2016

# A Case Study of an African American Community's Perceptions of Problems in Mathematics Education

Renee Jenkins
*Walden University*

# Walden University

COLLEGE OF EDUCATION

This is to certify that the doctoral study by

Renee Jenkins

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Jennifer McLean, Committee Chairperson, Education Faculty
Dr. Therese Kanai, Committee Member, Education Faculty
Dr. Karen Hunt, University Reviewer, Education Faculty

Chief Academic Officer

Eric Riedel, Ph.D.

Walden University
2016

Abstract


A Case Study of an African American Community's Perceptions

of Problems in Mathematics Education

by

Renee Jenkins




Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education




Walden University

January 2016

Abstract

African American students across income classes have been found to struggle with

mathematics, impeding their ability to complete college, pursue lucrative careers, and address

socioeconomic problems. Using the tenets of liberation and critical race theory, this

qualitative case study explored the perceptions of a small group of 8 African American adults

as to what they believe to be the root causes of mathematics achievement disparity for

African American K-14 students, and what role the African American community can play in

ameliorating these disparities.  As most related studies are on low income communities, this

study focused on an affluent African American community.  Standardized math test

performance data were gathered for local public schools, and 8 African American community

leaders were interviewed; all but one were parents and 5 were science, technology,

engineering, and math (STEM) professionals. Participants identified 4 root causes of

disparities and 4 roles the community can play in addressing them. Root causes related to

stunted aspirations, cultural obstacles, academic barriers, and poor rewards.  Roles included

funding a parallel culturally-responsive academic support system, inducing African American

organizations to improve support for academic initiatives, improve children's understanding

of the importance of math, and strengthen the community's communications with schools.

Curriculum for a community training program was designed to support these roles. The

results of this study support social change by informing stakeholders on how disparities

manifest in mathematics achievement, even in an affluent African American community, and

by providing information about how to leverage community participation in developing more

culturally relevant and sustainable academic interventions.

A Case Study of an African American Community's Perceptions

of Problems in Mathematics Education

by

Renee Jenkins

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

January 2016

Dedication

This effort is dedicated to my mother and grandmother who taught me the power of sacrifice, to my father who gifted me with a love of learning and to the liberation scholars past as well as present on whose shoulders I stand.

Acknowledgments

It not only takes a village to raise a child. It takes one to fulfill a dream. The names are too numerous to list here. Therefore, I will just simply thank my blood and spiritual family for every kind word as well as deed on my behalf. I also apologize for not calling you back. With a special 'thank you' to those who participated in this study, I also extend my heartfelt appreciation to all who labored and gave so graciously of their time and energy in the manifestation of  this study. This includes my doctoral chairperson and committee as well as editors. Asante sana.

Table of Contents

iii

List of Tables

List of Figures

Section 1: The Problem

**Introduction**

In order to address pressing social, economic, and environmental challenges, history repeatedly demonstrates that marginalized groups must develop adequate responses based on  introspection and self-directed leadership. The historian, educator, and community advocate, Carter G. Woodson, spoke to this need in 1933.

> History shows that it does not matter who is in power or what revolutionary forces take over the government, those who have not learned to do for themselves and have to depend solely on others never obtain any more rights or privileges in the end than they had in the beginning. (Woodson, 1990, p. 97)

This quote sets the tone and serves as the underlying purpose of this doctoral project study. In line with Woodson, the premise of this study recognizes the vital role that African Americans as a marginalized group must continue to play in leading, organizing and orchestrating solutions to their problems in a manner that serves their collective, long-term psychological and socioeconomic interests (Akbar, 1985; Freire, 2000; National Urban League, 2013; Woodson, 1990).

Numerous scholar-educator-activists have documented African Americans' struggles to confront injustices such as slavery, illiteracy, Jim Crow, and poverty (Moses & Cobb, 2001; Peterson, Woessmann, Hanushek,  & Lastra-Anadón, 2011; Woodson, 1933). Just as in confronting these injustices, African American communities are now called to cultivate more autonomous and organized coping strategies in order to address disparities in mathematics education with a view to meeting the educational challenges of

the 21st century (Moses & Cobb, 2001; National Urban League, 2013; Peterson et al., 2011).

On average, African Americans earn 20 points lower on standardized mathematics exams, and represent less than 4% of U.S. scientists, computer technologists, engineers and mathematicians (Barton & Coley, 2010; National Math and Science Initiative, 2012; U.S. Department of Commerce, 2011; U.S. Department of Education, 2008). These statistics, along with other national and local data, demonstrate that African American K-12 and community college students face significant struggles in becoming proficient in mathematics (Barton & Coley, 2010; National Math and Science Initiative, 2012; U.S. Department of Commerce, 2011; U.S. Department of Education, 2008). Therefore, a case study was proposed. The goal was to explore the perceptions of a diverse range of middle-class African American parents and community leaders who reside in an upper middle-class Maryland suburb. The primary purpose of the study was to develop insight into how the African American community might mobilize its resources in leading efforts to mitigate the problems their children face in learning mathematics. This study includes an overview of the local problem, rationale for exploring the problem, a review of relevant literature, a review of related theoretical frameworks, research methodology, proposed follow-on projects, overall reflections, and conclusions.

<div align="center">**Definition of the Problem**</div>

At the national level, numerous reports have documented the decline in mathematics performance across all demographic groups (National Math and Science

Initiative, 2012; U.S. Department of Education, 2008). These studies have also recognized the importance of mathematical skills to employability and upward mobility, noting the quality of life, national security, and socioeconomic ramifications of this decline (National Math and Science Initiative, 2012; U.S. Department of Education, 2008). Mathematics proficiency now governs the development of critical technical and scientific skills that are necessary to navigate today's globalized economy; the ramifications of low mathematics proficiency is no insignificant matter for individuals, communities, or nations because a decline in math skills is a decline in socioeconomic viability and leadership. (National Math and Science Initiative, 2012; U.S. Department of Education, 2008).

In particular, African American students are demonstrating a steady decline in mathematics performance (National Math and Science Initiative, 2012; U.S. Department of Education, 2008). This decline, coupled with ongoing disparities in access to educational resources and opportunities, leaves African American students especially vulnerable to a variety of socioeconomic problems. These socioeconomic problems include difficulties  graduating from high school and college, limited access to lucrative careers in science, technology, engineering and math (STEM), reduced opportunities to help their families move out of poverty,  difficulty developing the skills needed to assist their children in critical academic subjects, and an inability to solve many modern problems that require strong quantitative skills (National Math and Science Initiative, 2012; U.S. Department of Education, 2008).

For example, only 3% of African Americans hold jobs that can be formally classified as science, technology, engineering and mathematics (STEM) jobs, compared to 6% of European Americans, and 15% of Asians (U.S. Department of Commerce, 2011). From grade school through college, there exists a significant score gap between African Americans, European Americans, and Asians on standardized mathematics tests. The latest national report card in mathematics reported that the standardized test score gap between African American and European American 4th and 8th graders remained on average 25-30 points (National Center for Education Statistics, 2011). National statistics also show that 68.2% of African Americans who attend 2-year colleges have to take remedial math courses, with only a 50% chance of completing those courses (U.S. Department of Education, 2012). This statistic is in comparison to European Americans and Asians, of whom only 39.4% and 31.2%, respectively, have to take remedial math courses.

As reflected in a Maryland Higher Education Commission's (MHEC) 2008 Minority Achievement Report, the College of Southern Maryland (CSM), like many community colleges, continues to face  the ramifications of students having limited proficiency in mathematics and the challenges these students face in completing math, as well as math-related courses. However, before highlighting research from MHEC and other organizations which demonstrate that local African American students have an especially difficult time completing math courses (MEHC, 2008, 2011),  relevant demographics for Southern Maryland are presented. The area known as Southern Maryland is located approximately 40 miles from Washington, DC and is comprised of

three formally rural/agricultural counties that now bear a suburban label. These counties

include Calvert, Charles, and Saint Mary's Counties. Based on current census

information (U.S. Census Bureau, 2012), the demographics for each county are reflected

in Table 1.

Table 1

*Southern Maryland Population by Race*

| County | % African American | % Asian | % European American | % Hispanic |
|--------|--------|--------|--------|--------|
| Calvert | 13.8 | 1.5 | 81.7 | 2.9 |
| Charles | 41.6 | 3.1 | 51.0 | 4.5 |
| St. Mary's | 14.6 | 2.7 | 79.2 | 4.0 |

Currently, the only Southern Maryland county that has a great income disparity between

African Americans and European Americans is Saint Mary's County, where the median

income for African American households is $54,567, compared to European Americans

at $94,613 (U.S. Census Bureau, 2010b). However, more telling is the disparity in

educational attainment in all three counties where only 11% of African Americans have a

4-year degree compared with 29% of European Americans (Census Bureau, 2010b). This

lack of educational attainment translates not only into higher levels of poverty and

unemployment, but also impacts parents' ability to support their children in academic

endeavors (The Joint Economic Committee, 2010; Strayhorn, 2010; U.S. Department of

Education, 2008). In turn, parents' lack of educational attainment and academic support

impacts children's educational attainment, as evidenced in college matriculation patterns (U.S. Department of Education, 2008).

Approximately 74% of part-time undergraduate students in the area, and 62% of local graduating African American high school seniors, go on to attend CSM (MEHC, 2012). However, CSM's 4-year African American graduation rate is only 3%, which is low [even] compared to admittedly low nationwide community college graduation rates (National Center for Education Statistics, 2011a). The challenge of successfully completing remedial mathematics courses significantly contributes to this low graduation rate (National Center for Education Statistics, 2011a). Based on a review of internal reports and state plus national statistics, it is conservatively estimated that at least 47% of CSM's African American students have to take remedial math courses (MHEC, 2008; The College Board, 2011).

Nationally, research and statistics demonstrate that as the number of remedial courses a student is required to take increases the likelihood of their graduating decreases (Levin & Calcagno, 2008; U.S. Department of Education Statistics, 2012). This pattern holds true at CSM, where the difficulty of finishing remedial/developmental mathematics courses contributes to the low African American graduation rate (Jenkins, 2012; MHEC, 2012). Although CSM has the resources to provide some tutoring, more tutors, convenient hours for obtaining tutoring, and African American tutors/mentors are needed (CSM, 2012). However, above and beyond providing additional mentoring/tutoring support, numerous scholar-practitioners have highlighted the need for the African American community itself to understand and lead efforts to address the root causes of its

educational problems, including why so many African American students struggle with mathematics, starting in grade school (Marable & Mullings, 2009; Moses & Cobb, 2001; National Urban League, 2013; Strayhorn, 2010).

## Rationale

**Evidence of the Problem at the Local Level**

In seeking to better understand the root causes of the challenges CSM's African American students face in completing remedial math courses and courses that require strong math skills, a review of Maryland State Assessment (MSA) scores for $3^{rd}$ through $12^{th}$ graders provides evidence that their problems with mathematics begin long before they enroll at the college. MSA results not only expose a gap in mathematics performance between European Americans and African Americans, but also show a decline in African American students' performance as their grade level increases, with fewer and fewer of them performing at proficient—let alone advanced—levels (Maryland State Department of Education, 2012).

