how to reform curriculum, which helps Black male students realize increased academic achievement.

Methodology

This study utilizes an action research methodology (Butin, 2010; Mertler, 2017). An action research is a systematic inquiry conducted by an educator to inform his/her practice, studying how the educator's school operates, including how teaching and learning takes place within their context (Mertler, 2017). This methodology requires an iterative process that includes a study and planning phase, an action phase, a data collection and data analysis phase, and a reflection phase (Mertler, 2017). The phases are cyclical to ensure a quality action research, where previous cycles strengthen subsequent cycles. The objective of this methodology is to improve the educational outcomes in the researcher's context. That is why an action research best suits my problem of practice. As a practitioner-researcher, I began with a problem I believed existed in my context, and through cycles of action research I was better positioned to understand and address the problem.

Participant recruitment, data collection, and the intervention began in the fall of 2019, when students came back to Northwest high school from their summer break. I started the study in August by compiling a list of possible participants and concluded in November of 2019 with the last one-on-one interview. This interval of time was sufficient for students to settle into their routine, before beginning the process of interviews and the intervention. The first step in recruiting participants was to email their parents providing notification that I would be inviting their sons to be part of a project. Some parents responded to the email stating they approve of their child taking part in the study. Then I transitioned to my possible participants, first meeting with them to tell

them about the project, then chasing them down in the following weeks to retrieve the assent and consent forms.

While this doctoral program prescribes an action research methodology, I also drew from *critical race methodology* to give voice to Black male students' experiences in mathematics through counter-storytelling (Solorzano & Yosso, 2002). A counter-narrative was especially important, because the standardized tests potentially portray my participants as students who do not care about their education. Participants' experiences and perceptions were captured using one-on-one semi-structured interviews, a focus group, classroom observations, and student journals. I selected these methods because they provide participants with an appropriate platform to offer counter-narratives through counter-storytelling. In the words of Montoya (1994), "storytelling seeks to subvert dominant ideology" (p. 31), focusing on the experiences of the oppressed and opposing traditional discourse, which in the case of Black male students in education, has been historically negative (Brown, 2011). A goal of this study is to give voice to students who have otherwise felt silenced and marginalized due to absence of curriculum that is relevant to them (Yosso, 2002; Ladson-Billings 1998).

Participants of the Study

The target population of this study is Black male students currently enrolled in mathematics courses at Northwest high school. I used purposive sampling to select participants, since they belong to a specific group and will fulfill a specific purpose in this action research (Creswell, 2015; Teddlie & Yu, 2007). In an effort to achieve participant-heterogeneity relating to current mathematics achievement and grade level, participants of this study were chosen using the school's student information system.

This allowed for the identification of Black male students who have achieved at high levels in mathematics, as well as students who have historically struggled in mathematics based on classroom grades and AzMERIT results.

Commitment to recruiting a heterogeneous pool of learners with a variety of strengths, achievements, and backgrounds, is in opposition to *tracking* practices that have exacerbated academic disparities along racial lines (Oakes, 1992). The initial design of this study, aiming to recruit homogenous learner groups, could have inadvertently reinforced *tracking* of students, a practice that clusters students of color in remedial and special education classes, while disproportionally providing White students access to rigorous coursework (Carter & Welner, 2013; Oakes, Wells, Jones, & Datnow, 1997; Oakes, 1992). Additionally, selection of students with varying experiences of mathematics achievement will provide a more comprehensive understanding of Black male students' perceptions of their teachers' curricular expectations.

Due to the limited number of Black male students in my context, the only markers I will be using to select participants is race (Black), gender (male), enrollment in a mathematics course, and mathematics achievement level (both proficient and non-proficient students based on AzMERIT and classroom grades). After creating a database of all possible participants in my setting, I recruited twelve Black male participants for this study, anticipating attrition, as high school students tend to be transient moving from class-to-class, school-to-school, and possibly lose interest in the process. Ten out of the twelve agreed to be part of the study. One of my participants had to leave our school after completing a couple interviews with me, leaving 9 participants who finished the

entire project. This was pleasing to me, because we have approximately 30 Black male students on our campus.

In the following section, I will provide a brief introduction of the 10 participants who took part in all or most of the study. All participant names are pseudonyms to maintain confidentiality. We shared many positive moments, but also shared some difficult ones. Two of my participants had negative experiences with racial slurs on campus during the study. One of my participants left our school due to a violation of his probation. Another student lost a member of his immediate family towards the end of our study. I recruited one of the participants because he shared with me how he lost his friend to gun violence, and I thought our group could offer support and networking, as he was new to the school. Two participants received consequences from me because they broke school rules. Furthermore, some participants received evaluation for IEPs (Individualized Education Plan) and 504s, while others endured what I gathered to be challenging family dynamics. It will become obvious from my descriptions below, that I was fond of all participants, and my assessment of each led me to assert how intelligent, charming, and talented they are in and out of the classroom. Keeping that in mind and the fact several participants were in honors classes, I was surprised to discover not one Northwest high school Black male student scored highly proficient in mathematics. The following is a brief introduction of each participant:

Brandon – I met Brandon when he was in eighth grade. Now a sophomore, he is a charming, athletic, and extremely intelligent young man. Brandon was one of the first students I recruited for the study, because he is outspoken, and I knew he would have a

lot to say on the topic. Brandon has good grades in his mathematics class and enjoys the subject. Unfortunately, Brandon changed schools after a couple interviews.

Derrick – Derrick is a senior, and he is one of the most well rounded students on our campus. Teachers only have positive things to say about him, he gets good grades, and is one of the best student-athletes on our campus. I chose Derrick for the reasons mentioned; in addition, as an exemplary student, I thought he could serve as a mentor to the younger participants. As the sole senior in the study, he added valuable perspective informed by four years in this setting.

Rob – Like many of the participants, prior to the study I had little interaction with Rob. Rob participates in multiple sports and is an honors student in his sophomore year. Even as Rob was taking multiple honors classes, he struggled in mathematics. In speaking to his parents, it seemed more like an age appropriate issue of motivation. In addition, Rob communicated he did not enjoy mathematics as much as other content areas. In interviews, Rob provided some of the most profound qualitative data in the entire study. He was always willing to share, and his perspective on racial issues were very mature.

Alton – Another sophomore student, but unlike the previously mentioned, Alton was mostly concerned with his academics and did not participate in extracurricular activities at the time of this study. Alton is one of the most polite students I have worked with in the high school setting. He is taking an AP class as well as an honors mathematics class, and doing well in both. However, he was not proficient in last year's mathematics AzMERIT. He enjoys mathematics very much. Even though he was

reluctant to share in our meetings, he offered great insight when probed and especially in one-on-one situations.

Nate – I met Nate the first week of school, and was so impressed with his confidence and charm, I thought he would be a great addition to our group. Furthermore, he was new to the school, and once again, I thought participation in the study would help him establish a network of friends. Nate was one of the most willing to share, and offered a great deal of data during group and individual meetings. Nate struggled in mathematics and other subject areas, where I eventually tried tutoring him myself. As he continued to struggle, a family decision was made with the support of the school to get him additional academic services.

Lamar – Soft-spoken sophomore, Lamar, is another excellent student with a high GPA. He is presently taking an honors level mathematics class. Lamar is not a huge fan of his current mathematics experience, but his success and practices he finds helpful were valuable data to this study. He was proficient in last year's mathematics AzMERIT. Additionally, Lamar is not involved in any extracurricular activities outside of the classroom. I also want to mention, like all the participants of the study, Lamar is an impressive young man.

Mark – Similar to the other participants, Mark was a pleasure to have in the group, but was very soft-spoken. Mark struggled in his classes throughout our study. He has gaps in his education. From conversations with Mark, it is evident he missed major segments of his freshman year of high school and has experienced challenges in his home life. He is currently in his sophomore year. Mark had very little to say in group settings, but shared openly in one-on-one interviews.

Hayes – Once we started meeting as a group, a few Black male students approached me to see if they could be part of our project. Even though Hayes joined late, he attended consistently and it made me happy to see he wanted to be part of this experience. Hayes's experience was slightly different from most of the other participants, as he previously attended schools with predominantly Black students. Hayes is a sophomore student-athlete, and he has historically struggled in mathematics, both on standardized tests and classroom grades. He is a good-humored individual, and always kept our meetings lighthearted.

Nick – Nick is a freshman student, who has excels in mathematics and enjoys the subject area. In addition to mathematics, he has done well academically in all of his classes. He has a high GPA and is not involved in extracurricular activities. Nick mostly keeps to himself and his group of friends on campus, but he was always willing to share in both group and individual meetings. Like his peers in this study, his teachers only have positive things to say about him.

Aaron – Aaron is in his freshman year of high school and came to us from another school district. I had very little academic information to go on when I invited him to join our study. After meeting with him for a possible disciple issue, he shared with me some hardships he has experienced in his young life. I knew he was not involved on campus, he was new to our school, and he was struggling in mathematics. His perspective and the opportunity to establish relationships with other participants was my reasons for recruiting Aaron. He joined late due to delayed submission of the consent form, but he was able to contribute greatly during our group meetings.

Methods

One-on-one interviews. This action research utilizes 2 different one-on-one semi-structured protocols (Creswell, 2015). A semi-structured interview format provides opportunities to ask follow-up questions outside the original protocol. The purpose of the semi-structured interviews was to capture perceptions of Black male students' experiences in their mathematics classes and their thoughts on the intervention of this study. I interviewed the first four participants inquiring about their teachers' curricular expectations. The following four participants answered questions about the intervention of this study. The first of these interviews was conducted on October 8 and the final interview on November 21. All transcribed interviews were coded in multiple cycles. The semi-structured interview protocols are under Appendix B and C.

Focus group. The first meeting of this study was a focus group interview with eight of the participants. A focus group is an interview conducted with multiple participants (Creswell, 2015). After establishing the ground rules, the attendees and I conducted a twenty-seven minute group interview. I used an open-ended interview protocol to pose questions to participants, and asked they state their name before replying (Creswell, 2015). The objective for the focus group is to gather participants' experiences in mathematics classrooms. Additionally, I believe the group setting helped some members feel more comfortable sharing, since we were all meeting for the first time. I was concerned with participants' responses being influenced by their peers, so I completed member checking (Johnson & Onwuegbuzie, 2004; Creswell, 2015) to ensure I accurately communicate their perspectives. The protocol for the focus group is under Appendix D.

Classroom observations. Classroom observations were included in the study to triangulate the findings from the interviews. During the observations, I was paying attention to student-teacher relationships, seating assignment in the classroom, forms of teacher praise and criticism, frequency of opportunities to engage in classroom activities, frequency and quality of teacher feedback, the standard of quality expected by teachers in completing academic tasks, and the relevance of the curriculum to Black males. I completed 19 classroom observations, with 9 full-period observations and another 10 walkthroughs. It became difficult to use the study's protocol, while using the district required protocol. Ultimately, I chose the district's protocol and kept field notes that I utilized for the study. The protocol for the observation is under Appendix E.

Student journals. After each intervention session, students reflected in their student journals using Remind.com. The purpose of the journals was to help triangulate the findings from the second set of interviews focusing on the intervention. To complete the journals, which participants initially struggled to submit, they used their personal electronic devices or a school issued iPad. I began by asking participants to complete the journal entry on their own time, but eventually instructed them to complete it before the conclusion of each session. The prompts for journal entries asked students to reflect on their experiences with the reimagined mathematics curriculum (the intervention). Specifically, students shared their general feelings about the sessions, what stood out to them, what they found useful, and suggestions for improvements. The prompts for the journal entries are included in Appendix F.

How methods will address research questions. The first research question of this study, which asked participants to describe their perceptions of their teachers'

curricular expectations, was answered using data collected from the one-on-one interviews, the focus group, and classroom observations. Research question two asked participants what practices they have found helpful in meeting their teachers' high curricular expectations. The action research utilized data from the one-on-one interviews, the focus group, and classroom observations to answer the second research question. Using one-on-one interviews and student journals, the third and final research question established how Black male students viewed the reform practices as part of the intervention.

Data Collection

After recruiting 10 Black male students from my context, I collected qualitative data using 9 semi-structured interviews, a focus group, student journals, and 19 classroom observations. Audio files of the semi-structured interviews and the focus group were created using a personal recording device. For each of these interviews, we met in my office during a period that mitigated interruptions and disruptions. The one-on-one interviews were between 12 and 18 minutes in length. These audio files were transcribed through the services of Rev.com. Data from student journals were collected using the Remind App. These journal entries were already in text form, making them readily available to code. Using an observation protocol, field notes were kept for full-period observations. Collected data were used to address the research questions of this study.

Data Analysis

The data collection phase resulted in amassing large amounts of qualitative data relating to Black male students and their experiences in mathematics classes on our

campus. Constant comparative method allowed for concurrent analysis and categorization of data, while collecting new data (Cresswell, 2015; Fram, 2013). Even though the analysis was ongoing from the outset of data collection, it was only at the end of the data analysis phase that common categories across data sources emerged, ultimately informing the creation of the themes I will present in chapter 4. Transcripts were coded in two cycles, beginning with In Vivo coding in the first cycle and finishing with Focused coding in the second cycle (Saldaña, 2015).

In Vivo coding used participants' own words to create large numbers of initial codes (Saldaña, 2015). At first, all segments of the transcript that I believed could be important were assigned an In Vivo code. This form of coding supports a major goal of this action research, giving voice to marginalized students. Saldaña (2015) states that In Vivo Coding is appropriate for "studies that prioritize and honor the participant's voice" (p. 106). In the second cycle, Focused coding helped to narrow the number of codes through identification of the most significant codes from the first cycle of coding (Saldaña, 2015). These two cycles allowed for preservation of participants' voices while isolating the most significant codes. After completing two cycles across the 10 transcripts, multiple rounds of categorization led to the themes and assertions presented in chapter 4.

The process of analyzing this study's data was both inductively and deductively established (Mertler, 2017). The findings of this action research are a result of specific observations that led to generalizations, hence an inductive process, also known as the "bottom-up" approach (Mertler, 2017). However, there was a deductive component in this study. The conclusion of the literature review pointed to the importance of teachers'

curricular expectations as a mediator for students' academic achievement. In addition to unearthing other factors, the interview and observation protocols' objective was to investigate students' perceptions of their teachers' curricular expectations, which I suspect were playing a role in the current problem's persistence and prevalence. The last sentence fits the deductive model of beginning with a hypothesis, and the ensuing confirmation or denial of the original hypothesis based on the data. Even though deductive reasoning, also known as a "top down" approach, usually aligns with quantitative studies, "top down" is also suitable in qualitative studies (Hyde, 2000).

Procedure and Timetable of Implementation

Shortly after getting IRB approval from Arizona State University, in the summer of 2019 I started looking into the most conducive locations and times to meet with students for the study. Based on the tentative school calendar, I secured both times and locations by August 2019. These times and locations became fluid, as the school setting requires this type of flexibility, full of unforeseen events for both my participants and me. During the summer period, I also began to create a database of potential participants, considering everything from attendance to grades. Eventually, I created a possible list of students to recruit, along with supplementary communication to send to parents in addition to the consent forms.

Once students settled into their class schedules in the first weeks of school, I met with them individually to invite them to be part of the study. All but two agreed to be part of the study. I quickly turned my attention to the intervention of the study, which I created an outline for in the spring of 2019. The process of developing lessons using PowerPoint presentations ended up being time consuming. First, I conducted research on

each of the scholars of color to include in each session. Next, I had to organize the spreadsheet data file we were going to use for our mathematics lessons. To achieve this goal, I had to learn how to use pivot tables watching several YouTube videos. After trial and error, spreadsheets with disaggregated assessment data and accompanying activities were ready for my first session with students.

The official kickoff of this study was a focus group interview on September 19, 2019. Our second meeting was an intervention session on October 3, 2019. This session presented some technological challenges, which were remedied by securing Chromebooks, as these laptops were easier to use than students' personal electronic devices. The remaining intervention sessions dates were also in October. The first one-on-one interview took place on October 8 and the final interview on November 21, 2019. There was always a quick turnaround between interviews and transcription, to allow ongoing and timely coding. Using constant comparative method I analyzed and coded all incoming transcripts after completing the first interview (Cresswell, 2015; Fram, 2013). Nonetheless, much more time was dedicated to coding, to establish themes and assertions. It took the rest of November and through February of 2020 to finalized the assertions of this study. A timeline of the research is under Appendix A.

Trustworthiness

Qualitative studies rely primarily on the researcher's accurate methodological adherence and interpretations to assure its audience a high degree of truthfulness. Whereas quantitative studies test for validity and reliability, quantitative studies aim to establish trustworthiness (Creswell, 2015; Ivankova, 2014). This study will address issues of trustworthiness through Lincoln and Guba's (1985) indicators of rigor, which

includes credibility, transferability, dependability, and confirmability. In order to demonstrate how this study meets the requirements of the four indicators of rigor, I will first discuss the use of triangulation, member checking, and an external audit. In addition to using the aforementioned to address trustworthiness, I will also discuss the maintenance of extensive documentation for an audit trail, which is important to both dependability and credibility.

Triangulation is the process of corroborating findings across participants and data types (Cresswell, 2015; Ivankova, 2014). This study draws primarily from interviews and journal entries to establish themes and assertions presented in chapter 4. Only findings echoed by multiple participants made it through the multiple rounds of coding and categorization. This was achieved by keeping a frequency of each code in individual transcripts and across all transcripts. In addition, each finding was confirmed through additional sources of data. For example, a majority of the experiences communicated by participants was consistent with what I observed when I visited their classrooms.

Ivankova (2014) asserts that member checking is crucial to establish credibility. To complete this important step of gaining confirmation from participants, Ivankova recommends reviewing transcripts verbatim or to summarizing the findings of the interviews. On October 31, 2019, I chose to summarize the findings of the study to my participants seeking to gain verification and clarification. Participants agreed with the list I presented and the summary of each finding. In addition, to ensure my coding, interpretation, and final presentation of findings was credible and dependable, an external audit was conducted by a committee member of this study (Cresswell, 2015; Ivankova 2014). For the external audit, a documentation trail of the multiple cycles of coding,

categorizing, and notes that were created leading to the final themes and assertions of this study were examined.

The four indicators of rigor ask the following questions: (a) do the findings reflect the truth? (b) are findings applicable in other contexts? (c) is the study consistent and repeatable? and (d) are the findings consistent with participants' views and not a result of researcher's bias? (Ivankova, 2014). Steps taken to maintain truthfulness include using In Vivo coding to preserve participants' voices, member checking to gain participants' approval, my own observations, and triangulation across individuals and methods. As generalizability is not the goal of a qualitative study, the study aims to possess transferability, by providing detail about the setting, methodological adherence, and maintenance of relevant documentation. The consistency portion of dependability is addressed through triangulation and the external audit, and repeatability with the documentation of all study components, especially the methodology. Finally, similar to the other indicators of rigor, the study relies on triangulation, member checking, and detailed documentation for confirmability of findings. Furthermore, issues of potential bias are discussed in the positionality section of this study and again in the limitations section of chapter 5. As biases in qualitative studies are normal, but need to be accounted for.

CHAPTER 4

RESULTS

Chapter 4 is the presentation of the most salient findings of this action research. After coding all the relevant qualitative data through multiple cycles and categorization, I settled on four themes and five accompanying assertions. The themes include *my learner identity and identity in the mathematics classroom, barriers to my success, teachers' curricular expectations and factors influencing my academic success,* and *the intervention*. Assertions of this study will communicate participants' desire to be successful in mathematics and their positive learner identities despite persisting achievement disparities, what they perceive to be barriers to their success, their teachers' curricular expectations, practices they have found to be helpful, and their views of the intervention, which was an attempt at mathematics curriculum reform.

The remainder of the chapter will include detailed discussions of the four themes and five assertions that emerged in the data analysis phase. Beginning with the first theme, full and succinct descriptions along with relevant quotes follow the presentation of Table 3. Table 3 is a road map for the rest of the chapter, and offers a quick glance of this study's findings. The table is a synthesis of how I decided to packages many pages of informative qualitative data. Even though organization and presentation of this chapter is my best attempt to present the findings in a concise manner, I have tried to maintain a commitment to giving my participants a voice by letting them do most of the talking using their quotes. The following includes the many lessons I learned, engaged in conversation with participants, reading their written reflections, and my observations of their classrooms.

Table 3

Themes, categories, and Assertions*

Themes and categories	Assertions
My learner identity and identity in the mathematics classroom 1. My feelings on mathematics 2. Assessment of my mathematical abilities 3. The type of student I am 4. What I do to succeed	1. Despite achievement disparities in mathematics and varying appreciation for the subject, participants still maintain positive learner identities in the mathematics classroom.
Barriers to my success 1. My teacher and traditional curriculum 2. Relevance in mathematics 3. Personal and structural factors	2. A primary factor hindering academic success in the mathematics classroom is what and how participants are taught.
Teachers' curricular expectations and factors influencing my academic success 1. My teacher's expectations of me 2. How to help me succeed academically 3. Familial and other adult influences on my academic success	3a. Participants believe that their teachers think highly of them, expect them to succeed, and treat them no different from their peers. 3b. They preferred teachers who interact with them and care about them, even when those teachers are strict and academically demanding.
The intervention 1. My feelings on our meetings 2. Awareness of academic disparities and my response	4. Learning mathematics by addressing problems that affect participants and incorporation of content that aims to address their invisibility in the curriculum led to increased relevance, interest, and self-awareness that suggest signs of empowerment and self-betterment in the mathematics classroom.

*--Note: Themes are in italic font.

My Learner Identity and Identity in the Mathematics Classroom

The impetus for this study is the current achievement disparities Black male students face in mathematics. Therefore, interview questions sought to establish students' feelings about the subject, self-assessments of their mathematical abilities, and personal practices that have helped them achieve success in their mathematics classes. Even though most participants indicated that mathematics is not their favorite subject, not only did they aim to succeed in their mathematics classes, they felt they were average or above average in the subject. Participants attributed their success to paying attention in class, asking questions, and their personal perseverance.

The first theme that emerged during data analysis described participants' mathematics learner identities. This theme aligns with the following categories: (a) my feelings on mathematics, (b) assessment of my mathematical abilities, (c) type of student I am, and (d) what I do to succeed. The first assertion of this study is, despite achievement disparities in mathematics and varying appreciation for the subject, participants maintain positive learner identities. They care very much about being successful in all their classes, and specifically their mathematics class. The following is a discussion of each category within the first theme, along with relevant quotes. There is an adherence to counter-storytelling (Solorzano & Yosso, 2002) in this study, by constructing student profiles that reject notions of deficit thinking as a result of prevailing Black male achievement disparities, utilizing their quotes.

My feelings on mathematics. During most student interviews, we explored how participants felt about mathematics. Some stated that mathematics is not their favorite. When I asked Mark what his favorite subject is he stated, "it's not math because math,

it's not as interesting." Expressing a similar sentiment, Hayes commented, "math is my hardest subject." Rob noted, "I just don't enjoy it as much," as the reason that mathematics is not his favorite subject. Lamar had similar feelings, asserting, "well sometimes for me I really only like math if the stuff is really easy." He also added, "if it's confusing and I don't really understand it, then it just gets annoying." Ultimately Lamar concluded "to be honest, I just don't really like it." These students mostly held negative views about the subject of mathematics, and it came down to absence of enjoyment.

However, beginning with Nate, negative feelings towards mathematics started to shift. On the topic of his favorite subject, Nate stated, "it used to be math." He attributed a bad experience with a mathematics teacher in the 7th grade on why the subject is no longer his favorite. He added, "it's like, when I get it, I like it." Further elaborating, Nate asserted, "when I understand it I'm like, okay, I like this. It's simpler than it looks." For Derrick, even though he liked history the best, on his feelings towards mathematics he expressed his opinion in this way, "I think it is valuable because I have no idea what I'm going to be doing in my life." This was during a focus group when other students were questioning the value of mathematics, which I will discuss later in this chapter.

As a former mathematics teacher, I was slightly saddened but not surprised to hear most of my participants either did not enjoy mathematics or were indifferent towards the subject. Then came Brandon, Alton, and Nick with positive views about mathematics. All three stated that mathematics was either their favorite subject or they enjoyed it. Beginning with Alton, I quickly learned why he enjoyed mathematics as he explained, "math is my favorite subject because it's pretty easy. I just like working with

numbers a lot. Numbers are cool." Nick also stated that mathematics is his favorite and he has only had positive experiences in the subject. On the topic of his experience and previous teachers, Nick stated, "I can't really think of any bad math teachers that I've worked with that were just that bad. So I don't really think I would change anything really." Brandon, Nick, and Alton spoke mostly of positive experiences in mathematics, which was in contrast to their fellow participants.

Assessment of my mathematical abilities. In the previous section, participants discussed how they feel about the field of mathematics, as they experienced it in schooling. Naturally, a follow-up question asked how they would rate their individual mathematical abilities. The responses predominantly indicated that participants felt they were average to above average, with the exception of a few participants. Beginning with Mark, his prior performance in mathematics has not been stellar, but he stated, "I'm a decent math student." Rob also had positive assessments of his mathematical abilities asserting, "math is not hard for me." However, Rob did communicate in the previous section that he does not enjoy mathematics.

Continuing the trend of positive self-assessment of personal mathematical ability, when asked if he was a good mathematics student, Brandon replied by saying, "yes, I am a good math student." Nick said "for some reason it just comes really easy to me," adding "in general I feel like I'm kind of a little above average." Speaking to why it was easy for him, Nick claimed, "it was kind of like review and I was kind of ahead of the game." Derrick also expressed a positive assessment of his mathematical ability, when he recalled, "I used to like math in elementary school because I was really good at it." Additionally, he stated, "I would describe myself as a good math student. I pay attention

and do the homework." Nate claimed he was a good mathematics student in the past, but not in recent times, adding, "if I understand it… then I can do it."

Hayes had a little more to say on the topic of his mathematical abilities by first expressing some of the recurring difficulties he has faced. He stated, "it's hard to understand all the numbers and stuff," adding, "and how they move it around, you got to put this number there, and then something." However, when I surmised that those statements imply he does not consider himself a good mathematics student, Hayes expressed that he is an average mathematics student. As outlined above, most students see themselves as being average or above average in mathematical ability. A few students did not feel they were strong in mathematics. As I transition to subsequent sections, it is important to pause and reflect on participants' assessment of their mathematical ability, and their feelings on mathematics. Especially since the problem of practice has much to do with disparities experienced by Black male students in mathematics achievement.

Type of student I am. One of the primary goals in interviewing participants was to establish a sufficient understanding of how they experience mathematics classrooms. Whether they pay attention, complete assignment, and generally put in effort in their mathematics class. On this topic, Derrick provided an account of what types of academic tasks he engages in:

> I pay attention a lot. But say I had a homework in another class that I didn't do at home because I almost never do my homework at home and do it at school. If I'm not at school and I'm doing something else, I'm not doing homework.

Derrick is essentially expressing, while he does pay attention, he is also using class time to complete other assignments. Mark stated he always pays attention and he is usually

"trying to learn and figure things out and not being a class clown or always getting in trouble and stuff."

Hayes and Nate both stated that they try in class, but Nate added that even though he tries in class, "it's too boring." Rob added the following, "I doze off. I just get bored sometimes because it's not really engaging most of the time." Lamar's remarks were consistent with Hayes and Nate on putting in effort, as he commented, "I pay attention all the time." Lamar also said that he is the type of student who does not get frustrated in class. Alton, like his peers stated he does not get frustrated in class and he pays attention. Elaborating on the type of student he is in class, he noted:

> I am a good student mostly because I'm motivated and I'm eager to do the work. Even when I don't even know anything, I am eager to go back and study it to give… because I like to give my effort to things, especially things I'm interested in.

It is clear through the quotes that students mostly pay attention or engage in academic tasks while in class. They did point out boredom sneaks in from time to time, hindering on task behavior. These quotes indicate that our mathematics curriculum is potentially lacking the type of relevance and connections that students need to stay engaged throughout the entire class period.

Nick also commented that he does not get frustrated in his mathematics class and he has not experienced frustration with his teachers. Speaking to what his teacher thinks about him, but more importantly, the type of student he is, Nick stated:

> he thinks I'm just a regular student because for me even if I know an answer or a problem, for instance, the other day he gave us this problem that most people didn't actually understand or do, and he asked to raise our hands if we got it correct. I raised my hand and he actually didn't event really look at me because I don't think he really expected me because I didn't actually speak up. I don't

> really speak up to where I act like I know and… I just am kind of under the radar, just doing it I guess.

I asked Nick to elaborate on why he prefers to stay under the radar as he put it, Nick replied:

> just a personal decision because for me, I don't really like the popularity and just people looking at me like that, just like know what I'm doing. I just kind of feel like I don't want to be average but I want everyone else to think I'm average.

Like the others, I asked Nick if he pays attention in class. He replied to my prompt with this statement:

> yeah, most of the time because I feel like I'm forced to because my parents say that if I don't actually have all A's at the time, I'm not able to use any of my electronics. And for me, I feel like I'm a slave to my electronics, so it motivates me even more because I feel like I have to pay attention if I want to go home and do what I want to do.

Finally, on the topic of whether he gets frustrated in class, Nick offered one of the more complete responses, commenting:

> I guess to a point, yeah, because I know that maybe if I don't understand it now, he's probably going to repeat it later and it's going to expand even more. And if I don't understand the basics of it, I'm not going to understand the… when it gets harder and harder. So I guess, yeah, a little bit. But I don't really get discouraged like that much to the point where I guess I don't understand like the pace.

Nick is one of the stronger mathematics students in our group. What stands out about Nick is how he does not want recognition for his mathematical abilities, and is aware that his teacher did not expect him to answer in the instance outlined in one of his quotes.

When I asked Brandon if he pays attention in class, he answered yes. Brandon went on to explain how his grades demonstrates how much he pays attention, stating:

> only me and like one other kid that's asking questions in class and everyone else is quite and that's why everyone else is failing that class getting a C or D. In Mr. Stephens's second hour. Everyone else is like a C, D, and a few people have A's and I have a B right now.

Brandon also discussed how he interacts with his classmates in his mathematics class, which reinforces the type of student that he is. In Brandon's words:

> I just try to focus on my own work. And if they [classmates] ask for help, I try to give them the help that they need. I just try to be an overall good student and just try to help out when I can and not help out when I don't want to. I know sometimes they don't need my help, or sometimes they need to figure it out for themselves.

The quote above and the interview data imply that participants care about doing well in their classes. Generally, participant replies indicate they all pay attention to some degree in their mathematics class. There are instances of boredom, but there are also instances of unwavering dedication to academic excellence. In Brandon's case, in addition to his own success, he shared how he helps his classmates when they are struggling. In the next section participants share individual practices they have found to be beneficial to their academic successes.

What I do to succeed. At times interview questions led to students to reflect on practices they have found to be helpful in meeting their teacher's curricular expectations. One of the more reflective of the participants was Alton. He began by asserting:

> I think a factor of me being successful in math is that… if I'm learning something and it's intriguing to me, or whatever, like I said before, I'm going to stop at nothing to do that. Basically a factor would be, I don't stop to do something that I want to do, or I want to learn.

Alton expanded on his strong drive to succeed in academics and his personal perseverance by noting:

> if I join a class and I'm confused, I wouldn't drop out. That's a good example. Even though it would probably be difficult for me because I don't know anything, I would still… I wouldn't drop out because I just don't give up. That's another fact that I don't like to give up.