Specifically, MSA results show a disturbing trend in all three southern Maryland counties, which confirms that math proficiency of African Americans declines significantly with each grade level compared to European Americans and Asians. Anexample of this trend can be seen in the 2011 MSA results for Charles County, the largest Southern Maryland county. The percentage of students who score as proficient for $3^{rd}$ and $8^{th}$ graders are shown in Figure 1.
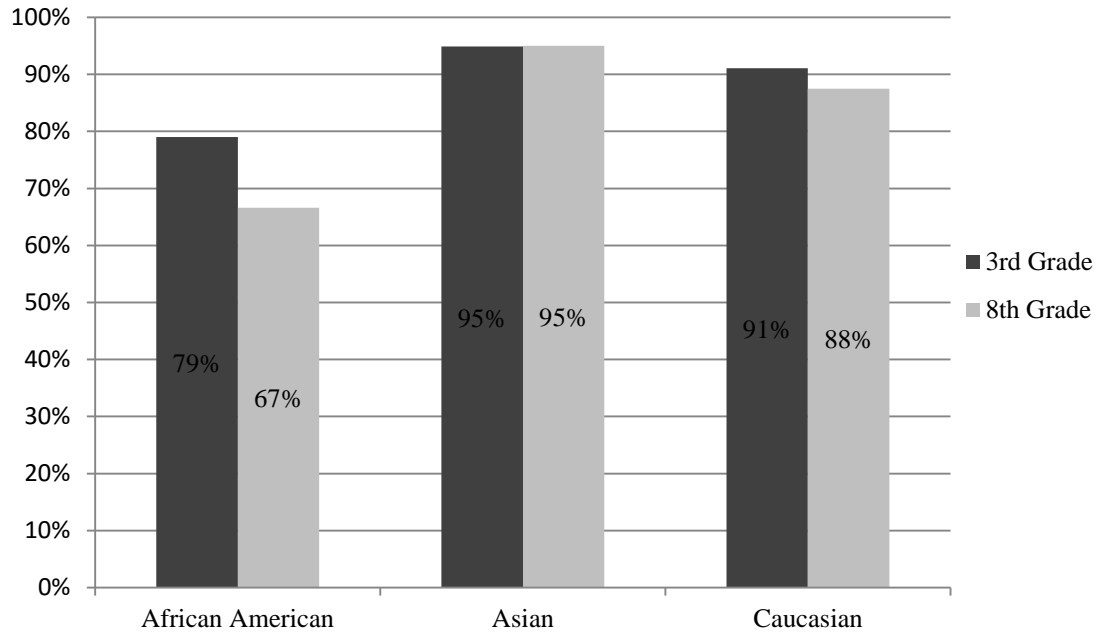
*Figure 1*. 2011 MSA mathematics exam proficiency rates as published by Maryland State Department of Education, 2012.

The statistics for the Calvert and Saint Mary's counties mirror those of Charles County. Although when assessing public data it is difficult to ascertain specific performance levels, there appears to be a score gap for African Americans at the high school level as well. Evidence such as Calvert County's SAT math scores show that European Americans score an average of 526; African Americans, 450 (Calvert County Public School System, 2011). In all three counties, 10-24% of African Americans do not pass High School Assessment (HSA) exams (Maryland State Department of Education, 2012). Upon arrival at CSM, MHEC reports (2008; 2011; 2012; 2013) reveal that African American students continue to struggle in mathematics, with those classified as

developmental students having a less than 50% chance of returning the following fall (MHEC, 2012).

Recent strategic and annual public reports published by CSM and the Calvert County public school system recognize the African American achievement/graduation gap as a major concern (Calvert County Public Schools, 2014; College of Southern Maryland, 2014). CSM reports indicate that the completion of developmental courses is one roadblock African American students face. These reports also indicate the need to address common problems experienced by African American students in mathematics education. Such problems include the need for instruction which matches their learning styles, culturally sensitive approaches which encourage more of them to seek and use student support services (i.e., advising, tutoring, etc.) as well as improved relationships with teachers (Calvert County Public Schools, 2014; College of Southern Maryland, 2014).

Given the difficulties African American students face in mathematics from grade school through their enrollment in the local community college, plus the limited resources of local schools, the need for ongoing African American community-led mathematics tutoring or support programs in the Southern Maryland area seems essential. However, to date no such initiatives have been found. In addition, no African American community-led efforts designed to help parents and other community advocates address the systemic difficulties African Americans students experience in mathematics have been discovered. Therefore, rather than continuing to have individual students and families struggle with mitigating problems and barriers in mathematics education from

grade school through college, the goal of the study was to research how the African American community might develop its own community-led initiative(s) to improve academic success rates in mathematics for African American students.

**Evidence of the Problem from the Professional Literature**

It stands to reason that as the subject underlying numerous domains of influence and power, including music, agriculture, science, finance as well as technology, the successful study of mathematics now serves as a gateway to the privileges of socioeconomic power, including a sense of mastery plus heightened self-esteem for individual students as well as cultural groups (Aghajani, Khormaee, Rajabi, & Rostamoqli, 2012; Erdoğan, Kesici, & Şahin, 2011; Mellin-Olsen, 2002). Consequently, in many ways mathematics education and research serves as a mirror for the social inequities and tensions found in the broader U.S. society and African American communities (Mellin-Olsen, 2002).

For purposes of this study, the next section summarizes research findings related to three critical problems faced by African Americans in their quest to become successful learners and employers of mathematics. These three problems include: (a) the mathematics achievement/opportunity gap between African Americans, European Americans, and Asians; (b) the ramifications of de facto tracking vis-à-vis mathematics; and (c) the cultural challenges African Americans individually and collectively face in crafting an infrastructure that mitigates the legacies of racism and racialization in all socioeconomic arenas including mathematics education.

While recognizing the need to escape characterizing the complex inequities and problems African Americans face in learning mathematics as ones that can be historically decontextualized and merely assessed using standardized tests designed by another group, Lubienski (2008) posited that there must be a common framework for measuring common aspects of performance in order to inform public discourse and the allocation of resources. Hence, if the majority of African Americans are to continue to matriculate in predominantly European American-controlled institutions as forecasted, there is a need for the community to consciously consider how poor performance on standardized tests harms and stigmatizes their children plus the community (AACTE, 2013).

For instance, Hanushek and Woessmann (2008) have shown that it is important for communities and countries to consider performance on standardized tests, as international tests scores are closely related to long-term economic growth for individuals and their communities. However, by focusing exclusively on the disparities between African Americans and European Americans in their performance on standardized mathematics tests as an achievement gap, rather than also as an opportunity or equity gap, achievement gap research often fails to fully acknowledge the deep ramifications of "race, racism, and racialization" (Martin, 2009b, p. 326). Therefore, a synopsis of research related to framing African American struggles in mathematics as both an achievement and opportunity gap follows.

Since the 1960s, researchers have officially tracked the academic achievement gap between African Americans and European Americans (Harris & Herrington, 2006; Ladson-Billings, 2006). Despite a slight easing in the early 1990s, this achievement gap

has continued to be especially pervasive in mathematics (Flores, 2007; Reyes & Stanic,

1988; Tate, 1997). Even though research does indicate "when African American and

European American students complete the same number of math courses the difference in

average achievement gap shrinks," many African Americans do not have the opportunity

to complete the same number of courses (Tate, 1997, p. 16). Therefore, as their grade

level increases, more African Americans place at low proficiency levels on standardized

tests, with few placing at advanced proficiency levels (Leonard, Napp, & Adeleke, 2009;

Tate, 1997; Walker, 2007).

Furthermore, low proficiency prevents many African Americans from taking

and/or succeeding in more advanced courses. This domino effect then blocks them from

pursuing rigorous college majors or careers that require STEM skills (Leonard, Napp, &

Adeleke, 2009; Walker, 2007). For instance, dating back to the 1990s, Tate (1997) found

that African Americans were less likely than European American and Asian students to

demonstrate advanced aptitude on standardized mathematics exams (12% compared to

39% and 45% respectively). Unfortunately, historical findings related to low

mathematics proficiency, lack of advance course taking and low enrollment in STEM

degree programs are not relegated to the past.

In 2011, with only 11% percent of African Americans identified as proficient in

mathematics, compared to 42% of European Americans, and 50% of Asians, recent

research continues to show that African Americans struggle with learning mathematics

(Peterson et al., 2011). Moreover, although research has established that just as for

Asians and European Americans, mathematics achievement gains for African Americans

increases when the number of mathematics courses undertaken increases, the vast

majority of African Americans end up taking fewer and less rigorous mathematics

courses (Harris & Herrington, 2006). This lack of proficiency in mathematics often

results in African Americans having to take at least one remedial math course in college

which in turn greatly decreases their chances of ever graduating from college (U.S.

Department of Education, 2012).

Even for those students who do have the opportunity to take advance level

mathematics courses, they struggle to do well on standardized exams like the ACT, AP,

and SAT tests (Walker, 2007). Coupled with this finding is the fact that "not even among

students from college-educated [African American] families can we find a majority of

students crossing the proficiency bar in math" (Peterson et al., 2011, p. 15). Yet, granting

perhaps not a completely fair contextual rendering of the problems African Americans

face in learning mathematics, a review of disparities between African Americans and

European Americans in performance on standardized mathematics tests does shed a

disturbing light on persistent deleterious trends.

Coupled with achievement gap research, additional research studies reveal that

mathematic education has become the new system used to track and stratify students

(Ballon, 2008; DiME, 2007; Gutierrez, 2000, 2008; Hooper, Roberts, Sideris, &

Burchinal, 2010; Leonard, 2008, 2009; Martin, 2009a, 2009b; Martin, Gholson, &

Leonard, 2010; Stinson, 2009). As Martin et al. (2010) emphasized that this defacto

tracking system results in continuing to afford the privileged some with more privileges

while restricting opportunities for others. Thus, advanced mathematics proficiency and

courses remain off limits to African Americans and other marginalized groups. This tracking dynamic alone points to structural inequities that call for sustained community engagement and oversight.

There is a need to place African Americans problems in mathematics education in their proper cultural-historical context to move beyond as Gutiérrez (2008) cautioned "[achievement] gap gazing" and tracking analysis in order to build an "infrastructure for equity" (Secada, 1992, p. 654). Therefore, a summary of research which demonstrates how race, racialization, and racism impact African Americans' opportunities as well as experiences in mathematics (Martin, 2009a, 2009b) concludes this section. Research reveals that historical and cultural forces leave African Americans struggling to develop the collective-cultural/community and individual capital needed to address systemic problems which originate from having educational needs as well as learning styles that do not necessarily align well with Eurocentric values, curriculum, and/or pedagogy (Leonard, Brooks, Barnes-Johnson & Berry, 2010; Martin, 2009a; Martin, 2009b; Meyers, 1993; Wilson, 1978). This lack of alignment includes their need to address social justice concerns, resource constraints, cultural identity development challenges, differing learning styles, stereotype threats, and the low expectations of teachers, as well as even their own families/communities.