Alton presented himself like the type of student who would exhaust all possibilities before he gave up academically, adding:

> even when it's difficult, I try to learn the best I can and try to do the best I can. And if it doesn't work out, then that's that. But, usually when it's that type of difficult circumstance, I usually just figure it out myself and then I could get on board and I get to being engaged and like everyone else.

In addition, Alton worked hard outside the class, noting, "every time I go home, I just study, like the lesson." Speaking about his notes and homework, Alton concluded:

> when I go back to them, it's a lot of stuff to process in my mind. So I have to kind of process it with myself and go over it again. Like do it twice, do the lesson, and then go home and study it like he recommends us to do, which I love because that can motivate me…

The preceding quotes demonstrate a steadfast commitment on Alton's part to mastering the content in his mathematics class. The aforementioned quotes demonstrate how he relies on himself to understand the material after the classroom lesson. However, when I asked if he ever gets frustrated in class, he replied:

> I did get frustrated, but at the same time, always had friends who would help me figure it out. So that way, I wouldn't have to go through trying to figure it out myself, even if… because I don't really know the information, so how can I really teach myself.

In addition to working individually to revisit material he did not understand in class, when necessary Alton leaned on his classmates to help fill-in the gaps in knowledge.

Brandon also had a lot to say about practices he has found to be helpful in achieving success in his mathematics classes. He opened by stating, "I was probably successful because I actually did the homework, and I actually asked questions." Adding, "and when I was confused I asked my friends for help. If they were confused, I asked Mr. Smith for help because I know he's there for a reason." Eventually Brandon

summarized his efforts by claiming, “I actually utilized my resources, and I was paying attention in class.” Similar to Alton, Brandon also communicated a strong dedication to succeeding with the following remark:

> I show up to my classes. Even if I start ugly in the beginning of the year, I always finish strong. It doesn’t matter how I start it. If I have an F in a class, I could have a C in a class. I always can start bad, but I finish strong. In fact, if I start strong, I always finish strong, as well.

Nick’s response to practices that help him succeed were similar to Alton. To succeed, Nick stated, “I’d say just either ask for help or, yeah, really just ask for help or go home and try to find problems like that.” Echoing what Nick said, Lamar commented, “I had to focus a lot more and ask questions just make sure I knew what I was doing.”

Nate’s strategy was simple; he asserted, “I just have to focus. I just have to focus.” At times Nate was slightly unsure and could not put a finger on what has helped him succeed, but he did communicate sitting in the front has been academically beneficial to him in the past. Rob offered more of a general recommendation for him and his peers, claiming, “it’s just we have to try and then we have to also not be so cut off when they try to help us and actually try to be open to help.” For Hayes, he felt he increased his chances of academic success by choosing to be on our campus over his homeschool. Hayes stated, “well that’s what I’m here for. I’m trying to get out of here.” He added, “I’m giving myself a better opportunity to get into a good college or something like that.” There were common practices that led to academic success like paying attention, asking questions, and persevering during challenging academic situations, but ultimately each participant also had idiosyncratic practices that they believe will lead to academic success.

One thing that stood out with students who were earning good grades in their mathematics classes was their appreciation or love of the subject. I believe this was a factor in their desire and ability to spend more time outside of classroom reviewing notes and practicing problems. Speaking to the importance of educators helping all students foster an enjoyment for doing mathematics. I argue this is best achieved by incorporating more classroom activities that take into account the interests of all students, boosting not only relevance, but also a love for the subject. In other words, the onus is on educators to constantly refine our practices to meet the needs of all students. The most salient literature from chapter 2 and communication from participants included in this chapter, points to a shift from mostly teacher-led instruction to more student-centered interactive and collaborative structures as a possible starting point.

Barriers to My Success

Participants communicated difficulties attaining academic success in their mathematics classes when teachers taught fast or just provided notes, followed by independent practice through homework. Participants also expressed concerns with the sequence of mathematics classes, and the absence of relevancy in the mathematics curriculum. Additionally, students voiced an inability to recall mathematics facts consistently, which are challenges that all students face. Furthermore, participants spoke in disparaging ways about a demographic group to which they belong; exhibiting *internalized racism*, conscious and subconscious beliefs about individual and collective inferiority that maintain social inequities of an oppressed group, which communicate negative and limiting messages to self and others relating to faculties and capacities (Harper, 2007; Huber, Johnson, Kohli, 2006). As well as external factors, including their

minority status on campus, and other structural factors. It is appropriate to conclude participants experienced challenges that all students face due to mathematics being a difficult subject. Nonetheless, participants shared additional factors that seem to relate to their racial background.

The second theme that emerged during data analysis communicates current challenges participants are experiencing in and out of the classroom, but all being factors to their academic success. The theme *barriers to my success* aligns to the following categories, (a) my teacher and traditional curriculum, (b) relevance in mathematics, and (c) personal and structural factors. The second assertion of this study, as communicated by participants, states, a primary factor hindering academic success in the mathematics classroom is how and what their teachers taught. The following section will outline the concerns participants communicated relating to teachers' curricular practices that are impeding or at least not contributing positively, to their academic success. In addition, participants expressed personal and structural factors, which are possibly reducing the chances of optimal educational outcomes.

My teacher and traditional curriculum. Listening to participants in interviews, as they describe their experiences in the mathematics classroom, I was eager to learn more about what students felt were factors acting as barriers to their academic success. One of the first factors to emerge had to do with teaching styles, and teachers' practices in the classroom. Alton began with his concerns about a previous mathematics teacher, commenting, "she taught extremely fast. The problem was teaching fast." After a follow up questions, he continued by sharing the following:

> she kind of never really explained... Some people would ask why this answer is that, but with my teacher now, the difference between them two is just that he explained it to us. We did class where we went over it and she gave us a study guide, this and that, but I feel like notes are better than the study guides. I just feel like with that, I was doing better with the notes than I did with the study guides because the study guides, that's more independent. We didn't really go over this study guides … I don't know why, but... She was just never engaged.

Alton is describing a practice other students also pointed out. The teacher gives students materials and lets them work independently, post direct instruction. Alton finished by asserting, "maybe just because it was confusing because I didn't know what I was being taught. It was just being wrote down. It was just being on the board written down and nothing was really been explained to me." Derrick had the same teacher and he shared a related experience, agreeing:

> my sophomore year I had Ms. Norton and she was just ... write down ... she'd do the problem herself and then give us the homework, shooting over all the problems. She wouldn't like tell us how to do it. She would do it herself and then she would have us do them. And I was, I don't know, it was really hard for me because I had to like look up on YouTube sometimes on how to do stuff.

Nate similarly expressed a concern with teachers moving through notes then beginning independent work. Describing his current teacher, Nate commented:

> he rushes through the notes and then just gives us the homework, then I like... I'm like, "okay, I feel like I've seen this, but I don't remember how to do it." And then I got to go back to my notes.

In reference to the previous scenario, Nate elaborated on his feelings, stating "so I'm never like, 'okay, let me learn.' I'm just like, 'okay, I'm going to take my notes and then do the homework.'" He continued to express his frustration, explaining, "in that instance, some of the teachers would just sit at their desk" after getting student started on independent work. On the topic of his teachers' practices after notes, Nate concluded:

> and then be on their computer and not focus on the kids and I got my hand up for five minutes and… then I just put my hand down and try and ask for help and if somebody doesn't know it then I just go to the next one.

Nate also shared some challenges with teachers from the past; stating,

> it was just Ms. Ottino ... I don't want to bash her, but she wasn't... she didn't have any energy. She was just very bland. She was like, "okay, if you don't know it then I'm going to keep moving."

Additionally, Nate said this same teacher would tell the class "if you don't know it, then ask your partner." Nate explained how none of this worked for him as a student.

Ultimately, what Nate communicated was a desire for his teachers to interact with students throughout the class, even during the lesson. He claimed, "if a teacher who just gives us the assignment and just tells us to do it, I don't ... I'm not productive like that." Nate felt his teachers had a tendency to bifurcate socializing and learning into distinct segments, commenting:

> I do feel like if teachers are really strict on their curriculum, they have to get the work done. If they feel they have to get the work done and then socialize. I feel they need to socialize and get the work done, not just get the work done then talk to everybody.

Nate preferred that teachers maintain high energy, engaging the classroom throughout the class period. In addition, he expressed a dislike for how teachers call on students to answer questions. He did not find it beneficial when classmates blurt out answers in class, arguing:

> what's bad about that is if somebody's stuck and he shouts it out and ask for the answer and everybody tells it and that person's stuck, they don't get that extra help that they need. That's why it's hard for me and that's why I can't pay attention.

All scenarios described by Nate and his peers occur regularly on our campus and the teacher has the ability to modify these practices. This is important to note, since

modification of these practices could lead to improved academic outcomes for my participants, and all students for that matter.

Nick shared similar views on challenges students face when teachers give notes then provide little assistance on assignments, asserting, “if they just put the notes out and they do the bare minimum, you really have to want to learn to actually, I guess, get the curriculum in your mind.” Nick believes the only way a student can be successful at this point is if they possess personal drive to learn. Lamar also communicated the following, “yeah, I have Ms. Norton too. She just puts the notes on the screen and then answers a question and gives us our homework.” Expanding on what he means, he stated “to be honest, having HMH [online homework] almost every day to me is not really that fun because all we do is just learn the lesson and do HMH.” In addition to the repetitive nature of going over notes, then transitioning to the online homework, of the content Lamar lamented, “in geometry we have to do proofs and it's just hard to memorize all the different types of proofs and stuff just to solve one thing.”

The final concern students had on the topic of curriculum was surprisingly on the sequence of classes. Educators discuss the progression of algebra I, followed by geometry, followed by algebra II, versus, algebra I, followed by algebra II, followed by geometry. Nate was the lead on voicing this concern, arguing “it's hard, but if I wouldn't have had that gap from 1-2 [algebra I], to geometry then 3-4 [algebra II]... If it was 1-2, 3-4, then I would've been so much better.” Nate expressed this multiple times and in multiple interviews. Alton also felt it was an unnatural progression, asserting “I think it was kind of weird that I like jumped from Geometry.” It was slightly surprising to hear students discuss a topic that usually concerns mathematics educators, as the progression

of courses is a change that could possibly increase students' chances on mathematical success.

Relevance in mathematics. As part of the literature review, *culturally relevant pedagogy* (CRP) stood out as a possible intervention to address the problem of practice. However, the educators in the study's setting, let alone the participants, were not familiar with CRP. For this reason, questions asked students to speak to whether they found what they were learning useful and relevant at this point in their life and for the future. Derrick was one of the students who expressed his desire for more real-world problems in his mathematics classes. He began by stating, "I feel like all students would be beneficial [sic] towards real life problems because it'll help us be ready for the future and stuff." Derrick believed the benefit of relevance in what students were learning extended to all students. He continued by expanding on this sentiment, commenting:

> maybe they did band or played sports or did anything, if it pertained to something that they are interested in, I feel like they would be more interested because, if I'm in geometry class and I'm just learning about a hectogon, I don't really care about the hectogon. You know what I'm saying? But if it has basketball, the trajectory of the basketball, and all this other stuff I... If I played basketball, I think that would be cool.

Other participants also expressed a preference for content that would be useful later in life and connect to their current realities.

Brandon communicated what he has been learning by stating, "I'll call it just necessary because it's just not that cool in my opinion. It's more necessary to learn the next thing." He did not find what he was learning was necessary for his future, claiming "I feel like hopefully they can change algebra because, like I said before, more engaging problems, real world problems." Adding to his feelings about real-world content,

Brandon asserted, “I know that there's classes for financial math and other stuff like that. I feel like if you started teaching us in freshman and sophomore year real-world problems, we can apply it, too.” He eventually concluded, “everyone can be aware and be like, ‘okay, this goes with my taxes. I should pay attention because I have to do this two or three years from now.’” There was almost a consensus on what I understood to be a rejection of what students usually experience in mathematics, which is the delivery of abstract concepts or concepts that seem detached from participants’ future needs.

The more participants shared on this topic, a feeling of the mathematics content they are learning not being useful to what they imagine they will do in the future became increasingly palpable. Brandon expressed more specifically how the mathematics content he is learning relates to a future career or lack thereof, when he explained:

> I feel the job, whatever we got to choose, it usually doesn't involve the math. If you like geometry, you're not going to be using geometry for like ... at least I would say for a psychiatrist. I'm not going to lie. I am not even going to use shapes trying to figure out how to figure someone's bad chemical imbalances work. But if you're getting into construction and all stuff, then I guess it's really good for you. I feel it depends on what's your career choice is.

Rob expressed a similar feeling towards geometry, when he stated:

> I mean I don't really get needing to use geometry in the future besides going to college and stuff. But I'd like to say that as a construction workers, someone that needs to cut and be able to do stuff, then that made sense. But you say, you play a sport. Why do you got to know geometry?

Lamar added to the group’s desire of making mathematics more real-world and relevant, when he asserted:

> I agree with Brandon with the real world problem thing because like ... When we just learned to solve for something, it's not as easy as if you say like, "oh someone has this amount of this and then they take away this amount." And then it just, for me it makes it easier with problems like that.

Nate and Nick took more of a humorous approach to critiquing what they are currently learning. Nate stated, "I think there is no value in *b* squared." He felt that mathematics classes should aim to prepare students for everyday skills, as he suggested, "so you can work really like your money and stuff." Nick claimed, "I don't think we're going to use those kinds of equation if we get older." He added, "*y* equals…, when are we going to use that?" He believed the basic mathematics would be more beneficial, but also had a recommendation on the type of mathematics he should be learning:

> if they show how it can tie into future jobs that most people might want to go into when they grow up, I guess people might see how it's kind of required to actually know that kind of stuff and maybe motivate them a little bit more to learn it.

Participants also communicated instances when relevance in the curriculum created a positive classroom experience, and in Alton's experience, a yearning for more:

> what makes it interesting is that I just feel like sometimes we should be learning more adulthood like stuff. Probably like... recently, we've been learning real-world problems. We were learning about interest and how to calculate interest and stuff like that. So I think that's a big part of adulthood because you would be definitely accounted with the interest and stuff like that. And I think we should be learning about mortgage and stuff. Just stuff I would actually use when I get older, important things because I don't know anything about that. I didn't even know how to calculate interest until like now.

Mark and Rob did speak about the curriculum from the intervention and its focus on relevance and personal connections. One of the goals of the intervention sessions was to make the content more relevant by ensuring the participants see themselves in the content.

I will present a section on the results of the intervention in the final section of this chapter. However, it seemed fitting that the following quotes from Mark and Rob are included in this section. These quotes reflect students' experiences and feelings on the

curriculum from the intervention. The curriculum from the intervention is an early iteration of possible curriculum reform. On the topics and the mediums we used to cover the content, Mark stated:

> I think that would be useful and really exciting to learn about because it could make you actually want to come to class to learn something different if the teacher was like, "tomorrow we'll be learning about this person and showing you a video," or something. Then some people who might not look up and be like, “oh I got to go this math class,” they'll actually get up and, “I want to see this and stuff.”

On this particular day, and in all the sessions, we took time to learn about scholars of color and discuss the barriers they experienced in different eras of American history. Even though Mark expressed how learning about historical figures who look like him brings personal excitement and excitement possibly for others, he still found what he is currently learning valuable, asserting “I think it’s relevant to me because… I mean I think everybody needs to know math.”

Rob offered additional insight on the curriculum from the intervention. Citing how he learned “where we come from. Because we don't often hear about that because you learn about other people, but not us. Well I don't have a problem with learning about other things.” He also added, “but I don't find it as interesting about learning … it might sound a little selfish, but I learned about my traditions and culture.” Rob said learning about scholars of color was not so much about race, and more about “people who are important to our society. And that give hope for people of lower classes to get out of their situation.” Rob concluded with one of the more powerful quotes on this topic. Speaking to the importance of this type of curriculum, he said “because then we wouldn’t have to

be like, ‘oh, only white people do this and only.’ Well anyone can do anything if they wanted to. That’s why we’re free.”

During the classroom observations, there were instances where I saw some of the practices discussed by participants in this section. Particularly, employing a predominantly lecture-based instruction, followed by independent practice. In most classroom observations, the class period was structured similarly. Warm-ups followed by examples, and concluding with independent practice or on occasion, unstructured work with a partner. As participants pointed out, there were times where teachers moved through examples quickly, but there were also instances where teachers explicitly modeled for students. However, as teachers explicitly modeled, some had a tendency to do all the steps, rarely taking opportunities to check for students’ understanding.

Consistent with participants’ accounts, questions were frequently posed to the entire class. More often than not, the same students volunteered to answer, making it difficult to identify students who do not understand the material. On the topic of relevancy, most of the examples from the observation involved teachers modeling with an emphasis on helping students master procedural knowledge. These activities usually required students to solve and graph equations, factor expressions, and use givens to complete proofs. There were occasions when these concepts were applied to word problems that offered real world applications. However, it was evident in most of the observations that students work on mastering the procedural aspect of a mathematical concept and not as much time making connections to their current and future lives.

What was not observed in the classrooms I visited was the use of reform practices as presented by Wooley et. al (2010) and Boaler and Staples (2008). These practices

emphasized depth over breadth insomuch that teachers should dedicate more time to complete less items at higher standards, in place of more examples and worksheets. Reform practices prescribed more time during the class period for students to interact with one another. Ladson-Billings (1995) echoed a similar recommendation as part of *culturally relevant pedagogy*, calling for knowledge to be shared and constructed between students in the classroom. Wooley et. al (2010) asserted these types of reforms would increase students' motivation and academic achievement. In contrast with my observations of mathematics classrooms, Flores (2007) stated that Black students needed more time spent on problem solving tasks, rather than the more procedural mathematics lessons that fill up most of the class period. Additionally, Flores asserted that high standards for academic achievement should be accompanied with high levels of support.

The same support is needed to realize the shift in curriculum Boaler and Staples (2010) suggested, which would move teachers from a protagonist role in the daily lessons, to a supportive role, guiding students in small and whole group collaborative structures. However, these types of reforms will not see implementation if the pervasively observed model of lecture to independent practice continue in our mathematics classrooms. What the observations demonstrate is a need for increased focus on CRT's *challenge to dominant ideology*. Meaning, the *color-evasive* curricular practices in the classroom continue to disadvantage Black male students. Furthermore, due to the current structure of the class period, both student-to-student and student-to-teacher interactions are limited. Not only does this take away from building strong relationships between students and teachers, it eliminates any chances of students and teachers sharing their cultures with one another. This is a pillar in *culturally relevant*

pedagogy, and a practice that would increase a sense of belonging in Black male students and other students of color.

Personal and structural factors. In the following section I will present instances when participants voiced personal challenges to their academic success, as well as factors I have identified as possible barriers to participants' academic success. Some of the personal challenges that participants communicated stood out to me because they are no different from their peers and not specific to Black male students. Alton expressed the difficulties he experiences in his mathematics class by stating:

> I would say a difficulty with math is my memory probably. When I learn something, or a lesson in class, I probably need to probably go back and study it a little, so I could just have a good memory of it. Sometimes, my memory can just doze off and I'll be like, "How do you do this again?"

Memory was a factor that Alton mentioned several times during the interview and needing to frequently revisit notes to recall what he needs to do. Nate similarly expressed a tendency to forget how to do something and backtracking to refresh his memory. Nate described the exact point when he has difficulty with recall, as he explained:

> just when you're sitting there, and I'm following along and then we get to a part in the problem and I just get stuck. And then I forget what to do and then I got to go all the way back and restart the problem and then try to find out where I messed up to correct that.

Like Alton, for Nate it was ultimately about his memory and his inability to recall the correct steps. On the same topic, Nate communicated the following:

> some things I remember, but some things I'm like, like it'll be on like the tip of my brain in one word. Okay. I know what this is, but I don't remember how to do it or I've seen this, but I don't remember how to do.

Nate and Alton seem to face challenges associated with their ability to recall mathematics facts differently. Whereas Alton refers to his notes early and often, understanding that

recall is a challenge for him. Having worked with Nate in a tutoring session, he has not had the same success referring back to examples. Moreover, I believe the way they utilize their notes was influenced by their previous experiences in mathematics and enjoyment of the subject. Nate and his mother shared that he has had negative experiences in mathematics since 7th grade, whereas Alton's experiences in mathematics have been mostly positive. Nate seemed turned off by out of class work, while Alton was driven to continue his successes. What Nate is experiencing is something that could be addressed with *warm demander pedagogy*, setting high standards for him and following it up with ongoing support.

The previous section was included because students communicated challenges they had with memory, but it was also included because it is a challenge all students face to varying degrees. However, Hayes and Rob gave me much to think about when they expressed what I would describe as structural factors that act, or could act, as barriers to their academic success. Unlike issues of memory, these factors were specific to my participants. Hayes, like his peers, communicated his feelings on Black male students' minority status, when he pointed out, "we barely have any Black kids and we need more so we can feel more comfortable." When I followed up with whether he felt uncomfortable due to his minority status, Hayes said, "I feel comfortable some days, then not comfortable ... Yeah. But I'll get over it." However, Hayes also implied that he was attending a school with predominantly White students over his more racially diverse homeschool, because he felt he had a better chance of academic success at a school with more White students. Hayes described why he was better off in a school where he is a

minority, claiming, “since I'm surrounded by a lot of white people, it makes me focus more because I don't pay attention to all the stuff they do.”

Hayes at times spoke in a manner consistent with *internalized racism,* since the comments address a group he belongs to, Black males. Hayes felt that not every Black male student in his environment wants to “get out” as he put it. Hayes contends, “they’ll go to the streets or something and don’t want to get an education.” Hayes continued to make his point by expanding on the previous comment:

> they can decide if they want to go to college, or go to get a degree or whatever in science or whatever. And then get a good job, be a lawyer. But most of the time they don't want that. They don't even like school. I don't like school, but I'm still trying to do it so I can get out of here.

Hayes’s comments primarily focus on establishing his reason for being at a school with predominantly White students and his feelings on why he believes it is better for him educationally.

Rob added to a segment of codes reflecting *internalized racism* by trying to make sense of the current disparities Black male students face in academics, noting:

> I just feel like we haven't really put out the work and the effort into wanting to change. Because we're just so comfortable being like less than I assume. Like that we don't want to or we're so close minded that we don't want to succeed.

These are possibly damaging views about one’s group affiliation. However, there are early signs of transformation towards a commitment to social justice and self-empowerment, as observed later in this chapter. The following quote from Rob is another example of *internalized racism*:

> it's a kind of a disappointment that we've allowed ourselves to get this deep. And allowed ourselves to not do anything about it and just live life like it's like every day, not caring. But now I have a new appreciation for it. I guess that I want to

> show people that not all Black people do worse than white people. That we could be better than them.

Rob summed up his feelings on this line of thinking, and what education reform could accomplish by concluding the objective is "to become better like them. So we don't have the big picture of Black people being less than other people."

During the same interview, Rob begins to explore why he believes the academic disparities exist along racial lines, and factors he believes are in play. He suggests:

> I don't think we do it on purpose though. Like I said, subconsciously I think we've just grew up like that. And it just happens. We don't even try to do it. We've closed ourselves off to succeeding because we've been told that you were not supposed to.

I asked Rob to elaborate on why he feels this way, and he stated, "it's just the fact of life. It's just society." At some point in this conversation, Rob asked me "how are you supposed to do better when you're constantly being told that you're worse than someone else?"

My goal in the conversation was to pinpoint from where Rob was gathering these disparaging messages about the academic capacities of Black male students. Rob replied, "it's just stereotypes all the time and different things. And then it just subconsciously makes you do, perform at a lower stat than everyone else." I asked Rob if he experienced these stereotypes in explicit or implicit ways, to which he replied, "sometimes it's both. Usually you can see it as far as in movies or on television. Or someone could even be telling you or someone can even just give you a look and you know what that means." At the end of the interview, Rob concluded, "the system is wanting us to not succeed," adding, "because they just don't want us to. They don't want to change the ways of the

past. What's it called? They're close minded, I assume. They're not open to change, which most people aren't."

In reference to participants' *internalized racism*, it is difficult to ascertain whether participants' statements about a demographic group they belong to is a result of the intervention of this action research. Meaning, did participants develop these views after seeing the disparities experienced by Black male students in the assessment data we analyzed, or were these beliefs they previously held? Nonetheless, the goal of the intervention was to engage participants in an exercise that allowed them to understand a problem that affects them, and then take steps in tandem with adults to raise awareness and inform curriculum reform. The goal of the intervention was not intended to negatively influence participants, but to offer guided exposure and transparency to a social justice issue they could address and hopefully be empowered by in the process.

I did have some reservations in exposing my participants to data that could possibly influence their self-concept in a negative manner. Steele and Aronson's (1995) work on *stereotype threat* demonstrated that Black students' test scores decreased due to anxiety related to confirmation of a negative stereotype about intellectual abilities of a social group to which they belong. However, educators can overcome *stereotype threat* by increasing a sense of belonging and instilling a belief in students that they are "scholars and achievers" (Delpit, 2012). I believe the intervention's incorporation of scholars of color, emphasis on activities being student-led, the creation of an artifact, and engagement in rigorous content, communicated a sense of belonging and academic achievement. In the final section, I will present qualitative data that indicates the possibilities of participants' empowerment because of the intervention.

Teachers' Curricular Expectations and Factors Influencing My Academic Success

All participants expressed that their teachers treated them the same as their peers, held high curricular expectations for them, and genuinely wanted them to succeed academically. When teachers set high curricular expectations, students viewed their intentions as positive. Several times students associated high curricular expectations with whether teachers cared for them. Furthermore, in this section students shared practices that educators have employed to help them succeed academically. Participants additionally highlighted qualities they prefer in their teachers. Qualities that enable teachers to foster interactive learning environments, while striking a balance between being strict or academically demanding and demonstrating empathy and caring. Other factors that influenced participants' academic success include parental involvement, seating preference in the classroom, previous experiences in mathematics, and a positive connection with me based on my race and gender.

The third theme that emerged during data analysis addresses RQ1 and RQ2, which ask how participants perceive their teachers' curricular expectations and what practices participants have found to be effective in meeting their teachers' high curricular expectations, respectively. The theme *teachers' curricular expectations and factors influencing my academic success* aligns to the following categories, (a) my teacher's curricular expectations for me, (b) how to help me succeed academically, and (c) familial and other adult influences on my academic success. This theme yielded two assertions: the first assertion is that participants believe their teachers think highly of them, expect

them to succeed, and treat them no different from their peers. The second assertion is that participants prefer teachers who interact with them and care about them, even when those teachers are strict and academically demanding. The subsequent section will present the most salient qualitative data that led to these assertions.

My teacher's expectations of me. The majority, if not all, accounts of teachers' academic treatment described by students was positive. Including participants' perceptions of their teachers' assessment of them as students. When I asked whether his teacher thought he was a good student, Rob replied, "I think he believes that I am, but I haven't shown it yet." Rob's reply, and Nate's following reply, standout because they indicate that teachers thought they were good students, even if they had not shown it yet. To the same question Nate stated, "I feel he knows that I am and I know I am. I just need to actually try, but I need the extra help to get over that hump into remembering." Lamar answered this same question with, "I say yes because on the assignments we get on HMH [online homework], I always get like a 90 or above." Mark and Derrick believed they were at least average, with Mark remarking, "I think that he thinks I'm an all right student. I do my homework and just get 70's," and Derrick commenting, "he probably does think I am a good math student or at least an okay math student. I don't really do nothing special. I just do my stuff."

When asked the same question on whether his teacher thinks he is a good student, after replying in the affirmative, Alton went on to explain why:

> I say yes, because I think my teacher thinks I'm energetic in his class and I'm actually engaged in every lesson that we learned and even when I'm oblivious about things that look uncertain to me, I actually ask him a question.

Brandon felt the same way that Alton did, asserting, “Mr. Stephens thinks highly of me, I feel because I'm the only one who asks the question in his class… I'm actually paying attention.” Brandon pointed out that Mr. Stephens has known him for the last four years and has coached him in basketball, which he believes is responsible for his teacher’s positive views of him. Brandon cited the following, “I think because of the work I've shown before in class, also in sports before, I think he thinks that I can probably go farther than what I'm trying to do.” Brandon concluded his thoughts on this topic with the following comment:

> he thinks highly of me, and I think if I'm not doing well in class he'll be like, "hey, just get back on it. Get the next lesson done." That's why I strive to be the best. I try to be the best student I can be in class. That's why I think he expects highly of me; he wants me to do the best I can.

In the last quote, it is evident that Mr. Stephens thinks highly of Brandon not only by setting high curricular expectations, but also by insisting and encouraging Brandon to meet those expectations. Brandon believed Mr. Stephens’s high regard of him is influenced by how respectful he is towards his teacher, unlike some of his classmates.

Derrick attributed his teacher holding him to a higher standard due to his involvement in athletics. He stated, “if anything, he talks good about me because I'm on the football team and he's with sports and stuff.” This is possibly due to coaches pushing student-athletes academically so they remain eligible to compete, or our messaging to student-athletes to serve as examples for the rest of their peers. Derrick expounded by offering the following rationale:

> I think they hold me to a higher standard than other students that are just regular students. They just go to the school just to learn and they would go home after they'd learn. They don't do anything after school. They are not involved with like Northwest high, they're just learning.

In agreement with Derrick, Mark added, “my teachers so far, I feel like they're expecting me to succeed.” Even when things did not start well with one of his teachers, things eventually worked out when he realized she wanted him to succeed. Mark explains how things changed for the better in the following quote:

> then we talked more, and I started going to her class after school and I kind of feel like she expects me to succeed. Because before, honest feeling I really didn't think that she expected me to. But then after I got to know her and seeing how she tried to help me then, yeah, I thought she expected me to succeed.

One way this study sought to investigate teachers’ curricular expectations is by inquiring how participants perceive their teachers’ classroom treatment of them, and hence the reasoning for questions on the type of criticism participants receive in class. Replying to whether he is criticized in class, Derrick asserted, “I’m never criticized.” Lamar also claimed that his teacher does not criticizes him nor his classmates, as he stated, “I don't think she criticizes anyone because when she finishes giving us the notes, she just sits at her desk.” I asked Nate if he was criticized more or less than his classmates and he answered, “I say less, only if it's necessary. If I don't do my homework, it would be like ‘yeah you didn't get your homework done last night.’ But that's it.”

Participants were also asked to determine whether they were challenged less than their classmates. To this question, the consensus was that teachers treated them the same as their peers. Lamar stated, “I feel like my teacher just wants everyone to learn the same” and “everyone gets the same.” Alton said “I’m challenged equally,” but he did feel that the content was not challenging for him. Nate expressed that he feels challenged academically, the same as his peers, which is evident in the following statement,

"because we're all the same." I rephrased the question to confirm, and Nate replied, "he expects the same thing from everybody. He… He's a fair teacher. He's a good teacher." When Nick was asked if his teacher treats students different academically, Nick stated, "no, he doesn't give individuals just straight up problems." Nick agreed that this teacher is fair and treats everyone the same.

Finally, participants discussed how they respond to their teachers' high curricular expectations. The responses varied in detail and length. Mark kept it simple by noting, "for me, it makes me stay woke in their class and pay attention more and want to be in that class." Lamar offered a similar but more detailed response:

> I feel like it's better like that, because if they don't really have high expectations, then you can just slack off and then you can get a bad grade in the class. But if they do have high expectations, then you actually have to try and get good grades.