For instance, albeit often indirectly, the ongoing group-level struggles African Americans experience in defining/controlling their own educational agenda and resources in the service of their cultural interests, appear in many research studies (Barnett, 2002; Barton & Coley, 2010; Bass & Gerstl-Pepin, 2011; Leonard, Brooks, Barnes-Johnson &

Berry, 2010; Martin, 2009a, 2009b). This point is illustrated by long established research

that demonstrates "investing in early childhood education, health, and well-being [is]

linked to future success in school and healthier outcomes" (Bass & Gerstl-Pepin, 2011, p.

925). Yet, despite these findings across socioeconomic classes, studies continue to reveal

that African Americans have lower access to quality early childhood education and

healthcare (Barnett, 2002; Barton & Coley, 2010; Bass & Gerstl-Pepin, 2011). In this

way "when children and their families are not properly cared for in terms of clean, safe

stable housing, nutritious food, proper health care, and early education, they are far more

likely not to come to school prepared to learn and, thus, be successful" (Bass & Gerstl-

Pepin, 2011, p. 924). Such a deficit has long lasting ramifications.

      However, even for African American children who do enter school ready to learn,

research findings demonstrate that many discordant cultural, psychological, social,

economic, and political forces often lead even these prepared children to disengage from

the study of mathematics. Some of these forces include explicit and implicit messages

regarding who is capable of doing mathematics; unacknowledged educational needs

based on culture and historical disconnect between school personnel and

parents/community. A description of these forces follows.

      Most members of society receive explicit and implicit images/messages about

who is capable of doing mathematics well (Viadero, 2005). For instance, considering the

race and gender of  the majority of mathematics teachers and the typical pictures of

mathematicians presented in textbooks as well as the media,  the broadcasted message

reads that to be math savvy or a mathematician is to be European American or Asian, and

male (Viadero, 2005). In due course, these stereotypical images and messages too often lead to unconscious bias and lowered expectations on the part of parents, teachers, students and others (Bean, 2005; Viadero, 2005; Martin, 2009a, 2009b; Stinson, 2013). This bias in turn fuels a self-fulfilling prophecy, wherein many stakeholders cease expecting African Americans to excel in mathematics, especially, at advanced levels (Bean, 2005; Martin, 2009a, 2009b; Stinson, 2013; Viadero, 2005).

Given unacknowledged education needs and styles, stereotype threats, as well as limited cultural capital including socioeconomic resources, developing positive identities as students and learners of mathematics remains very rough terrain for African Americans (Aghajani, Khormaee, Rajabi, & Rostamoqli, 2012; Aguirre, Mayfield-Ingram & Martin, 2013; Martin, Martin, Gibson, & Wilkins, 2007). Since mathematics pedagogy and curriculum tends to be Eurocentric in nature, many African American students "are never given the opportunity to engage with mathematics in rich and meaningful [culturally-relevant] ways that emphasize critical thinking and problem solving" related to topics as well as problems they care about (Aguirre et al., 2013, p. 5). Nor are the learning styles and strengths of African Americans (i.e., communal values, curiosity, sociopolitical awareness, improvisational thinking, linguistic skills, etc.) necessarily recognized or nurtured in traditional mathematics classrooms (Aguirre et al., 2013; Berry, Thunder, & McClain, 2011).

In addition to having access to fewer academic opportunities because of the lower amounts of wealth and educational resources available in their families/communities, stereotypical images/messages about who can do mathematics well, limited opportunity

to interact with mathematics in culturally relevant ways, and limited nurturing of their academic strengths, African American students must often battle stereotype threats. As Steele described in his pioneering research, based on the racialized world they see and experience, African American students constantly cope with the threat of being seen as a negative stereotype and the fear of inadvertently confirming negative stereotypes based on their actions (Grusky & Szelenyi, 2007). In mathematics education, a field ripe with stereotypes and complex politics (Mellin-Olsen, 2002), researchers continue to find that anxiety related to stereotype threat undermines African Americans academic confidence and performance (Aghajani et al., 2012; Aguirre et al., 2013; McGee & Martin, 2011; Steele, 2010).

Another force that impedes African Americans' development in mathematics rests on cultural habits and weak historical ties between African American parents/community and schools, which frequently make for real as well as perceived low parental/community participation in the schooling of their children (Brandon, 2007; Cousins & Mickelson, 2011; Franklin, 2002; Hooper, Roberts, Sideris & Burchinal, 2010; Ingram, 2007; Jeynes, 2003, 2012; Lee & Bowen, 2006; Strayhorn, 2010). Despite numerous studies showing the positive relationship between parental involvement and student achievement, poor ties plus lines of communications between African American parents and schools are too often the norm (Brandon, 2007; Cousins & Mickelson, 2011; Franklin, 2002; Hooper, Roberts, Sideris & Burchinal, 2010; Ingram, 2007; Jeynes, 2003, 2012; Lee & Bowen, 2006; Strayhorn, 2010). Owing to historical differences in power based on race, African American parents and school teachers/administrators simply have limited insight into

each other's culture, values and norms (Brandon, 2007; Lee & Bowen, 2006). This limited exposure translates into assumptions about each other's roles and responsibilities resulting in a failure to establish productive academic strategies for helping students, particularly, outside the classroom (Brandon, 2007; Lee & Bowen, 2006).

As illustrated by the array of aforementioned forces, the problems that African Americans face in mathematics education are complex and multifaceted. Given the complexity of these problems and that academic/mathematics education reform efforts have been underway for over 40 years, research points to the need for increased community involvement and oversight. Based on a range of statistical indicators, the National Urban League's 2013 *State of Black America* summarizes and underscores the call for an increase in community action especially in the spheres of education and job training. For as the report explains, given the structural inequities African Americans face, the community must remain diligent in "seizing opportunity when it presents [and] determined [plus] committed to creating opportunity when it does not" (National Urban League, 2013, p. 11) .

**Definitions**

The following key definitions were used in this study.

*Critical race theory (CRT):* CRT looks at how race and citizenship might interact (Ladson-Billings, 1998; Ladson-Billings & Tate, 2006). Originating from diverse legal and liberation philosophies as well as human/civil rights movements, CRT can be viewed as a "historical movement and a philosophical orientation that recognizes the centrality and permanence of  racism in the United States" (Kumasi, 2011, p. 2011). CRT provides

scholars across disciplines with a language and paradigm to use in considering the perspectives plus needs of those impacted by racialization and racism (Kumasi, 2011).

*Post traumatic slavery syndrome (PTSS):* PTSS "is a theory that explains the etiology of many of the adaptive survival behaviors in African American communities throughout the United States and the Diaspora. It is a condition that exists as a consequence of multigenerational oppression of Africans and their descendants resulting from centuries of chattel slavery… and institutionalized racism which continues to perpetuate injury" (DeGruy, 2010, p. 1).

*STEM*:  The STEM academic and professionals disciplines include science, technology, engineering and math (Department of Professional Employees AFL-CIO, 2012).

## Significance

Since mathematics literacy now serves as the gateway to STEM subjects and the gateway to citizenship plus socioeconomic viability in this technology-driven 21st century, limited mathematics proficiency and interest in mathematics decreases the probability of a person completing college and their access to more lucrative STEM-related careers (Bennett, 2011; Moses, 2001; U.S. Department of Education, 2008). More importantly, limited mathematics proficiency renders individuals and communities even more vulnerable to low self-esteem, socioeconomic turmoil, unemployment, exploitation and oppression (Flores, 2007; Moses, 2001; The Joint Economic Committee, 2010; U.S. Department of Education, 2008).

For instance, there are signs that limited mathematics interests and/or skills are impeding African Americans access to STEM related degrees and careers in the Southern Maryland area (CSM, 2011; Department for Professional Employees AFL-CIO, 2012; U.S. Department of Labor, 2012). In 2011, although African Americans comprised 22% of CSM's student body, they were only 12% of computer science/information technology graduates, and only 4% of engineering graduates (CSM, 2011, p. 95). Another indicative sign is that despite the high unemployment rate for African Americans and the fact that "Washington, D.C. has more than two times the concentration of STEM jobs than the national average" the number of African Americans pursuing STEM degrees at CSM remains low (Department for Professional Employees AFL-CIO, 2012, p. 3).

Although due to data aggregation, it is difficult to determine local employment rates by occupation. Based on CSM's enrollment plus graduation rates, it is reasonable to suspect that local rates are not much better than national rates that show that African Americans are underrepresented in "STEM occupations, accounting for about 8% or less of jobs in computer and mathematical occupations (6.9 %), life, physical, and social science occupations (7.4 %), and architecture and engineering occupations (5.2 %)" (U.S. Department of Labor, 2012, p. 7). Thus, both locally and nationally, the ramifications of African Americans difficulties in mathematics leaves African Americans individually and collectively increasingly vulnerable to lowered self-confidence, aspirations and educational attainment which in turn translates into higher rates of poverty, unemployment, economic exploitation, and barriers encountered in raising and educating children.

**Guiding/Research Questions**

Diverse researchers have linked African American students' academic and
mathematics performance to community-cultural capital, including factors such as
socioeconomic status, parental involvement with children, parental involvement with
schools, ethnic identity,  mentoring, and academic enrichment opportunities available
outside of school (Aguilar & Keating, 2009; Ballon, 2008; Brandon, 2007; Cousins &
Mickelson, 2011; Donahoo & Caffey, 2010; Hooper, Roberts, Sideris & Burchinal, 2010;
Ingram, 2007; Jeynes, 2003; Jett, 2010; Lee, & Bowen, 2006; Martin, 2000; Martin et al.,
2007; Strayhorn, 2010). However, despite these findings, no recent research studies were
found that assessed the effectiveness of long-term African American community-led
intervention programs designed to mitigate the inequities as well as problems these
students face in learning mathematics at any educational level.

In addition, although anecdotal evidence is provided by a variety of African
American-led mathematics intervention programs, there is a lack of studies certified by
independent agencies, such as the Institute of Education Sciences or National Urban
League. No local research studies related to the problem in general nor studies designed
to solicit the input of African American parents and/or community members on the topic
of achievement in mathematics were identified. Therefore, a qualitative research study
was proposed. The chief goal of the study was to gain insight into the following research
questions:

1. What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?

2. What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?

3. What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities?

## Review of the Literature

The literature review began with a search of Walden University's library and Google Scholar. Several databases were used including Walden's Dissertations, Education Research Complete, Google Scholar, ERIC, ProQuest Central, ProQuest Research Library, ProQuest Education Journals and SAGE. In addition, several trips were made to search the Schomburg Center for Research in Black Culture database. It was found that the key word phrases and search terms that provided the most comprehensive results were *African Americans, math education, mathematics education, achievement gap,mathematics, stereotype threat, implicit bias, parental involvement, teacher expectations, critical race theory, culturally relevant pedagogy, developmental math, remedial math,* and *at-risk students. Combined with African American,* other keyword phrases that resulted in limited hits were *community development, cultural capital*, *STEM*, and *mathematics achievement*. I also searched for peer-reviewed articles,

nonprofit/governmental research reports, and research anthologies written or edited by key researchers that appeared frequently in the reference lists of articles. After reading many articles, certain theoretical frameworks and contributing factors (i.e., keyword phrases) began to surface. These theoretical frameworks and contributing factors are summarized next.