Nate answered how he responds to both high and no curricular expectations from his teachers. When teachers set high curricular expectations, Nate commented, "I'd do it, but, if it… I don't know. I'd try if I can." To low expectations, Nate asserted, "they don't affect me," and he added, "if you have good energy, then you attract me. But if you negative, I don't worry about you." Brandon shared his feelings towards high curricular expectations, by saying, "if you push me hard, it means you care about where I want to be in my life, and that shows you have compassion for me." Brandon also said when teachers set high expectations, "they want to see me go far in life, so I appreciate it."

Contrary to prevalent narratives on students wanting easy teachers, the aforementioned sections demonstrate how participants see high expectations as a positive. The following long, but important, quote from Alton about his teacher will add

to participants having no issues with academically demanding and strict teachers, when these dispositions aim to achieve positive academic outcomes:

> he's extremely strict, and I have no problems with teachers being strict because I know that at the end of the day when I walk out of their class, I'm still going to have that repudiation [sic] of them being strict on me and that would actually affect who I am in college because I'm sure they're strict as well too. I'm sure it's very strict. But... he's extremely strict, especially with having high academic expectations on his tests, especially. He expects everyone to have a good grade on his tests, which I do get because I go home and study every night. I would say the high academic expectations in his class would probably be like, he just expects a lot from us, even from what he teaches. For example, if you have questions to ask him, or if you want to come for study hall, he's like, "I'm not going to reteach this to you. I already taught this to you. You should go home and study. Even if you don't know, you should go home and study. Then if you have any questions about why this is that, or why this answer is that, then that's something you can ask me. But otherwise, I'm already teaching something to you," which I understand.

From my classroom observation of this class, the expectations in this classroom are the highest I have ever seen. Colleagues have expressed to me that this individual is the best teacher they have ever seen, and we ask new teachers to observe him, because he is an exemplar. He is not rude to students; he ensures every student is engaged during a lesson through individual and collaborative interaction with the content.

How to help me succeed academically. The second research question in this study asks, what are the effective curricular practices that Black male students perceive to be helpful in performing to teachers' higher curricular expectations for mathematics achievement? The following section will present findings addressing this question. First, I will present participant responses on how I (as a school administrator) can assist them academically while at Northwest high school and more importantly, how I can help them attend college. Mark simply wanted to continue the connections we established during our meetings and interviews:

> just try to help us out, talk to us, see how we're doing, talk to us about our grades and stuff and just kind of like what you're doing. Just keep in touch, see us around campus and talk to us and stuff.

Hayes commented, "we can keep doing more of these interviews. I like these." For both me and the participants, this was the first time we engaged in this type of work. I would surmise Hayes's response is due to his voice, and the others' voice for that matter, possibly being solicited in the educational setting for the first time. There was typically an excitement with all participants in sharing their experiences during our meetings.

Derrick's response was also complimentary of our meetings, providing the following statement:

> the sessions and stuff helped a lot. Open people's minds. You could probably just... Opening people's mind to what's happening because I bet you there's a lot of kids that go to school, and they just go to school and do their homework detached. They don't know about what's actually going on. Other Black students... I feel like if a lot of other Black students know that we aren't doing so good, it would help out for sure.

Derrick was very much interested in raising awareness of the current academic disparities Black male students are experiencing. Rob stated, "you've already been doing a lot already. But the group showing us that you actually care about us. And that I always see you around. So I know if I ever need you, I can come up to you." Lamar requested, "just make sure that the teachers are teaching not only by HMH (online homework), but through group work and class work and them going to the front to teach the lesson."

Alton wanted access to pertinent information that can increase his chances of attending college, commenting:

> honestly, I just want it to be explained... if I have a specific major that I want to major in in college, I just want to know how I get there. How am I able to like... what classes do I specifically have to take to get there? But that's all I want to know.

Adding, “and what extra classes can I take? Can I take a class outside of school, or something like that? Just help my career.” Nate felt it was mostly up to him on whether he was going to succeed. He stated, “it's all about me. It's nothing you guys can do because you could tell me everything to do, but if I don't do the work, then it doesn't mean anything so I just have to work towards it.” Nick was the only one who did not have anything to say on the topic of how I could help, responding, “I really don’t know.”

Brandon on the other hand had very specific requests of me on how I can assist him academically:

> just by reminding us, "hey, you guys can do this." Just provide resources for us to study more. Provide resources that remind us that "you can do this," just so you can work hard. You can show us that you guys actually care about us. Some kids will say, "aw, they don't really care. They're just doing this because it's their job.” But if you show a real compassion, take them on a stroll and be like, "hey, you can do this." You actually show them. You spend time with them and do little conversations with them, then they'll actually feel like, "hey, they actually care about me. They actually want to see me succeed." Therefore, that will make them want to succeed and be higher in class and go to college.

Participants felt it was important that I facilitate opportunities to gather with other Black male students to share their experiences and connect. They connected with their peers and wanted the relationship they had with me to continue. Furthermore, some participants asked I intervene in how some of their teachers are instructing in the classroom. Additionally, as Brandon explained, as an administrator I should continue to encourage and show genuine care towards participants of this study. Along the lines of how I can help them succeed and attend college, every participant declared they plan to attend college.

Participants also shared what they have found to be successful practices that teachers have utilized to help them achieve academic success in the classroom. The first practice or quality that students found beneficial to their success is when teachers were engaging and personable. Mark expressed his preference for teachers with a good personality, who can explain the content well, and interacted with all students frequently. Mark gave the following rationale for this profile of a good teacher:

> because if they got a bad vibe and stuff, you're not going to really want to be around it and stuff. Or if you're in class and like they're talking about something you're not going to want to hear it because they send off a bad energy. But if they're a good teacher and they like you and you like them, then...

In the same way, Derrick felt that a teacher who explains and takes the time to interact is a winning combination. He asserted, "they go over it every single step or if anyone has questions they answer it, then it's enjoyable, because you're interacting with your teacher and he makes sure that we know what the content is."

Nick also spoke to the importance of a teacher's personality being an important factor to his academic success, by commenting:

> maybe not even the curriculum itself. It's just the teacher, how he projects it, and he kind of, I guess, makes it fun. Like he makes it funny. He kind of stops and makes like little jokes in between. It's the kind of thing that makes you want to be there and makes you interested in it, to where even if it's not interesting, you feel like it is interesting and you learn with them.

Nick felt it ultimately came down to a teacher's personality and the energy they bring to the classroom. He added, "it basically just depends on their personality. If their personality is really energetic and I guess really upfront, people are more ... I'm just wanting to learn instead of feeling like they have to work." As he previously stated, it is not so much about the curriculum for him, but more important, "if they're fun, make

jokes, they make you laugh and they actually are engaged, they make you engage in the actual assignment or whatever you're doing. It makes it a whole lot easier to learn."

Rob requested of teachers the following, "try to engage with us more. I assume like they're doing their jobs like plain and simple." Lamar compared one teacher's style he liked to one he did not. Lamar did not find independent practice beneficial, where the teacher puts the class to work and sat at their desk. Lamar instead preferred when a teacher "would talk to us and make sure that we're asking questions so she knew that we got it." Additionally, Lamar noted, "I'd rather just do like a worksheet in class that we go over as a class so that everyone can get it." Participants also appreciated teachers who created a classroom environment where they felt comfortable asking questions. Brandon addressed this by commenting:

> when I ask him questions. He's very forthcoming. He's very aware, and he's trying to be able to answer the question very quickly. When I come back to him, he's able to explain it to me in a more in depth way.

Participants made it clear they wanted teachers who interacted with them and always had a feel on whether students understood the content. In absence of those qualities, at least a teacher who is approachable and welcomes students' questions.

Alton appreciated when his teacher ensured the class understands the lesson. Alton said of his teacher, "he's really good. He engages with the lesson, and he makes sure that everyone gets what we're doing. I'm doing really good in his class because class is pretty easy." Due to his teacher being so engaged and motivational, of the classroom lessons Alton stated:

> like nothing was oblivious to me. I knew everything that was being taught just because how engaged he was with the students. And, when you're confused, he

> knows when you're confused, definitely. I was like, if I look at the board, I'd be like... he'd be like, "everything's all right," or like "meet with me."

Alton continued by emphasizing the importance of the learning environment a teacher creates through how he or she interacts with their students, claiming:

> if they're not engaged, then I don't think the student can be engaged, mostly because... based off how a teacher treats you, or acts towards the classroom and just how they make the mood of the classroom feel, that impacts how the student engages with the work, you know?

To summarize what Alton is communicating, the students in the classroom respond to a teacher's level of interaction, energy, and commitment to ensuring students master the content by constantly checking for students' understanding.

Nate repeatedly spoke about how a teacher's energy was very important. He presented his feelings on his teacher's energy this way:

> that could just be for me, not other students. That could just be how I feel. Those students in that class because it's a smaller class and that class is all quiet. Those students in there might like it, but I need to teacher with high energy to keep me intrigued into the grind.

Additionally, Nate stated, "I feel I will pay attention because he's not just like… he talks to us and he interacts with us." He also claimed, "the teacher's energy really does impact because if a teacher had really high energy, I feel like I pay more attention." He did not feel his current teacher possessed the type of energy he was looking for (but Nate did say this teacher was still a good teacher), so I asked him to describe a previous mathematics teacher who did. Nate surprisingly named someone I worked with years ago as a new teacher to the profession. He described this teacher with the following remark, "he wasn't more strict, but the way he taught was different. His teaching style was different and I could connect with it. It was different so he brought me like... I was intrigued."

Nate elaborated on his feelings towards this teacher by stating, “Mr. Gray was like, ‘okay, you don’t get it. Okay, so let’s work through it.’” He added that Mr. Gray would teach the lesson and frequently stop to help students. Nate pointed out this was not always the case with other teachers, asserting, “like if the teacher was all like, ‘is anybody stuck or did you need any help?’ Even some teachers... Or like... In that instance, some of the teachers would just sit at their desk.” Several other participants shared how teachers sitting at their desk during independent work was not helpful to students academically. They preferred teachers who frequently checked for understanding and responded appropriately.

Moreover, participants communicated that they would like their teachers to be understanding and caring. One of Mark’s request to teachers was not so much an instructional practice, but more of a relationship piece, which is equally important and presented below:

> sometimes a teacher will be talking but everybody daydreams, so sometimes you really won't be listening or something. And then you'll have to turn something in and it'll be like half done or something. And if you ask them to let you turn it in or something late, just once or twice, not all the time, then at least on the first time or second one to help them out or whatever. And just if you see them struggling with something help them out with that too.

Derrick added to the importance of a caring relationship with teachers where a helping hand was readily available in the following quote, “they went through the same thing and I feel like if they... When they were in school, they wanted a good teacher, to care about them and help them with their stuff, if they needed help.” In earlier quote Alton expressed an indifference towards strict teachers, and how strictness can be a byproduct of high expectations. However, it seems like what participants are looking for is a

balance in a teacher's approach. Nate stated, "I don't want a teacher that's a pushover, but I don't want a teacher that's really hard on all of us."

Classroom observations provided limited opportunities to objectively assess whether teachers thought highly of the participants. Additionally, I did not gather data that allowed for determination of whether teachers believed the participants of this study were good students during these observations. However, the absence of explicitly differentiated teacher treatment, as discussed by participants, was observed in the classes I visited. A majority of the time, classroom tasks were presented in a whole group setting, making it difficult to determine if there was differentiated expectations or treatment towards the participants. As far as teachers calling on students to answer questions, most teachers relied on volunteers, either by raising their hands or by shouting answers. Consistent with what participants communicated, there was typically a positive reaction to academically demanding teachers during classroom observations. These teachers had protocols for engagement that students adhered to throughout the class period.

Many of our teachers, if not all, modeled most examples systematically during classroom observations. However, some teachers took additional steps to see whether students really understood the concept being taught. In these classes, students anticipated they would be asked to collaborate with a partner on a task and potentially share out. These teachers had a system for calling on students to ensure more equitable classroom engagement, or had a system to check for mastery many students at a time. I saw teachers requiring students to put their answers on personal whiteboards or displaying the solutions on iPads to determine both engagement and mastery. There were also clear

examples of teachers finding a balance between academic demand and having fun with students. Students in these classes appeared to be participating at higher levels throughout the class period.

Familial and other adult influences on my academic success. Participants expressed additional factors influencing their academic success that did not result in high frequencies of codes like those mentioned above. Nonetheless, I felt they were important to the body of discussion in this section. The first factor is familial influences on academic success. These influences ranged from parents tutoring their student, to restricting access of technology if the student brought home bad grades. Lamar stated, "with my parents, they'll be like, 'oh, you have a bad grade, and it's because of that game.'" Alton listed his parents as major factors to his academic success, by encouraging and instilling in him a good work ethic. I encountered almost every participants' parents/guardians through some form of communication. It was evident that each of the participants' parents/guardians cared and played a role in their students' academics, whether the student was doing well or struggling academically.

Brandon felt he could handle any challenge that came his way due to his upbringing. He explained how the drive to face his challenges derives from familial influences in the following quote:

> because I come from a very strong family, and it's either you quit or you don't. It's your decision. If you quit, we won't hate you. Not saying I hate you, but you're a pathetic quitter. You'll get that label on you. I don't want that label of "quitter," so I want to do the work I can do academically or outside, externally, and just get it done.

In the two years I had known Brandon, he had endured personal challenges most students had not faced and should never experience. Based on my work with Brandon, it was

always impressive and pleasing to see him keep a positive attitude, while preserving his charm and intelligence, despite personal challenges in his life. This was not limited to Brandon, as many of the participants faced challenges from issues with grades, disciplinary issues, and even removal from school.

Nick credited being ahead in mathematics to his father, and the work they did in elementary school, remarking:

> when I was growing up, my dad, I think it was at the start of the third grade. No, second grade. He started making us do something called IXL where we had to learn multiplication, learn difficult math problems, all that kind of stuff.

It was clear that Nick's father continues to play a role in his schooling through following quote:

> if I don't actually have all A's at the time, I'm not able to use any of my electronics. And for me, I feel like I'm a slave to my electronics, so it motivates me even more because I feel I have to pay attention if I want to go home and do what I want to do.

As I mentioned earlier, I encountered most of the parents outside of gaining consent during the study. A few parents reached out to me asking if I could speak to their student about getting their grade up, and even soliciting tutoring for their student, since I was previously a mathematics teacher. It is no surprise families play a large role in the academic success of each participant, as they do for all students.

Adults acting as positive academic influences was not limited to participants' parents and guardians. Both Derrick and Mark expressed how their coaches played a role in encouraging them to do well academically, since both their coaches were also their mathematics teachers. During the study, I played the role of teacher in the intervention sessions. The sessions received positive reviews, which I will discuss in the final section

of this chapter. When I inquired whether I was a factor in participants viewing the sessions positively, since I was both Black and male, participants responded in the affirmative. This was possibly due to 6 out of 9 participants never having a Black teacher in their schooling experience, let alone a Black male teacher. Three participants did have a Black teacher in the past, but they could count them on one hand and in some instances, it was a substitute teacher.

After indicating that he felt a connection to me and his peers, Mark expressed the following:

> I think that it made a difference that you're a Black male and then everybody else in the classroom is Black too. That kind of made a difference. Because certain things that we talk about, we could talk about it and feel comfortable talking about it because we're all Black. And you kind of did treat us differently too, like you were talking in a more polite way and gave us time to do things and stuff. So yeah, you did treat us a little differently.

On the same topic and specifically about me, Hayes stated:

> you understand how Black kids and stuff grew up and all that. And all of my teachers, they're all pretty much predominantly White. So they don't understand. They just think we're plain old regular kids, and don't do pretty much anything. I'm just like, nah. That's why when you called me to come to this or whatever, it told me, "oh, so okay, he understands what troubles we go through, and how it's hard to learn," and all that stuff.

Derrick shared that being around other Black males "was a positive, definitely" and "we are all relatable. It's like the same, I don't know… The same like culture or something. I felt a connection, like everyone was the same, or not even the same, just together, like we're coming together. It's feels different." After initially being unsure, Rob said "I mean there is a connection between us just because we are… let me think… more like a family." He added, that we communicated with each other differently and claimed, "it's just different because… I don't know. I don't want to say like a code but like we do just

interact differently with each other." He concluded with the following remark, "we have a connection, but I feel safe around you."

The Intervention

As part of this Action Research, one of the objectives was to design and deliver a viable intervention to address the problem of practice. The problem of practice is the prevailing disparity in mathematics achievement in the schooling of Black male students in my context, and the role of teachers' curricular expectations in addressing this problem. The goal is to explore the possibilities of curriculum reform utilizing tenets of *culturally relevant pedagogy*, *warm demander pedagogy*, along with activities influenced by *youth participatory action research*. In addition, to ensure curriculum reform that included participants' voice, I solicited input from participants to inform future iterations. This section sought to address RQ3, what are Black male students' views of the reform practices as part of the intervention?

This section will present how participants experienced the intervention throughout our meetings. Participants held positive feelings towards our meetings. They enjoyed the topics of our discussions, which included scholars of color, who they rarely hear about in their classrooms. The setting allowed participants to connect with peers, in a space where they shared their experiences and heard about the experiences of others. In addition, the data we explored on the academic disparities Black male students face on our campus came to them mostly as a shocking revelation. Knowledge of how Black male students are preforming on mathematics standardized assessments led to participants asserting they would work harder in class, ask for help more frequently of

their teachers, study more, and ultimately perform better academically, because they felt they were capable of higher achievement.

The final theme, *the intervention*, aligns with the following two categories: (a) my feelings on meetings, and (b) awareness of academic disparities and my response. The assertion for this theme states that learning mathematics by addressing problems that affect participants and incorporation of content that aims to address their invisibility in the curriculum, led to increased relevance, interest, and self-awareness that suggests signs of empowerment and self-betterment in the mathematics classroom. The first category will reveal what students communicated on the topic of how they felt about our meetings. The second category explores how participants responded when analyzing their very own achievement data.

My feelings on our meetings. After the intervention sessions, participants were asked to share their feelings about our meetings. Most participant expressed they had positive experiences with the intervention. Mark stated, "I like talking and answering questions of other people and seeing what they think could help them and their input on all the conversations and stuff." Mark reinforced that he enjoyed our discussions and hearing from others. Of our actual mathematics work in our meetings, Mark said "the challenging part was at first calculating everything" but it was interesting. He also thought the content was useful and summarized the experience in the following quote:

> I learned a lot of stuff. There's a lot of stuff about Black people, like the history thing. I learned that too and especially with the... When we were calculating stuff and we got to see our percentages of all the other ones. I learned that and it really helps me. I think about it still. Not really as much as I did back then because it was really new at that point.

What Mark is discussing is the structure of our meetings which started with an introduction and discussion of a scholar of color, followed by a spreadsheet activity where we investigated the existence of achievement disparities on our campus.

Hayes began by sharing his thoughts on learning about critical issues in education, stating, “I liked how you, when you showed us the video, I like both the colored people and the library people came together in protesting.” This was a video of students fighting for desegregating New York schools. On what he liked about the video, Hayes added, “and how they were trying to help the math [sic] group, and how they were splitting up all the schools trying to prevent the Black kids and stuff from coming in there.” Hayes commented on the mathematics we did with spreadsheets and how the skill transferred in his mathematics class:

> when we were doing the Excel thing, I didn't really know what we were doing at first. And then I picked up on it pretty quickly. It was like, yeah. So now when I go on the computers, and my math class when we go on our iPads, we use Excel, and he makes us go up on the board.

Hayes felt that learning about scholars of color was inspirational. He commented, “I liked it all. Basically, when you put the people ... What's her name, Katherine?” This was in reference to watching a clip from the movie *Hidden Figures,* and learning about Katherine Johnson. A female mathematician of color who worked for NASA. After learning about Katherine Johnson and other scholars of color, Hayes offered the following, “it inspired me to want to go to a Black college, but still want to go to a top school.”

Derrick agreed that the sessions were good, stating, “I think it was pretty interesting to see the history.” Additionally, Derrick commented, “I didn't know about how historic the people that we learned about...” and concluding:

> like the struggles they went through just to get a good education. I feel blessed that I can go on and go to college and not have to worry about people... discrimination, like "you can't go to this college because it's only whites".

Like other participants, he found the spreadsheets difficult at first before he figured it out. On this topic he communicated the following, “yeah, that was pretty interesting. The challenging thing was probably the... plugging in this stuff, and challenging to my mind. Looking at how low our stuff is compared to theirs.” On the process of analyzing data, Derrick said, “well, I liked the meetings because they're... It opened our eyes to what's going on.” I asked Derrick to compare his experience in our meetings to his regular mathematics class, to which he replied, “honestly, yeah. There's a big difference from my regular math class to that classroom. It was just, I don't know. There's less people in the classroom and everything.”

Rob felt it was a good experience, as he pointed out, “like all of it was useful in my opinion” and adding, “I feel it was a big step in the right direction.” Lamar commented on our analysis of data, stating, “well for me it was interesting to see how the different people, their scores vary.” The mathematics we worked on utilized Google Sheets to analyze student assessment data, disaggregated by race and gender. The goal was to have high curricular expectations for students and to teach students skills that could be transferrable in and out of the classroom. To this goal, Mark asserted, “I feel like you expected me and everybody else to succeed.”

Continuing on the topic of high curricular expectations, Derrick claimed, “I think there was pretty good expectations, like teaching us how to use math Excel and just showing us what's happening and how to use it.” He also expressed the following on the expectations of our meetings:

> I feel like the expectations were higher just because we were gathered around, everyone's the same. They were just higher because I don't see any other groups coming together trying to fix a problem. It isn't every class, it's just a math class. You're trying to fix a problem, but it's usually the teachers showing you how to do the problem.

Rob discussed other areas where he felt high expectations were set, commenting, “you had a high expectations for us to tell the truth and be honest with you about how we actually felt in a lot of classes.”

Awareness of academic disparities and my response. I want to begin this section with a caution. The quotes in this section might lead a reader to infer that participants believe the disparities they experience in mathematics achievement is a result of them not putting in enough effort. The focus of the intervention was to look at the prevalence of achievement disparities as social justice issue, and to reflect on what structural factors were in play. I was not surprised when participants responded with alarm, to discovering the extent of academic disparities Black male students face in mathematics achievement as we explored disaggregated data. As shocking and possibly damaging as it might be, self-discovery of Black male students’ mathematics achievement was the first step to addressing a problem that affects them, while increasing relevance in the curriculum and seeking to empower participants by forging partnerships with adults to improve this issue.

One of the first things that participants noticed in the data we analyzed was their glaring minority status in the student population. Hayes raised concerns about how little representation Black male students had in the school population, before making connections to improving his academic outcomes if the population distribution was less lopsided. He offered the following remarks:

> like how there's five hundred-something White students, and twenty-something, forty-something Black people. I was like, "no, I can't be going on slacking and not getting good grades. I need to be trying to be one of the top of my class," or something like that.

Hayes also reflected on how the data and ensuing discussions led him to think about his academic performance and the performance of his peers:

> when you would ask a certain question, it grabbed my attention, like "oh, okay, I got to think about how this affected me, and how this affected all the other people that go to this school." All the other Black kids that it's happened to.

These two quotes from Hayes are consistent with the concerns of other participants that were part of this discussion. In a previous section, Hayes communicated how his minority status has led him to feel uncomfortable at times. However, Hayes also shared that he was foregoing his home school to attend our school, due partially to having more White students. Hayes's ambivalence is due to his minority status in the school causing discomfort, while believing that attending a school with more White students would increase his chances of escaping his current situation.

Derrick began by expressing how other demographic groups are also struggling academically, before saying this about Black male students' data:

> it opened our eyes to what's going on and... because I think some of us didn't even know that we... how many students we have like Black American... Like African American students. And what was that? I think we were surprised how none of us had the high scores, fours and yeah.

What Derrick is referring to is the AZMERIT test data that showed how Black male students were not represented in the Highly Proficient category (a score of 4). Derrick expressed his disappointment of this reality, stating, "it was pretty crazy when I saw we had zero fours out of, I don't know how many everyone else had." This fact seemed to reveal the magnitude of the problem for Derrick as well as the other participants.

Rob said the following about the data demonstrating the academic disparities of Black male students, "I kind of already assumed that we weren't doing this good." Additionally, he commented, "it brought to my attention how poorly we had been doing. And we need to change." Rob claimed that one of the outcomes of our data analysis exercise is how it made him more aware, and goes on to assert how it is important that awareness of the problem leads to changes, as presented in the following quote:

> knowing that you all actually look at the data and understand that there is a difference between racial, like Black people and white people. And there is a difference and you understand that. I mean that you just notice it and that you're trying to do something about it.

What I got from Rob's quote is, now that there is data of this disparity, we should do something about it. Rob calls for raising awareness and inspiring his peers to increase their academic efforts, stating, "I mean it's small but hopefully engage people more to actually notice this difference and actually want to try more."

The last part of the previous quote is what I am most interested in. How are students going to move forward after being part of this study, and more importantly, the intervention sessions? Students were asked if they are going to do anything differently in the classroom because of our sessions, and if they thought the sessions were academically beneficial in any way. To this Mark responded by saying:

> it'll make you think like, "dang I got to do good on this test, because most of us aren't." And actually it kind of could help because it would make you want to drive more to improve on your math scores and stuff.

Mark said he is looking to make some changes academically, and I asked him if the sessions motivated him to increase his efforts, to which he replied, “yeah, I feel like I’m encouraged to work harder.” He stated it was largely due to seeing the assessment data and the analysis we did in our sessions.

Replying to whether the sessions had influenced him academically, Hayes replied with the following quote:

> yes, because I need to get my grade up in there anyways, because it's at a C, and I don't like that. So I go to my math teacher pretty much almost every study hall and get extra help for the lessons and stuff we do.

Moving forward, Hayes indicated he is going to be more vocal in classes, as he stated, “I'm going to just probably speak more, ask my teachers, ‘can you please come over here and help me more?’ Instead of just giving us the lesson.” Derrick echoed what the previous two participants communicated, as he asserted, “I think I'll probably study harder, and was that... Just now that I'm aware of what's going on, try to be better. Because I know that I probably can do better. If I try, you know what I'm saying?”

Replying to whether the intervention has changed him and how it has pushed him academically, Rob said, “it already has” and by “putting out the work I assume. Because I feel like we can succeed and excel.” Rob, as I mentioned earlier, takes a tough tone towards the demographic group he belongs to, but with an optimistic end goal, as he noted:

> it encourages me to become better than what we have been doing. And if you didn't care about it then you don't care. It's like you're growing your own future.

> But I want to change the way people perceive us. And by doing that, it might not be fun, but I'm going to have to change myself.

In the quote above, Rob is equally concerned about improving his academic outcomes, as he is the way others view Black male students.

Quotes from the interviews were in alignment with student journal entries and my field notes of the intervention sessions. Though the journal entries were brief, participants communicated how they liked most, if not all, of what we worked on. There were two instances where a participant pointed out improvements that could be made to the intervention meetings. One dealing with a technological issue we had on our first meeting, due to difficulties accessing our data sets on their school issued iPads. Another recommended change was on the redundancy of how our sessions were structured. The student who made both the recommendations, Nick, makes a fair point. A future iteration of curriculum reform should build in a greater variety of activities that increase engagement. Nonetheless, most students indicated they liked meeting with their peers to hear about others' experiences and discuss issues of race relating to academic achievement.

In both the field notes and student journals, multiple students expressed their surprise and concern with only having 15 Black male students on our campus who took the AzMERIT. They believed this could be a factor in the achievement disparities experienced by Black male students. The field notes also indicate a progression in participants' understanding of the problem of practice, from the first meeting where one participant stated, "White males are better at math," to a student commenting on one of the last journal entries, "there's a lot more than one thing that influences grades." This

was evident at one of our last meetings, where participants discussed their parents' role in their academic success. Participants expressed how their parents encouraging them and holding them academically accountable has been greatly beneficial.

During our last meeting, students were asked about their experience in the intervention and what stood out to them. Nate expressed how impressed he was on how the group came together to engage in all activities encompassed by the intervention. Mark shared how he had not thought of the inequities that exist in the educational setting. Desmond, already a good student, said he would put more effort into his studies, while raising awareness on the issue of achievement disparities affecting Black male students. Participants expressing increased commitment to excel academically is definitely welcomed news. However, as discussed earlier in this chapter, and due to the nature of the data we analyzed, there is a possibility of *stereotype threat* influencing all student responses in this section. What the quotes do not reflect is the emphasis on the problem we are addressing not being whether participants are putting in enough effort. What I tried to engage participants in was an analysis of how the system was not serving them well, what they thought the reasons were, and what types of reforms we can make to the curriculum to address issues of academic disparity.

This concludes the presentation of the four themes, the corresponding assertions, and discussions of each category. To recap, there are five assertions presented in this chapter. First, regardless of standardized test scores and enjoyment or lack of enjoyment of mathematics, participants communicated a desire to succeed and felt they were average to above average in the subject. Second, the clearest barrier to participants' success in mathematics is simply, how the content is taught and the content itself. Third,

participants did not believe their teachers held lowered curricular expectations for them. They thought their teachers treated them fairly, and expressed the following desired qualities in a teacher: interactive, caring, and strict, as long as it led to positive academic outcomes. Finally, learning mathematics by addressing a problem that affected participants and incorporation of content that addressed their invisibility in current curriculum received positive reviews.

CHAPTER 5

DISCUSSIONS

From the outset, this study's purpose was to address the achievement disparities Black male students experience in mathematics achievement in my context. The growing focus on AzMERIT scores on my campus and campuses across the state of Arizona was, and continues to be, palpable. Many in education, including myself, understood the implications of good AzMERIT scores. Including its positive impact on school enrollment, home prices, and school bragging rights. However, AzMERIT data could also have negative implications as far as what educators naturally surmise about the academic abilities of our lowest performing students. Seeing that Black male students were experiencing some of the greatest achievement disparities, it could impede their chances of succeeding in high school, effectively decreasing or eliminating opportunities to attend college. These realities will most likely affect their career trajectory and life outcomes in a negative manner, due to limited opportunities to enter higher earning occupations.

In this final chapter, I will discuss the findings and connections to existing literature, the limitations of the study along with recommendations, implications of this study, personal reflections, and a conclusion. First opening the discussion section with a recap of the findings from chapter 4, before answering the research questions of this study. Where applicable, connections will be provided between the literature on the topic and the findings. In addition, I will intermittently revisit the frameworks utilized in this dissertation to assess their appropriateness and future use throughout the chapter. In the limitations section I will present what I believe are weaknesses in the study, providing

recommendations to address these issues. The implications section is broken up into future research and use in the local context. The chapter will end with personal reflections and my concluding thoughts.

Discussions

Three research questions guide the study of Black male students' perceptions of their teachers' curricular expectations. Research questions inquired about students' perceptions of their teachers curricular expectations, the types of practices participants have found to be helpful in achieving to higher teacher expectations, and participants' views of reform practices as part of the intervention. The results of the data collection and analysis led to the assertions presented in chapter 4. Assertions stated, despite achievement disparities, participants maintain positive learner identities, felt their teachers held high expectations for them and treated them no different from their classmates. In addition, participants preferred interactive, caring, and even strict teachers. Finally, learning mathematics by addressing a problem that affects participants and incorporation of culturally relevant content led to increased interest and self-awareness that suggests commitments to academic self-betterment.