**Theoretical Framing of a Complex Problem**

Flores (2007) noted that finding an appropriate way to frame such a complex problem as the achievement/opportunity gap in mathematics between African Americans and other groups "gives us not only a better understanding of it but also impacts the ways in which we address the problem and make efforts to solve it" (p. 29). Therefore, this section will identify theoretical frameworks that frame the discrepancy between African Americans, Asians, and European Americans' achievement in mathematics as nor merely a "achievement gap" but as representing a "cultural/community empowerment gap" resulting from "race, racism and racialized inequality" (Martin, 2009a, p. 297). The use of, critical race theory, culturally relevant identity development and black organizational autonomy (BOA) theoretical frameworks support Martin's (2009a) contention that in order for this cultural identity/community empowerment gap to be adequately studied, "race should be understood as a sociopolitical, historically contingent construct" rather than just a descriptive variable (Martin, 2009a, p. 298).

The utilization of such frameworks also supports Bass and Gerstl-Pepin's (2011) assertion that "reconciliation of the [race related educational inequity] debt requires working across disciplines and agencies to address the larger community issues

surrounding educational inequities" (p. 908). Therefore, by placing race, culture, and the concept of an achievement gap in their proper contexts, the aforementioned theoretical frameworks also facilitate the holistic examination of societal, cultural, political and psychological policies plus practices which undermine African Americans' advancement not only in mathematics but as a sovereign people.

In building on the work of scholars such as Carter G. Woodson (1933) and W. E. B. Du Bois (1935) in articulating a critical race theory in education, Ladson-Billings and Tate (1995) have afforded researchers a framework for examining the cultural an socioeconomic-structural significance of race as it relates to shaping people and formal/informal educational policies, practices and research. Martin (2009a) articulated the application of critical race theory to mathematics education with the assertion that at a societal level (i.e., macro level) "mathematics research, policy, and practices [result from a larger historical social narrative whereby] race, racism and racialized inequality" influence vital aspects of the power and opportunities afforded African Americans in mathematics education" (p. 297). This includes aspects of power and opportunities (i.e., cultural capital) in the form of community development, socialization, self-conceptualization, educational opportunities plus expectations, employment as well as influence in the political-socioeconomic spheres (Ladson-Billings & Tate, 1995; West, 1993; Wilson, 1978).

Given inequities in the development of these aforementioned aspects of cultural capital, critical race scholars further contend it is important to move away from framing of educational inequities based on race as purely an 'achievement gap' (Bass & Gerstl-

Pepin, 2011; Gutiérrez, 2008). For in framing educational injustices as an achievement

gap "suggests that educational inequity is a function of short-term deficits in children or

teachers rather than long-term accumulations of societal and cultural inequities" (Bass &

Gerstl-Pepin, 2011, p. 909). Furthermore, this framing then allows those advantaged by

these inequities to place "the burden of responsibility [for] closing the gap on teachers

and children who are born into the context of poverty, racism, or disability" (Bass &

Gestl-Pepin, 2011, p. 909). Instead, critical race theorists challenge citizens and their

policy makers as a collective to consciously and justly share responsibility for correcting

the structural power dynamics which promote injustice (Bass & Gestl-Pepin, 2011).

Bearing in mind the charge of critical race theorists for "the citizenry as a whole"

to share in consciously remedying educational inequities (Bass & Gestl-Pepin, 2011, p.

909), liberation scholars such as Freire (1970, 1980) repeatedly asserted it is necessary to

examine the role disenfranchised communities must play in fighting for their own

liberation. For as Bass and Gerstl-Pepin (2011) emphasized, for meaningful long-term

changes in educational research, policies, and practices to manifest, "the reconciliation of

the [educational inequities] debt requires working across disciplines and agencies to

address the larger community issues surrounding educational inequities"  (p. 908).

Indeed, this community development view of reconciliation aligns with critical

race and Afrocentric identity development theorists' contention that in order to dispute

the status quo and dominant group's control over the storytelling people of color voices

including "teachers, parents, administrators, students, and community members" must be

heard (Ladson-Billings & Tate, 1995, p. 58). However, as illustrated by the movements to

abolish slavery and gain civil rights, it has never been enough for African Americans to tell their story. Undeniably, African American history has consistently shown that in the face of racism and racialization, storytelling must be accompanied by the development of community lead institutions coupled with organized community resistance (Marable & Mullings, 2009; Zinn, 2003).

Leary (2005) reiterated this point in her theory of post traumatic slavery syndrome; it is not enough for African Americans to just tell their stories, they must hear and act on these stories in a way that promotes individual plus collective healing, organization and development. This fact is supported by diverse studies of successful African American endeavors which show that by using principles articulated in externally focused theoretical frameworks, such as CRT, as well as internally focused culturally-relevant identity development frameworks such as post traumatic slavery syndrome (PTSS) more holistic coping strategies and skills can be developed by communities and individuals (Jett, 2010; Mandara, Gaylord-Harden, Richards & Ragsdale, 2009; Moses & Cobb, 2001; Leonard, 2008). In fact, Cibulka, as cited by Bass and Gerstl-Pepin (2011), expressed the critical importance of African Americans daring to use a range of introspective and extrospective frameworks to explicate "the complicated, messy, painful, and potentially embarrassing" internal and external messages as well as structures of oppression in order to pursue equity built on the deployment of holistic structural changes in people, policies and practices (p. 912).

Regrettably, in mathematics education, it remains a struggle for African Americans, individually and collectively, to explicate the pain and shame of prejudice

without falling into the trap of painting themselves or being painted as deficient, decontextualizing the root causes of socioeconomic inequities, and/or remaining dependent on even well intentioned "others" to solve problems that are cultural in nature (Cokley, 2005; Martin, 2000, 2009a, 2009b). Thus, once again harkening back to the opening epigraph by Dr. Carter G. Woodson and embodied in the underutilized BOA community development theoretical framework/model, there is a need for marginalized groups to invest in enterprises which promote autonomy, self-empowerment, true economic capital development as well as collaboration with other groups less they remain dependent (DeFilippis, 2001; Hill, 2012; Horton 1992).

While newer models of community development theoretical frameworks such as the Community Development Social Justice and Family Centered Asset-Based Community Building models (Ife & Fiske, 2006; Williams, Boddie & Rice, 2010) do offer some relevancy, the BOA model is the only model identified that speaks to the nuances of the complex challenges African Americans face developing sustainable and autonomous community-led organizations. These problems include the historical negation of their own culture; relentless resistance to their resistance to oppression and organization; ongoing segregation; pervasive sexism within own communities; negative internal as well as external (i.e., micro and macro level) power dynamics; and economic development concerns (Horton, 1992). Unfortunately, as observed by Horton in 1992, African American community development models still appear to be under theorized and under studied.

**Evidence of African American Underdevelopment in Mathematics**

As reflected in previous sections, the literature review yielded research confirming that across grade levels, African Americans continue to encounter numerous educational challenges, especially in the mathematics arena (Barton & Coley, 2010; Harris & Herrington, 2006; Hooper, Roberts, Sideris, & Burchinal, 2010; Ladson-Billings, 2006; Lubienski, 2008; Peterson, Woessmann, Hanushek, & Lastra-Anadón, 2011; Viadero, 2005; Wolfle, 2012). Earning on average 20 points lower on standardized mathematics exams and being significantly underrepresented in advanced mathematics courses, a variety of reports and theorists have demonstrated that African Americans struggle to become proficient in mathematics and that their struggle adversely impacts them individually and collectively (Barton & Coley, 2010; National Math and Science Initiative, 2012; U.S. Department of Commerce, 2011; U.S. Department of Education, 2008).

Recognizing that the interaction of individuals and institutions together "serve as both causes and effects," a review of literature exploring why African American students underachieve in mathematics was conducted (Jencks & Phillips, 1998, p. 275). This included a review of literature which delved into why and how these students might be underserved by their society, schools, communities, parents, teachers and themselves. Literature revealed several key factors which contribute to African Americans experiencing significant opportunity and achievement gaps in mathematics. These key factors include (a) less cultural capital and connection; (b) insufficient parental and community involvement; (c) low expectations of teachers; and (d) difficulties developing positive ethnic, academic and learner of mathematics identities.

**Less cultural capital and connection.** Since the reality is that students experience mathematics and the motivation to learn mathematics differently based on their cultural realities which is comprised of their historical, social, political, economic, linguistic and personal realities, Clark, Johnson, and Chazan (2009) asserted neither the "learning or teaching of mathematics is culture-free" (p. 39). This assertion is borne out by research showing even upper and middle class minority students begin school disadvantaged since  upper and middle class European American values, goals, motivations, preferences, learning styles, mannerisms, concepts/knowledge, etc. are viewed as the ideal norm (Leonard, Brooks, Barnes-Johnson & Berry, 2010; Martin, 2009a, 2009b; Won-Pyo & Young, 2008). In other words, as put forth by Olneck (2000), owing to a disconnect between "embodied cultural capitol" which makes for learning styles of marginalized minority students' differing greatly from the teaching styles of the majority of teachers and the curriculum that they teach, these students are less likely to succeed academically (p. 319).

Furthermore, researchers have found that emphasis on high-stakes tests can further impede efforts of marginalized minorities to increase their embodied cultural capital and, thereby, raise their institutionalized cultural capitol including grades, test scores, degrees, jobs, status and wealth (Ford & Helms, 2012; Won-Pyo & Youngs, 2008). These impediments can occur when under standardized educational testing laws and movements such as NCLB, educators, parents and students can become hyper-focused on mastering tests instead of on building the kind of transformative relationships

and culturally relevant curriculum needed by marginalized groups to excel (Ford &
Helms, 2012; Won-Pyo & Youngs, 2008).

   **Insufficient parental and community involvement.** As an aspect of cultural
capital, parental involvement is inextricably linked to students' academic success
(Brandon, 2007; Council of the Great City Schools, 2010; Cousins & Michelson, 2011;
Jeynes 2003, 2012; Lee & Bowen, 2006; Ingram, 2007; Strayhorn, 2010; Vukovic,
Roberts, & Green Wright, 2013). Especially in mathematics education, parents can play a
pivotal role in setting high expectations, providing structured homework support and
"reducing mathematics anxiety, particularly for more difficult kinds of mathematics"
(Vukovic, Roberts, & Green Wright, 2013, p. 446). Yet, despite these findings and
ongoing policy directives calling for  increased parental and community involvement,
researchers continue to find that African American parents do not necessarily learn
productive strategies for supporting their children academically or develop positive
relationships with teachers and school administrators (Brandon, 2007; Cousins &
Mickelson, 2011; Franklin, 2002; Hooper, Roberts, Sideris & Burchinal, 2010; Ingram,
2007; Jeynes, 2003, 2012; Lee & Bowen, 2006; Strayhorn, 2010).

   Brandon (2007) concluded that many African American "parents encounter
personal, cultural, [educational, linguistic,] and structural barriers that may cause them to
be isolated or alienated from the school system" (p. 116). Often because of beliefs about
their role versus the role of educators, long work hours, multiple jobs, transportation
issues, other care giving responsibilities which result in limited time for school
involvement and even to respond to school communications, literature reveals that

African American parents frequently do not live up to educators' expectations for parental involvement (Brandon, 2007; Lee & Bowen, 2006; Trotman, 2001). This can leave parents and teachers at odds with children not receiving the full support they need from either group.

Although insufficient parental involvement exacerbated by lesser amounts of available academic and economic resources available in their communities contributes to the underdevelopment of African American students, a national study sponsored by the United Negro College Fund (UNCF) speaks to another grave problem that African American communities face. The UNCF study concluded:

But as currently configured, education reform's roots may be shallow, because it has been propelled too frequently not from the bottom but from the top, often leaving parents and community members with the feeling captured by this report's title [Done to Us; Not With Us: African American Parent Perceptions of K-12 Education], that education reform has been done not with them, but to them. And the history of social change, like the civil rights struggle, teaches us that no such movement can succeed without the support and active engagement of its intended beneficiaries. (Bridges, Awokoya, & Messano, 2012, p.4)

While no other recent research studies ascertaining the perceptions of African American parents about school reforms or interventions were found, a variety of other studies and theorists highlighted the need for the community to play a more participatory role in defining educational policies and practices based on its own socioeconomic realities (Martin, 2009a, 2009b; Martin, Martin, Gibson, & Wilkins, 2007; Sheldon &

Epstein, 2005; Shockley, 2008). Serving as editor of a mathematics education research anthology, Martin (2009a) stressed that policies and practices that do not take into consideration their cultural realities and voices will continue to have limited applicability for African Americans. Having studied supplemental education, Gordon advanced Martin's conclusion by making the practical point that since most education happens outside of the classroom more efforts are needed to craft partnerships with minority communities that make more of the time that these students spend outside of school more meaningful learning time (Gordon, Bridglall, & Meroe, 2005; Yaffee, 2010).

**Low expectations of teachers.** Perhaps more than in any other discipline, African American learners often have to tackle overcoming the low expectations of their mathematics teachers (Ballon, 2008; Martin, 2000, 2009a, 2009b; Pringle, Lyons, & Booker, 2010; Stinson, 2013). Shaped by an often unconscious historical deficit belief model, studies confirm many teachers view African Americans as less intelligent then other groups (Ladson-Billings, 1998; Steele 2010; Stinson, 2013; Tenenbaum & Ruck 2007). Tenenbaum and Ruck (2007) conducted a meta-analysis of 4 other teacher expectation studies. This meta-analysis demonstrated that teacher expectations were indeed substantially lower for African American and Latino/a American K-12 students.

Tenebaum and Ruck's (2007) findings coincide with the findings of other researchers who have found that teachers perceptions of violations of middle and upper class European American cultural and linguistic norms makes for cultural clashes wherein African American students come across as less intelligent and capable of learning (Howard, 2006; Molett, 2013). Too frequently these cultural clashes leave

African American students disproportionally overrepresented in disciplinary proceedings, special education classes and lower academic tracks while underrepresented in advanced academic tracks and classes (Ballon, 2008; Martin, Gholson, & Leonard, 2010; Molett, 2013; Pringle, Lyons, & Booker, 2010). These cultural clashes have even contributed to the U.S. Departments of Justice and Education issuing a public policy advisory asking public schools to institute fairer disciplinary practices (U.S. Department of Justice, 2014)

With African American and Latino/a American students across the nation receiving disproportionally more and harsher disciplinary actions than European Americans, the advisory reiterates that "research suggests that the substantial racial disparities of the kind reflected in the CRDC [Civil Rights Data Collection] data are not explained by more frequent or more serious misbehavior by students of color" (U.S. Department of Justice, 2014, p. 4). Since teacher expectations paired with parent expectations plus involvement set the stage for students success, research supports that neither can be left to chance.

**Difficulties developing positive identities.** According to Walton and Spencer (2009), hundreds of laboratory experiments have demonstrated that ethnic minority students are often very mindful of the stereotypes that call into question the ability of their racial group. As termed by Steel (2010), "stereotype threat" undermines the intellectual development and achievement of minority students (p. 7). For African Americans in mathematics education, stereotype threat takes on added significance as advancing in mathematics often requires that these students go it alone in sustaining positive ethnic and intellectual identities.

Crafting positive identities can be particularly daunting in the mathematics field where stereotypes abound, teacher expectations are frequently low, curriculum seldom represents diverse interests, and parental plus community support is limited (Aghajani, Khormaee, Rajabi, & Rostamoqli, 2012; Aguirre, Mayfield-Ingram & Martin, 2013; Berry, Thunder, & McClain, 2011; Martin, Martin, Gibson, & Wilkins, 2007). However, conversely, despite the complex challenges African Americans face in mastering mathematics, it is identity research which brings to light that individuals and communities can move beyond the constant pressure of having to avoid and disapprove stereotypes into proactively defining for themselves the cultural relevance of education and mathematics (Martin 2009a; McGee & Martin, 2011; Moses & Cobb, 2001; Sheldon & Epstein, 2005; Stinson, 2013).

## Implications

The concept of education for liberation implicit in CRT leads to the supposition that marginalized groups and individuals must "name their own reality" (Kamusi, 2011, p. 207). This call to naming is especially pertinent in mathematics education, where research consistently demonstrates that "members of minority groups internalize the stereotypic images that certain elements of society have constructed in order to maintain their power" (Ladson-Billings, 1995, p. 57). As a result, the burden rests on the marginalized to develop appropriate structures for mitigating institutionalized forces which intentionally and/or unintentionally misrepresent their reality.

In mathematics education, theories and research related to mathematics achievement, race, identity development, and community development can serve as

frameworks for helping African American parents and communities (Horton, 1992; Ladson-Billings, 2006; Martin, 2000, 2009a, 2009b; Moses & Cobb, 2001; Steele, 2010). These theories and research can help parents and communities understand the vital role that they can play in improving mathematics education for all by looking to their own cultural history, assets, and concerns (Gutstein, 2006, 2012; Jeynes, 2003; Lee & Bowen, 2006; Moses & Cobb 2001; National Urban League 2013). In fact, the aforementioned research studies and theoretical frameworks illustrate that if a more equitable mathematics education infrastructure that honors all students is to be crafted by any marginalized community, parents and community members must build that infrastructure and dismantle deficient power structures (Bass & Gerstl-Pepin, 2011; Gutstein, 2006, 2012; Harris, 2012; Moses & Cobb, 2001; National Urban League, 2013).

Therefore, more community-based research studies would afford educators an opportunity to develop more collaborative and equitable strategies in order to address persistent inequities in mathematics education which are not limited to the African American community (Bass & Gerstl-Pepin, 2011; Executive Order No. 13621, 2012; Gutstein, 2012; Moses & Cobb, 2001; National Math and Science Initiative, 2012; National Urban League, 2013; U.S. Department of Education, 2008). Springing from this research study, I foresaw several follow-on projects including the development of an evaluation report for the stakeholders, the organization of a community task force tasked with developing a detailed resource development plan and the development of curriculum designed to train parents, mathematics tutors and/or mentors.

**Summary**

Starting with the standard images and messages about who is capable of doing mathematics, research shows that African Americans are challenged by a wide range of cultural, political, socioeconomic and pedagogical hurdles as they seek to develop the belief that they can become competent in mathematics and to maintain access to opportunities for advancing in mathematics (Aghajani, Khormaee, Rajabi, & Rostamoqli, 2012; Aguirre, Mayfield-Ingram & Martin, 2013; Martin, 2009a, 2009b; Martin et al., 2007; Stinson, 2013). While it is acknowledged that individual initiative on the part of some African American students and parents does improve outcomes, these measures only impact a small percentage of students. Therefore, given the wide range of structural impediments, long-term systematic changes in people, policies and practices which would increase success for the majority calls for organized community and parental oversight.

In addition, since mathematics reform efforts have been underway for over 40 years with little substantive increases in outcomes for African Americans (Barton & Coley, 2010; Council of the Great City Schools, 2010), new collaborative strategies for addressing their problems are needed. Since true collaboration can only occur if educators and program developers dispense with imposing solutions on learners and communities that do not reflect their unique needs, this research study was conducted to solicit the input of African American parents and community members for the express purpose of respecting their voices.

The next section outlines the methodology used to conduct the study. Ultimately, it is hoped that this study will inspire community action and collaboration with the local public school system and community college as well as contribute to the body of community development and equity research. In keeping with  other community based mathematics education models (i.e., Project Algebra and Project Seed), I anticipate that this research study will lead to a community task force that will build on research findings as well as implement the suggested training curriculum for parents, mentors plus mathematics tutors proposed herein.

Section 2: The Methodology

## Introduction

In keeping with the research questions and use of CRT to "illuminate the voices of individuals that have been historically silenced in educational research, thus providing a counter script to mainstream accounts of their realities" (Howard, 2008, p. 956),  an exploratory sociological case study was conducted (Hancock & Algozzine, 2011). This section outlines the research methodology, rationale, participant selection, data collection process, data analysis steps and findings for the study. Ethical considerations are also addressed.  The Walden IRB approval number for the study is 10-24-14-0261727.

## Methodology & Rationale

**Rationale for Methodology**

In relation to the research questions, which sought to discover the perceptions of parents, community members, and STEM professionals about the causes and possible solutions to the complex mathematics education problems facing African American children, purposeful convenience sampling was used (Creswell, 2012; Glesne, 2011; Hancock & Algozzine, 2011).  In keeping with Hancock and Algozzine's (2011) assertion,  a qualitiative case study methodology was used to gain a deeper understanding of the situation and delve into the meaning of the situation for those involved by systematically collecting descriptive data grounded in complex and diverse sources.

In addition to a case study design, a variety of other research quantitative and qualitative designs were considered. However, it was determined that these designs did not allow for the extensive forms of data collection from diverse sources, intensive open-

ended questioning and deep cross-participant comparisons needed to develop a picture of the complex "contemporary phenomenon" under study (Hancock & Algozzine, 2011, p. 15). Of the quantitative designs (e.g., quasi-experimental and survey) and qualitative designs (i.e., action research, case study, ethnography, grounded theory, narrative, and phenomenological) considered, only the quantitative survey and qualitative ethnographic study designs fit with the purpose of the study (Creswell, 2009). Although a quantitative survey design would have allowed for the collection of answers to standardized questions, this design would not have facilitated the in-depth, face-to-face, and open-ended questioning needed to unearth participants' perceptions and attitudes (Creswell, 2009).