RQ1. The first research question asks, how do Black male students describe their teacher's curricular expectations in grade level(s) mathematics classrooms? In chapter 4, the second theme described participants' perceptions of their teachers' expectations. Participants felt their teachers wanted them to succeed, thought highly of them, and treated them no different from their classmates. Specifically, they did not feel their teachers gave them differentiated curricular materials or lowered achievement standards. The participant consensus was that teachers met all students' academic needs through

pedagogy that was not differentiable on a student-by-student basis. As a school leader, I am pleased to hear participants of the study feel their teachers treat them the same as their peers. However, it illuminates the complexity, magnitude, and embeddedness of factors leading to all forms of inequity and oppression in the structural fibers of our society.

At the surface level, what participants perceive as equal treatment in the classroom by their teachers is no doubt a derivative of the *color-evasive* approach we employ in public education (Parker, 2015; Decuir & Dixson, 2004). As discussed in chapter 2, *critical race theory* rejections notions of a *color-evasiveness* in the educational context (Solorzano, 1998). It is evident that this type of approach has not served Black male students well, as their mathematics proficiency rate was 7.7% in the first year of this study (Smith, 2017). Additionally, the literature review of this study revealed the importance of teacher's curricular expectations and the ensuing self-fulfilling prophecies (Gershenson & Papageorge, 2018; Rist, 1970; Rosenthal and Jacobson, 1968; Brophy & Good, 1970). Considering the aforementioned, and participants of this study perceiving positive teachers' curricular expectations while maintaining positive learner identities, why do achievement disparities persist in my context?

Literature on teachers' expectations reveals the existence of more favorable treatment towards White students and lowered expectations for Black students in the educational context (Pringle, Lyons & Booker, 2010; Tenenbaum & Ruck, 2007; Strayhorn, 2008). However, participants did not communicate having these types of experiences in their educational experience, thus far. It is my belief a probable explanation for the incongruence in what participants communicated versus the achievement disparities of our Black male students in mathematics, is due to our implicit

and subconscious pedagogical practices, and not necessarily explicit and conscious pedagogy that communicates lowered curricular expectations. I believe many of us in education employ *color-evasive* practices, not understanding their inadequacy in serving Black male students, and even worse, the damages it continues to inflict. Our curriculum is designed to meet the needs of our society's dominant culture, and I believe this has falsely informed most educational professionals' conceptions of academic ability. These longstanding curricular practices continue to position generations of educators in deficit orientations towards Black male students and other students of color. During the dissertation process, I have had multiple reminders by committee members to check deficit orientations in my writing and thinking.

RQ2. The second research question asks, what are the effective curricular practices that Black male students perceive to be helpful in performing to teachers' higher curricular expectations for mathematics achievement? Generally, participants preferred teachers who interact with them and care about them, even when those teachers are strict and academically demanding. As far as student-teacher interactions, participants lamented the routine progression of notes followed by independent practice. This routine limited the type of interaction students sought to have with their teachers. Participants expressed a desire for their teachers to show compassion and caring. In addition to a preference for caring teachers, approval of demanding teachers is consistent with *warm demander pedagogy* (Kleinfeld, 1975). Participants valued teachers who achieved a balance between demand and compassion, as long as these teacher behaviors led to increased quality in their schooling experience.

In multiple instances, when teachers employed effective curricular practices, participants attributed those actions to whether that teacher cares about them or not. Absence of the type of relationships that could foster caring behaviors was evident in participants' descriptions of some teachers who sit at their desks after the completion of a lesson. Furthermore, participants described their desire for teachers who sustained high energy throughout the class, incorporating occasions to socialize with the class during lessons. In addition to enthusiastic teachers, participants favored teachers who check on understanding throughout the class period with a willingness to answer their questions. During class, discussions and knowledge co-construction with peers was preferred over lectures followed by independent practice. Moreover, participants stated they had success in mathematics when they felt the content was easy, they understood the topics, and most importantly, when it was relevant and they sensed its connection to their current and future lives.

The pedagogy that participants identified as effective are encompassed in the types of reform practices that Boaler and Staples (2008) and Rowser and Koontz (1995) called for. Making the transitions from predominantly lecture-based knowledge dissemination, to students collaborating and learning from one another, in conjunction with direct instruction. Reform practices also called for sharing of all cultures in the classroom. All students should see themselves in the curriculum by affirming and sustaining the unique cultures they bring into classrooms, while curriculum designers continue to seek ways to increase relevance to serve a constantly changing demographic. Some recommendations to achieve this goal includes the introduction of more curricular materials that highlight the contributions of all Americans, curricular materials designed

by educators of color and scholars from marginalized populations, and finding a balance when teaching abstract concepts in mathematics with practices that increase understanding in mathematics through relevance (Gutstein & Peterson, 2013; Davis & Jett, 2019).

RQ3. The third and final research question asks, what are Black male students' views of the reform practices as part of the intervention? Based on data from interviews, field notes, and student journal entries, the response towards the intervention was mostly positive by the participants. Participants cited interaction with peers as one of the components they enjoyed the most. Specifically sharing their experiences and opinions, and hearing about the experiences and opinions of their peers. In our setting, most of the time my participants are usually the only Black male in a given classroom. Lack of diversity was something my participants discussed during our meetings, and thought it would be beneficial to try to address. Changing demographics of our school is not something our teachers can control, but creating more opportunities for students to collaborate and discuss in our classrooms is something we can easily achieve.

Boaler and Staples (2008) presented a comparison of three schools, where the school utilizing more student-led activities, collaboration, whole-group discussions, and less teacher lectures, improved their students' academic achievement at higher levels. Participants of this study communicated similar preferences of how they would like their classes to operate. They expressed a desire for their teachers to shift from predominantly direct instruction followed by independent work, to interactive classrooms that allow students to work with one another. I believe the intervention was success in including students more frequently in knowledge production than the traditional classroom.

Positioning myself as a facilitator, posing questions to participants and refraining from dominating discussions helped steer the intervention's meetings to be more student-centered.

Incorporation of scholars of color and videos highlighting the struggles and contributions of Black people to STEM, presented content participants do not typically experience in mathematics classrooms. Participants stated they learned a lot from this segment of the intervention. This portion of the intervention was intended to address two objectives: increasing a sense of belonging in the mathematics classroom and to counteract the possibilities of shaming students by examining their own data, which showed achievement disparities experienced by Black male students. The scholars of color were included to empower participants by learning about individuals who overcame obstacles to achieve academic excellence. I believe it was important that these historical figures looked like my participants, because it is rare that students learn about scholars of color in their regular classrooms.

The data analysis activity was designed to create more interest in doing mathematics using content that had a direct connection to participants. Participants expressed how working in Google Sheets was challenging, but beneficial. One student claimed how it helped him in his regular mathematics class when they had an excel activity on a later date. They came to understand that the mathematics work we did had implications for changing our teachers' practice. They knew they were the only students on our campus doing this type of analysis, and expressed a willingness to present our findings. Ultimately, all components of the intervention aimed to instill a belief in the participants that they are achievers and scholars.

The interviews, field notes, and student journals showed how participants becoming aware of the data has led them down two paths. First, expressing concern with the current inequity in academic achievement and a desire to play in a role in raising awareness to address the problem. Second, participants stated that examination of the data has motivated them to improve their academic outcomes; regardless of whether they are currently earning good grades or not. What I am taking away from the intervention and what I would like others to glean, is the need to solicit more input from our students; especially those negatively affected by standardized tests and other tools used to assess academic achievement. In this study, hearing from participants has reinforced my belief that teachers' ability to foster positive relationships, facilitate interactive and collaborative learning environments, and connections in the curriculum to students' current and future interests are invaluable.

Limitations of Findings

Only after beginning the data collection phase did I noticed a list of unforeseen weaknesses in the design of the study. I will begin by discussing the difficulties I experienced in recruiting and retaining participants in the study. Using purposive sampling, I aimed to select a sample that represents all achievement levels on the AzMERIT. The first challenge was collection of consent and assent forms, as teenagers can be very forgetful. Once I had all the proper permission forms, issues with solidifying meeting times and space began. The schedule I had developed became a living document, adjusting to the realities of a high school campus with limited space and last minute demands of my position. Times and locations changed due to other events on campus taking precedence with little to no notice. Nonetheless, my participants were

graciously flexible throughout the study, allowing me to make alterations to our meeting schedule several times.

In the design phase of the study, I saw the possibilities of collecting data during the school day to be advantageous to all involved. In some ways, meeting with students during the school day became a challenge due to competing priorities for me and my participants. We managed to complete our meetings, but there was a feeling of rushing to get everything finished, for fear of losing participants, space, and scheduled time to tend to campus emergencies that required my undivided attention. I also had to be understanding of students needing to miss some of our sessions, to make other meetings with teachers on our campus. I could have addressed these challenges by securing space and establishing time to meet in a manner that mitigates conflicting priorities. In other words, I needed to consider more than a school calendar when setting these meeting times. Additionally, I would have considered meeting outside of school hours if possible.

Another component I did not give sufficient thought to is the incorporation of teacher interviews in this action research. Even though this study intentionally focused on students' voices, additional triangulation could have resulted if I had included teacher interviews. Specifically speaking to RQ1, where participants stated they receive equal expectations and overall treatment from their teachers. This was not consistent with the literature I cited in chapter two. It would have been beneficial to hear from teachers to confirm or deny the existence of differentiated curricular expectations for Black male students. In addition, if I had thought to include teachers in the study, I would have prepared better in creating semi-structured protocols that responded to existence of differentiated curricular expectations, or lack thereof. With classroom observations,

interviews, and possibly surveys, I would have planned to design protocols that paid increased attention to both explicit and implicit teachers' expectations.

In one of the earliest interviews, I remember feeling disappointed with the questions in front of me. The disappointment stemmed from sensing they were not going to address everything I wanted to know. In the end it all worked out, but it initially felt like there were questions I was not asking, but should be asking. I am appreciative of the semi-structured interview protocols that mitigated these perceived deficiencies. Then there was the reality check of how I was going use the study's protocol and the district-required protocol simultaneously during classroom observations. The plan was to observe mathematics classrooms for the study while fulfilling my required teacher observations. I quickly adjusted to fulfilling my assigned duties through our district's observation protocol, and used those field notes to meet the study's needs. Once again, planning the study with consideration of realistic expectations and anticipation of time constraints would have been greatly beneficial.

Another realization deep into the action research process was the laborious and time intensive nature of conducting this type of study. As I previously mentioned, it was hard enough to secure meetings times and locations for 9 interviews and 6 meetings for the intervention. Additionally, each interview was coded in two cycles, before additional cycles of coding for categorization and final determination of themes. This is slow work because each line of interview has to be examined and reexamined to properly establish its importance and where it best fits. The intervention sessions became equally time consuming because each of the six meetings required hours of planning. Nonetheless, they were mostly successful, with the exception of not anticipating the valuable

discussions that would take place in these meetings. At one point a participants asked, "are you recording this?" As participants also noticed the quality of their discussions. Unfortunately, I failed to anticipate how valuable recording these discussions was going to be, and how field notes would miss all the wonderful nuances of their discourse.

Even though it was rewarding and important to engage in this work, there are questions that remain unanswered for me. This study cannot conclusively state that teachers' expectations are the cause of Black male students' achievement disparities in mathematics. If even possible, with the unbounded nature of this study's problem of practice, establishing causality is for a different type of research. Furthermore, the findings cannot be extended to wider populations, due to the design and methodology of the study. However, the findings could be transferable to settings that resemble the context where this study took place. Overall, my recommendations for conducting this type of research is to anticipate the real time required to accomplish each of the tasks and to come to terms with what your research can and cannot accomplish.

As my problem of practice became clear to me, I knew I wanted to involve my participants in being part of the solution. As I have discussed in several sections in this action research, one goal of the intervention was to analyze the assessment data that highlighted achievement disparities, and to compile recommendations that my participants would present to our school leaders. When I finally decided I would have participants analyze the achievement data, I had reservations because I did not want to inflict any type of harm to my participants. Once I established that I could cautiously present the data in a caring but honest manner, I moved forward with the intervention. Even though there was corroboration of findings across participants and data types, it is

highly possible that participants were shamed by analyzing their own data. More importantly, their contribution in all components of the study was possibly influenced by this shame. Given a chance to do this study again, I would strongly consider changing my approach in having participants partake in analyzing their own data.

Implications for Future Practice in Local Context

I am grateful for realizing significant development in understanding a problem that negatively affects a group of students I care very much for. From my first year as a mathematics teacher, I knew there was inequity in mathematics achievement that disproportionately affected my Black male students. Watching veteran teachers and practices within my department, I too adopted the practice of placing these students in remedial mathematics classes when they could not master the prescribed curriculum for grade level coursework. I like to think I did everything I could for these students, but I am left wondering if I exhausted all possibilities in meeting their academic needs. I cannot go back in time to address the academic needs of the students who could have benefited from what I learned in this study. However, as a school leader I can influence and assist teachers in developing relevant curriculum that gives all students an opportunity to engage and excel.

The greatest implications for my practice is a commitment to reforming what we teach and how we teach it. Before relegating students who are not excelling in mathematics classrooms to remedial tracks, I would like to see us address issues of disengagement with a broad encompassing curriculum that reaches all students. What looks like an inability to master mathematics concepts could very well be an issue of interest in the content. As the study demonstrated, the participants were vocal about a

dislike for the abstract, welcoming content that connects to their daily lives. As one participant put it, instead of doing proofs in his geometry class, he wanted more experiences with financial literacy and other skills that were going to come in handy in a few years, when he graduates. This is not to say we should discard what students are being taught in mathematics classrooms. The recommendation is for the content and teacher practices to increase a sense of belonging through relationships, and making more connections to students' lives, ultimately improving engagement and academic outcomes that lead to post-secondary success.

Moreover, no longer will I view placement of students experiencing achievement disparities in classes with reduced rigor as the best option. This study has been very influential in rejecting previous notions about students' academic aptitude, for setting high curricular expectations for all students. The contradiction between AzMERIT scores demonstrating achievement disparities, and the interviews that revealed Black male students desire to succeed academically despite what the proficiency rates imply, has been eye opening. This means I will work closely with teachers to set achievement standards, with supports to meet increased academic outcomes. Before we can attain this transformation, we must all adopt one of *culturally relevant pedagogy's* central tenets that all students can succeed academically.

As we reform the curriculum that we teach in schools, teachers must also pay attention to the types of interactions and relationships they are forging with students. Ultimately, the content being taught is nothing without the creativity, personality, and connections the teacher brings to life during every lesson. Participants were clear about favoring teachers with enthusiasm, striking a balance between learning and socializing,

and being caring and academically demanding. The aforementioned is consistent with *warm demander pedagogy*. There was a strong rejection of the traditional delivery of curriculum, which begins with *banking* of knowledge, before students reinforce these skills independently. The path forward must include the encouraging and coaching of teachers to focus on strong relationships in the classroom. Additionally, there will be recommendations to teachers on a need to diversify the manner in which students are presenting new information. There is a place for direct instruction, but small group and whole class collaboration was something participants prefer and want to experience more frequently in the classroom.

Implications for Future Research

The findings of this study are clear on the absence of perceived differentiated curricular expectations by my participants. This has led to increased interest in studying the types of expectations that teachers set for Black male students in comparison to other students. The literature on the topic of teachers' expectations indicates that self-fulfilling prophecies should ensue when teachers communicate high curricular expectations. However, this has not been the experience of my participants, as they continue to experience achievement disparities in mathematics. Leading me to suspect the possibilities that their teachers do set differentiated expectations for them. As I previously mentioned, informed by what participants expressed, I do not believe our teachers communicated reduced curricular expectations for students consciously or explicitly. If they did, participants would have voiced this in one of our interviews or during our intervention sessions.