Conversely, an ethnographic study might have provided penetrating insight into why and how African American participants construct the shared cultural meaning and values brought to parenting, community development, education and mathematics. However, this design would have required "long-term immersion in the field" through ongoing observations plus interviews (Glesne, 2011, p. 17), which exceeded participant access, time, funding, and resources for this doctoral study.

**Participant Selection**

Recognizing the need to balance quality in-depth interviews with a spectrum of African American parent-leaders, community activists, and STEM professionals, a purposeful convenience sample consisting of eight participants was used (Glesne, 2011). Given that Southern Maryland is comprised of three school districts, the school district in which I work was used for ease of access. Limitations of the sampling method and study

are outlined in the conclusion of this section. However, as detailed next, the recruitement process was designed to ensure voluntary participation in the study.

In addition to being an African-American resident of the county, candidates were recruited to participate in the study based on the following criteria: (a) professional employment in a STEM or education related discipline; (b) active prolonged membership in one of more local educational, religious and/or civic organizations (e.g., African American churches, National Association for the Advancement of Colored People, Concerned Black Men, Parent and Teacher Association, etc.); and/or (c) parent of African American student(s) enrolled in local K-14 schools. The criteria for selecting participants was established because African Americans are the only ethnic group experiencing the mathematics education achievement gap in the county under study. Furthermore, the criteria was established to maximize opportunities to hear from STEM professionals plus educators who understand the challenges of becoming a successful African American learner of mathematics and leaders who could offer insight into community dynamics as well as resources (Moses & Cobbs, 2000). An effort was made to recruit a balance of STEM professionals, parent-leaders, and other community leaders.

To facilitate the recruitment of volunteer participants, recruitment fliers were sent to the offices of local African American religious and civic organizations (see Appendices A and B). Additionally, fliers were distributed and posted in local religious and civic establishments including African American churches, the three branches of the local library system, Panera restaurant, three Starbucks, two community centers, and five

grocery stores. Per the flyer, potential participants were directed to contact me via phone or e-mail (see Appendix C).

Based on responses to fliers, potential participants who fell within different variations of the aforementioned categories were sent invitation letters via email and postal mail. In addition to explaining the purpose of the study, the invitation letter included a copy of a consent form detailing the interview process as well as participants' rights (see Appendix D). Please note: To maintain participants privacy and confidentiality, a copy of the consent form has not been included in this document. Those electing to participate in the study were asked to return a copy of the signed consent form via postal mail. A postage paid, pre-addressed envelope was included in each invitation package. As recruitment and interviews were conducted primarily during the Christmas holiday season, participants were given two weeks rather than one week to review and return signed consent form. When necessary, I emailed participants a reminder to return signed consent form. Interviews with participants were scheduled by phone and email.

In anticipating field and ethical issues related to protecting participants' rights, a copy of a consent form was sent with each invitation. Participants were asked to return the signed consent form via mail prior to interview. At the start of each interview, an interview guide including a checklist was used to ensure that each participant received a copy of their signed consent and that standard procedures were followed. In accordance with ensuring that participants understood that their participation was voluntary, would not adversely affect their well-being (i.e., professional, social, legal, etc.), and could be terminated at any time, the interview procedures outlined in the consent form were

reviewed verbally and participants given the opportunity to ask questions (Glesne, 2011; Jenkins, 2012).

In addition, since candid commentary was to be solicited, a process for conducting confidential interviews and coding participants' personal information in order to protect privacy was followed (Jenkins, 2012). Participants were identified by an alias except on a master list that I maintained. All electronic data files were encrypted, password-protected, and stored on my home computer and on a secure online backup drive. Paper files were secured in home office. After 5 years, all files will be destroyed.

**Data Collection**

Based on recruitment flyers, I was contacted by 10 potential participants. All potential participants fit the criteria. An invitation letter was sent to each. Eight participants agreed to participate via email and/or phone. Eight participants were interviewed one time and one-on-one using a semi-structured interview approach (Creswell, 2012; Hancock & Algozzine, 2011). All participants, except one, were parents of children who were or had been enrolled in local schools; one was a grandparent, another was a foster mother. Three participants were male; five participants were female. The group included five STEM professionals who currently work full or part time in related occupations and serve as mentors. Three participants had taught in some capacity in county schools. One participant currently teaches mathematics. All participants were active in various civic and/or religious organizations.

As anticipated, interviews lasted on average 1.4 hours. One to three short bathroom/water breaks were taken during each interview. Interviews were conducted at

two branches of the local library system in private meeting rooms. The goal of the

interviews was to collect demographic data and detailed data related to the guiding

research questions which were developed in accordance with key concepts consistently

highlighted by theorists and researchers in the literature review. Therefore, interview

questions focused on gaining insight into  participants' perceptions of the cultural plus

academic problems faced by African American students in mathematics; cultural

awareness; experiences and skills in mathematics; community development views; access

to resources; and ideas for developing mathematics intervention programs. The interview

guide including 28 questions can be found in Appendix E.

As previously noted, a researcher-designed interview guide was used to facilitate

interviews using a semi structured interview style (Jenkins, 2012; Lodico, Spaulding, &

Voegtle, 2010). The advantage this interview style was that I was able to slightly reword

and reorder questions in an effort to establish rapport and be responsive to the

participants (Jenkins, 2012; Lodico et al., 2010). In this way, the use of a semi structured

interview process did encourage the examination of themes that ran through all

participants' experiences.

Interviews were recorded using a digital recorder and computer. In addition,

handwritten notes were taken during each interview. Along with a secure online

transcription service, Rev.com, I transcribed the audio recordings of interviews. The

confidentiality agreement provided by the service and approved by the URR can be found

in Appendix H. Before distilling transcripts into abstracts to be emailed to participants for

review as part of the member checking process, I validated transcripts by reviewing text and comparing them to audio recordings line-by-line.

Member checking was used to strengthen creditability of research findings (Hancock & Algozzine, 2011). Serving as an opportunity for participants to authenticate and critique findings based on their experiences and interview contributions, each participant was emailed a draft abstract containing their own interview contributions as slated to be used in subsequent data analysis phases and possibly included in final report (Hancock & Algozzine, 2011). Participants were given one week to review abstracts and return feedback via email. As a part of their review, each participant was given the opportunity to note any discrepancies and ask questions (Rubin & Rubin, 2005). Just one participant responded to email containing abstract with substantial feedback, while two other participants responded with minor edits related to grammar. In all, 5 out of 8 participants responded. Where warranted, responses and corrections to abstracts were incorporated into subsequent data analysis.

During data collection and analysis stages, field-research notes were maintained. Efforts to guard against loss of these notes included maintaining backup copies and using acid-free archival paper. Field-research notes included the following items:

- Field notebook. In addition to completing interview guide forms for all participants, this notebook was used to record daily observations (i.e., themes, concerns, surprises, questions, resources, interview observations, etc.) and administrative notes (i.e., contact information, to do lists, records of phone communications with participants, etc.).

- Research journal. Daily summaries of field notes, questions, emerging understandings, outstanding tasks, and other reflections were recorded in this journal. The primary purpose of the journal was to chronicle steps and organize content as the research process unfolded.

- Catalog of artifacts. No artifacts were identified or collected. However, as included in proposal, a copy of the Artifact Review Form can be found in Appendix F.

Given the critical role the researcher plays in data collection and analysis, it is acknowledged that the following factors which may have had an impact on data collection and analysis. First, having served as a computer science teacher for the local community college for over 12 years and participated in or sponsored various community outreach activities, the researcher had occasionally met 6 out of the 8 participants in a professional capacity over the course of 12 years. Thus, as expected some participants were familiar with the researcher's concerns for African Americans plus other groups underrepresented in STEM programs and careers.

Second, as a student, educator, parent, and citizen having felt firsthand the psychological and socioeconomic ramifications of the opportunity and power gap in mathematics education, I acknowledge my passion for and devotion to advocacy for the people behind the topic under study. Given these factors and bearing in mind that the primary responsibility of the researcher is to present the participants' perspectives, steps for addressing potential bias and improving credibility plus trustworthiness were taken as outlined in the next section (Hancock & Algozzine, 2011; Merriam 2009).

**Data Analysis Process**

Transcribed interview data were analyzed for subthemes and overarching themes. Responses were coded using manual processes as well as Microsoft Excel and NVivo qualitative analysis software (Creswell, 2009; Glesne, 2011). This included conducting theme analysis within each interview and across interviews. Coded subthemes and overarching themes were consolidated and condensed. To improve credibility, cross-check analysis, and unearth additional subthemes, a manual line-by-line review of each interview transcript was conducted. Based on thematic analysis, the key responses and quotes from each transcript were put into an abstract that was sent to each participant. In addition, draft analysis was sent to a peer reviewer for evaluation. Primary and backup peer reviewers had been previously identified during the proposal stage. Both are social service professionals who have performed auditing functions as a part of their professional duties. The peer reviewer was sent disidentified original transcripts, transcript abstracts sent to participants and  draft data analysis section in order to assess my logical development of subthemes and overarching themes.

Additionally, interview data were analyzed for subthemes fitting with the research questions and discovered in the literature review. To facilitate qualitative data analysis for this case study, techniques for identifying themes outlined by Ryan and Bernard (2003) were used. Overall, these techniques included (a) discovering themes and subthemes, (b) winnowing themes to a manageable few (i.e., deciding which themes are important in any project), (c) building hierarchies of themes or code books, and (d) linking themes into theoretical models (Ryan & Bernard, 2003, p. 85). A variety of

"scrutiny techniques" were used in the process to extract key points from transcripts for further analysis and investigation (Ryan & Bernard, 2003, p. 85). These scrutiny techniques included searching interview data for subthemes based on repetitions, unfamiliar terms, metaphors/analogies, similarities/differences, negative linguistic connectors, missing data, and concepts related to prevailing theories and education statistics (Ryan & Bernard, 2003).

To improve coding of the transcribed interview data (Creswell, 2007), interview transcriptions were reviewed many times before and during the coding process. Responses were coded and assigned to overarching themes and subthemes. Codes reflected recurring keywords and/or concepts gleaned from responses. Within spreadsheets of transcript abstracts, similar statements made by participants were tagged and extracted. In addition, handwritten notes were taken to facilitate data analysis and comparison. Subthemes were created from the shared codes. For example, all coded statements that related to low expectations were put in the low expectations subtheme.

Additionally, discrepant data that did not fit within existing subthemes were identified and analyzed. The analysis of discrepant data included searching for responses which presented a puzzle, offered a unique view or contradicted other participants' responses and/or prevailing research. Searches for connections between discrepant data, more typical responses and prevailing research facilitated a richer interpretation of the data.

In addition to using MS Excel, NVivo qualitative analysis software was used to assist in the analysis of interview data. Word Frequency queries were run in MS Excel

and NVivo. The output from these queries was then compared and used to determine if significant words related to coded subthemes already unearthed in hand-coded analysis or represented new subthemes. NVivo was used to find responses related to significant frequent words. These responses were then put into a node for deeper analysis. When it was determined that responses related to a new subtheme, a new code was created. In addition to finding responses related to frequently occurring words, MS Excel and NVivo were used to search for responses related to other keywords and to perform a question-by-question comparison of responses based on the aforementioned scrutiny techniques recommended by Ryan and Bernard (2003).

Furthermore, based on demographic characteristics of participants, data were reviewed to determine if specific codes occurred more frequently for various types of participants (e.g. non STEM compared to STEM participants, females compared to males, etc.). Whenever possible, data from interviews were triangulated with data from public sources (i.e., education statistics, county budget reports, census data, etc.) and a peer reviewer was used to help verify the logical development of subthemes plus overarching themes in relation to the coding of interview data (see Appendix G; Creswell, 2009; Hancock & Algozzine, 2011; Merriam, 2009). Data from public sources was used to substantiate participants' perceptions and thus use to validate the selection and combination of subthemes and related codes. In the case of several codes, public data were sought to help illuminate the reasons for the manifested behaviors articulated by participants and helped improve the wording of selected subthemes/codes. Conversely,

feedback from peer reviewer was used to verify, condense, and clarify confusing subthemes and codes.

After identifying patterns in participant responses, subthemes and overarching themes were developed. To support a detailed understanding of the subthemes and create a more vivid picture of the perceptions, beliefs, feelings and experiences of participants, verbatim examples from responses were selected for inclusion in findings. Finally, subthemes were further evaluated, compared and condensed in order to ascertain final overarching themes representing the common perceptions of the whole group. An analysis of these overarching themes in relationship to existing theoretical frameworks and research was used to propose a project deliverable, training curriculum for parents, that I foresee as useful to the community. A draft of this project deliverable concludes the study.

**Results of Data Analysis**

The data analysis process was used to identify common types of interview responses. Participant interview responses were organized and coded in a manner that facilitated frequency and other thematic scrutiny analysis. Based on research questions, responses to interview questions were sorted by research question and interview questions. Responses were reviewed and queried many times to ascertain patterns, subthemes and overarching themes. The results of data analysis including a summary of participants' responses are presented in this section. Participant responses revealed their beliefs regarding the origins of the struggles of African American students in mathematics including socioeconomic conditions of the community which exacerbate

these struggles and the roles plus resources the community should develop in order to alleviate these struggles. Following a description of participants and table listing the subthemes and overarching themes discovered during data analysis, findings are presented based on the subthemes associated with each research question followed by an analysis of the overarching themes found. Pseudonyms were used to maintain confidentiality.

In all, eight participants were interviewed. With the exception of one participant, all were parents whose children had or were attending local county schools. One participant was a grandmother. Five participants were female; three were male. The group included five STEM professionals, all of whom currently serve as mentors and tutors. Three had taught in local schools; one currently taught at the college level. All participants had served as African American community advocates and leaders for a variety of churches and/or civic organizations. A brief description of each participant follows.

Born and raised in the local county, *Akachi* is a concerned community member, parent, advocate, educator and retired STEM professional. After a 33-year career in the telecommunications industry, he now teaches mathematics. Akachi holds undergraduate and graduate degrees and is the father of two college graduates who attended local schools.

*Gabe* is a father of two children who attend local schools. As a third generation college graduate, he is a STEM professional, mentor for an African American youth organization, and tutor. Gabe holds undergraduate and graduate degrees in computer

engineering as well as electrical engineering. In his career, he has worked in a variety of capacities including software development and strategic planning. In the civic arena, he is active in church and athletics.

A mother of seven and grandmother, *Imani* is also an active church member and community leader who founded a nonprofit to serve underserved and at-risk children. All of her adult children graduated from local schools. At the last child's graduation, the audience gave her a standing ovation. As an older adult, Imani completed her associate's degree. She has also served as a substitute teacher.

As a concerned parent of a child enrolled in a local high school, *Macario* is an active church member and runs her own small business. Having lived in various parts of the county, she is familiar with the policies and practices of different schools. She also strives to stay involved in school activities.

*Nadir* is a STEM professional with a degree in computer science with concentration in electrical engineering. He now works as a system engineer and is the father of three children who graduated from local schools. In addition, he serves as a mentor for a STEM program enrichment program for African American children and has served as a substitute teacher and math plus science tutor for a local literacy program and his church.

Relatively new to the local area, *Nia* is an artist with a strong knowledge of African and African American history. In addition to being a concerned parent of biological, foster and adopted children as well as community member, she recently attended college herself.

*Rachel* is a STEM professional who works as an electrical engineer. As a community leader extremely concerned about the "skill level of children" and who believes all children are "our children", Rachel started a local nonprofit which provides African American students with STEM mentors and academic enrichment opportunities. In addition, the organization provides tutoring and scholarships.

Having graduated from a local high school as the salutatorian, *Wera* is a STEM professional with undergraduate and graduate degrees in electrical engineering and engineering management. She is also a concerned parent of two children that attend local schools and throughout her career has served as a mentor for various STEM youth programs.

As related to research questions, analysis of participants' interviews resulted in 27 subthemes and four overarching themes. These subthemes and overarching themes are summarized in Table 2 followed by any analysis of each.

Table 2

*Summary of Overarching Themes and Subthemes*

| Overarching Theme | Subthemes |
|---|---|
| 1: Absence of a Collective Treatment of Education as a Cultural Function and Parallel Community Controlled Support System Perceived to Contribute to Academic Disengagement | *Research Question 1–Root Causes*<br>▪ Stunted aspirations<br>▪ Discounted African American history and culture<br>▪ Few African American professional role models and teachers<br>▪ Low expectations based on stereotypes<br>▪ Poor in-depth assessment of comprehension<br>▪ Too little class time spent on mathematics.<br>▪ Differences in learning styles<br>▪ Need for specific mathematics and study skills.<br>▪ Unfamiliar with the applicability of mathematics<br>▪ Limited home resources for help with homework<br>▪ Few accessible mathematics tutoring and enrichment programs<br>▪ Cultural habits which distract from academics<br>▪ Parents in survival mode with limited financial resources<br>▪ Faulty value and reward systems which fuel disengagement<br>*Research Question 2–Recommended Roles*<br>▪ Face the depth of the problem<br>▪ Pool community knowledge and resources<br>▪ Support parents; educate the community<br>▪ Improve tutoring services for students<br>▪ Induce African American churches and organizations to sponsor/fund academic initiatives |

*(table continues)*

| Overarching Theme | Subthemes |
|---|---|
| | *Research Question 3−Recommended Resources for Development*<br>▪ Parent and community education program<br>▪ Affordable well designed tutoring and intervention program<br>▪ Regularly scheduled cultural programs<br>▪ Other academic enrichment initiatives<br>▪ Family assistance programs |
| 2: Teachers and Adults Perceived as Having NOT Made a Compelling Case That Mathematics is Meaningful or Accessible | *Research Question 1−Root Causes*<br>▪ Stunted aspirations<br>▪ Few African American professional role models and teachers<br>▪ Unfamiliar with the applicability of mathematics<br>▪ Cultural habits which distract from academics<br>*Research Question 2−Recommended Roles*<br>▪ Pool community knowledge and resources<br>▪ Support parents; educate the community<br>*Research Question 3−Recommended Resources for Development*<br>▪ Parent and community education program<br>▪ Affordable well designed tutoring and intervention program<br>▪ Regularly scheduled cultural programs<br>▪ Other academic enrichment initiatives |
| 3: African American Churches and Organizations Perceived as Having the Responsibility and Capacity to Do More to Address Academic Inequities. | *Research Question 1−Root Causes*<br>▪ Few African American professional role models and teachers<br>▪ Limited home resources for help with homework<br>▪ Few accessible mathematics tutoring and enrichment programs<br>▪ Parents in survival mode with limited financial resources<br>*Research Question 2−Recommended Roles*<br>▪ Face the depth of the problem<br>▪ Pool community knowledge and resources |

| Overarching Theme | Subthemes |
|---|---|
| | ▪ Induce African American churches and organizations to sponsor/fund academic initiatives |
| | *Research Question 3–Recommended Resources for Development* |
| | ▪ Parent and community education program |
| | ▪ Affordable well designed tutoring and intervention program |
| | ▪ Regularly scheduled cultural programs |
| | ▪ Other academic enrichment initiatives |
| | ▪ Family assistance programs |
| 4: Along With Improving Communications and Support for Teachers, Improving Methods for Holding Schools Accountable Perceived as Vital | *Research Question 1–Root Causes* |
| | ▪ Discounted African American history and culture |
| | ▪ Few African American professional role models and teachers |
| | ▪ Low expectations based on stereotypes |
| | ▪ Poor in-depth assessment of comprehension |
| | ▪ Too little class time spent on mathematics. |
| | ▪ Differences in learning styles |
| | ▪ Need for specific mathematics and study skills. |
| | ▪ Unfamiliar with the applicability of mathematics |
| | ▪ Faulty value and reward systems which fuel disengagement |
| | *Research Question 2–Recommended Roles* |
| | ▪ Improve support for schools and teachers |
| | ▪ Hold the school system accountable |
| | *Research Question 3–Recommended Resources for Development* |
| | ▪ Corps of school volunteers |

**Analysis of Research Question 1**

Research Question 1:  What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?

Participants' insights reflected complex beliefs about intricately intertwined cultural and academic forces which undergird disparities faced by African American students in mathematics. These cultural and academic forces undermine the awareness and aspirations needed by students to sustain a prolonged interest in mathematics. In all participants responses to 15 interview questions revealed 14 subthemes. The list of interview questions can be found in Table I1 listed in Appendix I. Related subthemes are summarized in Table 3 below. The analysis for each subtheme follows the table.

Table 3

*Research Question 1: Subthemes*

| Subtheme | Code |
| --- | --- |
| Stunted aspirations | Aspirations |
| Cultural forces | |
| Discounted African American history and culture | CF_History_Culture |
| Few African American professional role models and teachers | CF_RoleModels |
| Academic forces | |
| Low expectations based on stereotypes | AF_Expectations |
| Poor in-depth assessment of comprehension | AF_Comprehension |
| Too little class time spent on mathematics. | AF_TimeonMath |
| Differences in learning styles | AF_LearningStyles |
| Need for specific mathematics and study skills. | AF_MathSkills |

*(table continues)*

| Subtheme | Code |
|---|---|
| Unfamiliar with the applicability of mathematics | AF_ApplicationofMath |
| Limited home resources for help with homework | AF_HomeworkResources |
| Few accessible mathematics tutoring and enrichment programs | AF_Tutoring |
| Cultural habits which distract from academics | AF_Habits |
| Parents in survival mode with limited financial resources | AF_Parent_SurvivalMode |
| Faulty value and reward systems which fuel disengagement | DC_Rewards |

**Stunted aspirations.** Overall, analysis revealed a subtle yet poignant perception that ran throughout participants' answers to interview questions related to Research Question 1. With sadness, those interviewed spoke in varying degrees of there being what I will term an "aspiration gap." This aspiration gap was described by Rachel, an engineer, who was inspired to start STEM and tutoring programs for young people based on this observation.