In a recent article, Lara (2020) writes about Baldwin Hills elementary school in Los Angeles Unified School District and their success with *culturally relevant pedagogy*. After being among the lowest performing students, Black students had a 27% and 62% increase in English and mathematics, respectively. They are now one of the top schools in California. In a local implementation of culturally relevant curriculum, Cabrera, Milem, Jaquette, and Marx (2014) aimed to use quantitative methods to establish the legitimacy of a popular but controversial success of Mexican American studies in Tucson unified school district. While operating cautiously, understanding the damage testing has had on students of color, wide adoption of curriculum reform is more likely to thrive when the data demonstrating its effectiveness is irrefutable. Unfortunately, quantitative measures are better suited to achieve this goal. I would like to see further quantitative research measuring the benefits of future iterations of attempts at curriculum reform. Not necessarily in raising standardized test scores, but through increases in graduation rates, reduction of discipline disparities, and identifying and increasing variables that gauge connectedness to the school and community.

Personal Reflections

In many ways, this experience has been difficult, time consuming, and dissonance inducing, because all the while it was one of the most rewarding endeavors in my fourteen years as an educator. During meetings with my participants, at times I felt they were occupying space, possibly for the first time, with more than a couple Black student in the class. We were forging a community with similar frustrations, microagressions, and expertise in constant code-switching, which are all inevitable as one navigates between two worlds. A world where we interact with friends and family of similar

backgrounds one way, and interact with our peers from different backgrounds another way, necessitating vacillation between behaviors to fit each context.

The current structure of public education, like other institutions in our society, views "whiteness as normative" (Ladson-Billings, 1998, p. 9). Tacitly, everything in the school setting is communicating to Black male students and other students of color, they are not the normative group, and their academic success depends on how well they adapt to fit into a system was not intend to serve them. This confusing back and forth between cultures is not conducive to anyone, let alone an adolescent. This is why *culturally relevant pedagogy,* and the more recent *culturally sustaining pedagogy*, which through "teaching and learning sustain the lifeways of communities who have been and continue to be damaged and erased through schooling," (Paris, 2020, para. 1) are necessary if we are to rectify the original design that continues to fail students of color.

Recently, at a meeting with administrators from the 38 schools in our district, after a scan of the large room we were meeting in, I realized that I was the sole Black administrator in our district. In many ways, the experiences of my participants and my own possess close parallels. Therein lies my passion for studying this topic, and the ever-growing comfort and confidence to callout practices that reinforce the invisibility of Black male students in our predominantly White school. I recently spoke out about adding gifted programs at our school, because most student of color would never gain access to this rigorous curriculum, which would only increase the disparities in achievement that already exist. This was not a popular view in a room full of respected colleagues and did not gain traction, but I was happy to start a discussion where others

did concede there was a downside to bringing gifted courses to our campuses. More than ever, I will be a strong advocate for students of color in decision-making opportunities.

I began my teaching career at a Title I school, where a majority of my students came from racially diverse and lower socioeconomic backgrounds. The work was challenging, yet rewarding and necessary. As I mentioned in chapter 2, Title I schools have less experienced staff, limiting their effectiveness in these settings. After serving schools in more affluent communities, this study has fueled my passion for social justice and a desire to return to a school serving students from underserved communities. Reading works of Black scholars, such as Carter G. Woodson, whose works from 1933 closely resemble current deficiencies in how we teach Black students in public schools (Woodson, 2006), I am inspired to utilize my recently acquired knowledge in a community where I can make the greatest impact. Ultimately, I am happy to have studied a topic that I am passionate about, has informed my purpose, and I truly believe I can contribute to through praxis.

Conclusions

Ladson-Billings (1998) discusses the concept *interest-convergence* and its function as part of *critical race theory*, where White people and people of color share a mutual interest in realizing social change. She cites decisions such as *Brown v. Board of Education* and other historical occurrences where such victories appeared to demonstrate benevolence on the part of those in power. However, more often than not, these instances came to fruition because they served the interest of the dominant culture as well as the oppressed. Thinking forward, what factors should we consider to achieve curriculum reform that highlights the needs of Black students, and do those factors depend on our

ability to establish compelling outcomes that lead to *interest-convergence,* influencing those in power to participate in sweeping change?

As noted in the implications portion of this chapter, in addition to, or in absence of *interest convergence,* another area of focus will most likely require quantitative studies that demonstrate the effectiveness of reform practices such as *culturally relevant pedagogy* and *youth participatory action research,* in order to gain wider popularity and mass implementation. At the end of the day, none of these paths to curriculum reform mean anything if they do not address academic achievement. As important as curriculum reform is, it is not a panacea to addressing the educational needs of Black male students and other students of color. However, reforming the current curriculum does not require increased funding, hiring more teachers of color, and race-conscious policies. Which are all crucial to achieving the type of educational reform many of us are seeking, but have been mostly elusive, because they rely on legislators, board members, and other decision-makers outside the school setting. Conversely, curriculum reform is in the realm of autonomy afforded to teachers and administrators.

Educators are responsible for ensuring the positive experiences of students and families within their community. Specifically on how to improve Black male students' educational experiences, there must be a shift from the *color-evasive* approach that has proven to be ineffective. We have relied on a one-size fits all curriculum that neglects the assets Black male students bring to our classrooms. The centrality of race in how our schools operate and continue to underserve Black male students is something school districts must come to terms with and strive to address with race-conscious practices and policies. Only then can we show Black male students we care about them now, and their

future endeavors. I am confident these steps will increase a much-needed sense of belonging in more Black male students, whether they are a minority in a school like mine, or attend a school with predominantly students of color. The process of real change is slow, but I for one will commit the rest of my career to ensuring Black male students and other students of color have a home in public education.

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APPENDIX A

TIMELINE OF THE PROJECT: MARCH 2019 – MAY 2020

Task	2019-2020														
	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5
Research proposal															
IRB approval															
Revise protocols															
Participant selection															
Intervention															
Data Collection															
Data Analysis															
Write chapter 4 and 5															
Evaluation and dissemination															

APPENDIX B

ONE-ON-ONE SEMI-STRUCTURED INTERVIEW PROTOCOL

Distribute materials	Consent form at the beginning of the study
Researcher introduction, thank you, and purpose (1 minute)	-Start recording Hello, my name is Junior Michael and I want to thank you for being part of this study. This interview should take 50 to 60 minutes. This interview will be used strictly for the study and your identity will be kept anonymous. The interview questions will focus on math curriculum and the teacher's curricular expectations in your math class. I will be recording our interview. Do I have your permission to record? We can stop this interview for any reason, at any time, if you do not wish to continue.
Interview norms (1 minute)	As I mentioned earlier, I am going to ask you questions about your experience in your current and previous math classes. Especially questions about instruction you found helpful in math class. Feel free to elaborate on topics covered in the question or anything you believe is relevant to our discussion. We can take breaks or stop the interview at any point. This interview will help me understand the current state of your experience in math education and how we can reform curriculum to help you achieve at higher levels.
Introduction of participant (2 minutes)	To begin, please tell me a little bit about yourself: • What is your favorite subject in school? • If it is math, why? If it is not math, why not? • Would you describe yourself as a good math student?
Specific questions (45-60 minutes)	First Interview 1. Tell me about a time you were successful in any math class. What do you think led to that? 2. Tell me about a time when you had difficulty in any math class. What made this experience difficult? 3. How did you face this difficult experience? 4. Did you feel discourage as you were facing this difficulty? Why or why not?

	5. What do you think about the math curriculum in your current class? Please elaborate. 6. Do you find the math curriculum interesting? If yes, can provide me an example of how your teacher made math interesting? 7. What changes would you like to see in the way math is taught in class? 8. Does your math teacher give you challenging problems? Why or why not (in your opinion)? 9. Do you feel like you are expected to learn more or less by your teacher, compared to other students in your math class? Why? 10. Would you say your teacher expects less of you during class? Why or why not? 11. How does your teacher help you meet high academic expectations? 12. Does your math teacher give you less challenging problems than your classmates? Why or why not (in your opinion)? 13. How do you respond if/when your math teacher has high academic expectations of you? 14. Tell me about a time when you were frustrated with your math teacher or math class. What caused you to feel frustrated? 15. Thinking back to the time when you were frustrated in your math class, what helped or could have helped you in that instance? 16. Are you planning on going to college? If yes, do you know what math classes are required for admission? 17. What school do you plan on applying to? 18. Do you believe you have a chance to get into college/university? Why or why not?

	19. How can we (teachers and administration) support you in your math classes to help you attend college?
Closing (2 minutes)	Thank you for being part of the study and this interview. I really appreciate your input. You have given me a lot to think about. Thank you for your time. Do you have any questions or additional comments? -Stop recording

APPENDIX C

SECOND ONE-ON-ONE SEMI-STRUCTURED INTERVIEW PROTOCOL

Distribute materials	Consent form at the beginning of the study
Researcher introduction, thank you, and purpose (1 minute)	-Start recording Hello, my name is Junior Michael and I want to thank you for doing this second interview with me. This interview should take 30 to 45 minutes. Just like the first interview, your answers to my questions will be used strictly for the study and your identity will be kept anonymous. The interview questions will focus on the work we did together in this study, especially your participation in the intervention. I will be recording our interview. Do I have your permission to record? We can stop this interview for any reason, at any time, if you do not wish to continue.
Interview norms (1 minute)	As I mentioned earlier, I am going to ask you questions about your experience with the intervention. Especially questions focused on the curriculum from the intervention and my curricular expectations of you. Feel free to elaborate on topics covered in the question or anything you believe is relevant to our discussion. We can take breaks or stop the interview at any point. This interview will help me understand how to better design curriculum for all students, but especially Black male students.
Introduction of participant (2 minutes)	To begin, let's see if you've changed your mind on some questions I asked you last time: • What is your favorite subject? • If it is math, why? If it is not math, why not? • Would you describe yourself as a good math student?
Specific questions (25 - 30 minutes)	Second Interview (about the intervention and will take place at the end of the study) 1. What aspects of our meetings did you like and why or why not? 2. Portions of our meetings that you liked, did it help you in your math class or academically? How?

	3. What aspect of our meetings was not useful to you in your math class or academically? What would have made it more useful? 4. Did you find what we worked on in our meetings challenging and/or interesting? Why or why not? 5. Did what we worked on in our meetings encourage you to work harder than you typically do in your math class or academically? Why or why not? 6. How did the topic of our meetings influence your participation in the activities and desire to succeed in those activities during our meetings? 7. Did you feel like there was high expectation of you in our meetings? Why or why not? 8. How did the level of expectation that I communicated to you and others influence your participation in our meetings? Especially addressing issues that are specific to you. 9. Did my expectations and treatment of you differ in any way when compared to your math teacher and other teachers? Did the fact that I am a Black male make a difference in receiving my expectations or treatment? 10. What have you learned from your experience in our meetings that you could apply in all of your classes? 11. What else can our teachers do to help you achieve at higher levels? 12. What can our administration do to help you achieve at higher levels across all content areas?
Closing (2 minutes)	Thank you for being part of the study and this interview. I really appreciate your input. It was an absolute pleasure working with you this semester. Thank you for your time today and the time you spent with me throughout the study. Can I check in with you at the end of looking through this interview transcript to ensure I captured your responses as you meant them?

	Do you have any questions or additional comments? Thank you. -Stop recording

APPENDIX D

FOCUS GROUP PROTOCOL

Distribute materials	Consent form at the beginning of the study
Researcher introduction, thank you, and purpose (1 minute)	-Start recording Hello, I want to thank you for being part of this group interview. This focus group interview should take no more than an hour. This interview will be used strictly for the study and your identity will be kept anonymous. The interview questions will focus on mathematics achievement. I will be recording our interview. Do I have your permission to record? We can stop this interview for any reason and at any time if you do not wish to continue.
Focus group norms (1 minute)	During the focus group I will be asking you questions about mathematics achievement, the role of curriculum, and how teachers' curricular expectations influence your success in the classroom. Feel free to elaborate on topics covered in the questions or anything you believe is relevant to our discussion. You can stop the interview at any point. One ground rule I want to establish is for all of us to do our best to speak one at a time. This will allow us to hear each other out clearly. In addition, please state your name before responding to my questions. This will help me identify who is speaking when I review the recording for this session. Thank you.
Focus group questions (45-60 minutes)	1. Do you believe the current mathematics curriculum suits your strengths? Why or why not? 2. What do you think the curriculum needs to better suit you (assuming participants express deficiencies in the current curriculum)? 3. What could your teacher do to help you be more successful in the math classroom? 4. Do you find the math content you are taught enjoyable? Please explain why or why not.

	5. What would make the content more enjoyable for you? 6. Is the math you are being taught relevant to you? Please explain why or why not. 7. What would make the math lessons more relevant for you? 8. Do you pay attention in your math class most of the time? Please explain why or why not. 9. How often does the teacher call on you during class? Is it more or less often than your classmates? 10. How often are you praised by your math teacher? Is it more often or less often than your classmates? 11. How often are you criticized by your math teacher? Is it more often or less often than your classmates? 12. Do you feel like your math teacher treats you differently than other students? Please explain why or why not. 13. What is your relationship with your classmates like? Is it positive? Please explain why or why not. 14. Have been treated differently by any of your teachers based on your race? Specifically, different treatment on academic expectations for you. 15. Do you believe your math teacher thinks you are a good math student? Why or why not?
Closing (2 minutes)	Thank you for being part of the focus group interviews. I really appreciate your input. You have given me a lot to work with. Thank you for your time. Do you have any questions or additional comments? -Stop recording

APPENDIX E

CLASSROOM OBSERVATION PROTOCOL

Distribute materials	Consent form at the beginning of the study, and I will garner teacher permission to observe at the beginning of the study.
Researcher role	I will observe a full lesson, for the duration of 55 minutes in a grade level mathematics classroom. I will plan on observing each participant in their mathematics class at least once. The objective of the observation is to capture interactions, actions, attitudes, behavior, and engagement of participants, as well as the general practices of the classroom teacher. More specifically, I will be paying special attention to the curricular expectations of participants' teachers. I will enter the classroom quietly and minimize any possible disruption created by my presence.
Classroom information	Teacher_____ Date_____ Subject_____
Participant Information	Student (pseudonym)_____
Observation field notes	Description of the classroom: Classroom: a. Layout: b. Seating arrangements: c. What is displayed on white boards? d. What is displayed on walls (posters, rules, etc.)? Teacher: a. Teacher demeanor (appearance, attitude, conduct, etc): b. Lesson objective: c. Teacher expectation: d. Instruction delivery:

	e. Instructional planning: f. Type of curriculum (standard, responsive, other): g. Length of direct instruction: h. Length of student interactions (collaboration): i. Assessment (formal and informal): j. Teacher roles: k. Classroom activities: Student (Participant): a. Engagement/participation with curriculum: b. Interaction with teacher: c. Interaction with peers: d. Teacher feedback: e. Teacher praise: f. Teacher criticism:

	g. Teacher control or behavior based interaction: Other students: a. Engagement/participation b. Interaction with teacher c. Interaction with peers d. Teacher feedback: e. Teacher praise: f. Teacher control or behavior based interaction:
Closing (2 minutes)	Thank the teacher and leave with minimal disruption to the classroom environment (at the end of the class).

APPENDIX F

STUDENT JOURNAL PROTOCOL

Distribute materials	Consent form at the beginning of the study
Purpose	The goal of the student journals is to capture students' perceptions of the intervention. Students will spend the last five minutes of each intervention session reflecting in their journals on what they thought of the day's activities.
Interview norms (1 minute)	Participants will respond to the same prompts in their student journals. Participants complete this activity at the end each intervention session.
Student journal prompts	What were your impressions of today's session? Did you understand what we went over today? Please elaborate. What concepts from today do you still need help on? What portions of today's session could you see benefiting your academic experience? • How can these concepts help you in other classes? • How likely are you to use the concepts we learned today to successfully complete your class assignments? What was missing from today's session or what are some areas of today's session that could be refined? General comments, questions, ideas?
Resources	Student journals will be completed on Blogger.com using school issued iPads. The transcripts of the blogs will be analyzed and coded.