> I saw many local students just going to work at Wal-Mart. "It's just that I
>
> felt like they just didn't have a bigger dream." I am concerned that African
>
> American children are not being pushed to aspire to more. If education
>
> does not push them to aspire to achieve high career goals, children end up
>
> limited.

Nadir, a computer scientist and engineer, questioned why so few local African American students feel compelled to study technology given their constant use of it.

Across the board, participants reported that too many African American students do not really seem to see the importance of education (Imani) or understand what it takes

to make empowering academic or life choices. There seems to be a lack of desire and/or knowledge about viable careers, especially those careers that require strong mathematics skills. Interviews revealed complex beliefs that students' aspirations are dampened by deeply entrenched cultural and academic forces. Subthemes related to these beliefs are explored in the ensuing sections.

**Cultural forces**. Participants continually made connections between the vital role knowledge and respect for one's culture plays in the shaping African Americans sense of identity, vision and confidence as intellectual actors. Several cultural impediments to students developing a positive and ardent sense of self rooted in a strong vision of their cultural past, present and future were revealed in data analysis. A description of these cultural impediments follows.

*Discounted African American history and culture.* Owing to its history as a southern enclave, it was recognized that nationally and locally "African Americans are still trying to play catch up" based on a history of slavery, segregation and discrimination (Nadir). This history has led to the community having a low percentage of college educated adults. In addition, it was recognized that many parents and family members have experienced limited exposure and success in mathematics. All participants emphasized the link between the nation's and the county's racialized history as well as how this history continues to impede African American's educational progress. The link to current treatment of African history was described by Nadir:

> Schools do not teach African American history. Schools need to teach more than
> the standard historical images like Harriet Tubman. They need to showcase

African American inventors and engineers, unsung heroes. In general, we need to

showcase a wider range of African American achievements and heroes.

In accordance with sentiments expressed by other participants, Nadir made the point that

African American students "have few inventors and innovators as role models to look up

to". Without historical and contemporary professional role models, students find it

difficult to imagine themselves as innovators, scientists, mathematicians, etc. Therefore,

it was thought that in many ways the history of repression continues to deflate the

aspirations of African American students.

Inexplicably related to the aforementioned "aspiration gap," participants voiced

an even deeper collective concern. That is disconnected from positive knowledge of their

African culture and history including knowledge of the sacrifices made to afford them

more equitable educational opportunities joined with bias experienced in school, many

young African Americans have not developed "a purposeful vision for their future"

(Akachi) or a "basis of confidence" (Nia). This limited "vision for the future" and

"cultural basis for confidence" undermines students' ability to undertake challenging

educational goals. Interviews revealed several contributing subthemes/factors which

participants believe account for African American students not developing a purposeful

vision for the future and the confidence to tackle difficult educational aspirations and

goals.

A undeveloped sense of cultural confidence was viewed as a major byproduct of

this discounted African American history and culture. The "[cultural] basis of confidence

is not there" (Nia). This observation was expressed by Nia, a parent and recent college student who was relatively new to the county. Nia went to observe:

> If they don't have that confidence, or if they're afraid of being ridiculed in class, or looking, what they feel, to be dumb in front of the other students, they're going to retreat and they're going to lose interest in [mathematics], or they're going to feel that it's a source of humiliation. They may discontinue learning.

Although the word "confidence" was only explicitly used by Nia, all participants spoke to a pervasive awareness that many African American students lack a positive sense of their culture, history and identity as scholars.

In a myriad of ways, others concluded that African Americans limited knowledge of "their history" and "their successes" contributes directly to their not "see[ing] the importance of education" (Imani) and not developing a "resilient attitude" when it comes to academics (Macario). Rachel expressed a common belief that students' cultural alienation is in part due to never hearing the positive legacy of Africans including that of "inventing mathematics". So, students "have nothing really to inspire them and motivate them" (Rachel). Akachi, a resident reared in the county, observed that one major chilling byproduct of this deprecating sense of cultural purpose and confidence (Akachi):

> Local African American youth end up with the wrong messages about life and "fast money". "They get involved in things that give you money for a season [(i.e., drugs)], but then they cost you your life. Their concept of the future is "this weekend."

***Few African American professional role models and teachers*.** Escalating the disconnect from a positive sense of African American history and culture, consensus revealed that students in the county are exposed to few professional role models and teachers who look like them. So, many do not get to witness and spend time with African American professionals who have mastered mathematics or were successful academically. As put forward by Gabe, a parent, engineer, and mentor:

> The community has a lack of academic and business role models who are not athletes or entertainers. This impacts the aspirations of the whole community. It also impacts the sense of support for those African Americans that do decide to go into STEM professions. They don't know any mathematicians. They don't know any engineers. They don't know anyone that's talking math [or STEM].

In short, access to limited role models was seen as leading to limited awareness of life, academic and career opportunities as well as how to successfully access or take advantage of related academic opportunities.

**Academic forces.** There is a need to "counter the low morale in the African American community about school/education" for "too many see school as hum drum work" (Imani). This sentiment expressed by Imani illustrates the estimation of participants that a variety of interrelated school and community dynamics reinforce African American students' disengagement from school, mathematics, and what begins as high academic aspirations. This section describes these dynamics and related subthemes.

*Low expectations based on stereotypes.* With a limited knowledge of African American educational achievement especially in STEM disciplines, few academic and professional role models, low intellectual confidence coupled with constant doses of negative beliefs about mathematics, the relationship between race, stereotypes and low expectations was also widely recognized. A common concern was that many teachers and even parents do not really expect African Americans to excel in mathematics. Therefore, many African Americans students themselves come to not really expect to master mathematics.

In large part, students' low expectations are constantly reinforced by negative stereotypes and messages implicitly and explicitly transmitted by society, media, and teachers as well as parents, family and friends who themselves struggle with mathematics. As Rachel observed, "society contributes because African Americans constantly hear the "negatives of [their] culture, of [their] race."  Imani, a mother and grandmother who had successfully graduated seven children from the local school system, sadly lamented "a stigma is attached to blackness".

Additionally, Wera observed that low expectations are reinforced when students are not encouraged to work though their difficulties in mathematics and/or take rigorous mathematics courses. She spoke of the need to encourage more "students along the math track versus allowing them to get discouraged, and then opting not to take a math course, or a challenging math course" (Wera). Nia also expressed a related fear grounded in race:

I think White teachers have a lowered expectation of what Black children can do. I think they don't bother, or once the child does not catch on at the rate that they

feel they should, they just kind of, "Well, okay. We're moving on." That's what I

see. Or it's a quick recommendation for special education.

Imani shared Nia's conclusion as well as her experience of having to work with European American teachers to remedy poor treatment of their sons based on stereotypes. Imani commented "some teachers just do not believe Black students can learn mathematics as well as White students. So, [they] cut Black students slack" (Imani). Macario also recognized that since "socialization is different based on race", "students' mannerisms and interactions with teachers can differ based on race" (Macario). In the case of African Americans, these mannerisms and interactions can negatively influence teachers' expectations.

Akachi made an even more complex countervailing point about the relationship between race and expectations. He asserted that race is used by teachers and students in "too many cases as an excuse for mediocrity and failure. It's also used as an excuse not to try to develop the capabilities" (Akachi). Thus, participants' views regularly contributed to the supposition that African American students are caught in a complex vicious golem cycle of low expectations. A cycle fueled by the explicit and implicit bias of society and teachers then compounded by the internalized negative messages of parents, peers and students themselves.

***Poor in-depth assessment of comprehension.*** Akachi, a retired STEM professional who now teaches mathematics, captured the meaning of success in mathematics alluded to by all participants: To be successful in mathematics means that "first of all you understand the concepts behind the mechanics and that you are then in a

position to apply [the concepts] so that you can enrich your [life]" (Akachi). However, as concerned parents, grandparents, mentors, educators and community members, all participants emphatically interjected that one of their chief criticisms is that somewhere in the schooling process students are at best learning mechanics with little lasting comprehension of even basic arithmetic (i.e., long division, fractions, percentages, etc.) let alone advance mathematics.

Reflections on this lack of comprehension and deep learning solicited numerous stories and comments. Rachel, Imani and Marario related problems with mathematics to problems with reading comprehension and offered the following observations: "They can read but they can't comprehend" (Rachel); There is a big need to "check beneath the surface" (Imani); and "Many kids do not really know how to read or do mathematics at a complex level" (Macario). Participants also relayed stories of their encounters with students who were not able to do rudimentary mathematics as expected. Gabe told a story of a recent college graduate who he had taken to lunch to celebrate her graduation. When the tip came, the young lady was trying to figure out how to compute the tip. "I'm thinking you can't figure out a fifteen percent tip? You've taken Calculus and you have a college degree. …She was an 'A' student. I don't understand, how does that happen?" (Gabe). While, having served as a substitute teacher, Imani told of how she had come to even question good grades after encountering a student who insisted upon serving as her assistant rather than completing the assigned mathematics work. When she insisted that the girl complete her work, she found that the girl did not know how to do the assignments. Up until this point, the girl seems to have been rewarded by the regular

teacher for being compliant (Imani). Closer to heart and home, Macario revealed that despite telling teachers and administrators of concerns that her daughter did not really comprehend what she was being taught these concerns were ignored and her daughter was just passed along. Now as a high school student, her daughter is having major problems in mathematics (Macario).

Nadir, an engineer who serves as a tutor and mentor, summarized the limited comprehension dialogue by revealing that many students have come to see mathematics as a "necessary evil." He went on to tell of having once tutored a young man who came in believing mathematics was a "necessary evil" and just wanted to get his father of his back. "I went old school" in tutoring him and did not allow him to use a calculator until he understood why and how to do the steps. Sticking to the view that students need "a full understanding of why this problem is [solved] this way," a turning point came when the young man saw the pattern and that mathematics was not as hard as he imagined.

Although this young man went on to major in mathematics in college, Nadir expressed a frustration expressed by others: There are too many African Americans that hold and transmit to children negative beliefs about their capacity to do mathematics. As Rachel articulated, coupled with schools "so focused on Common Core and just getting the basics" as well as worksheet drills, it does not appear that teachers and other adults are actually taking the time to teach "this is why this [mathematics concept] is important" (Rachel).

It is worth revealing here that there was some disagreement about the value of the Common Core standards in assessing comprehension. Wera, a parent of children in grade

and high school, indicated albeit with reservations that Common Core seems to be on the right track as it focuses "moving out of the pure memorization into demonstration and understanding" while, Rachel and Akachi, educators, indicated some displeasure with Common Core. I did not question participants' opinions about Common Core in any depth.

*Too little class time spent on mathematics*. Three participants asserted that one underlying reason for poor performance in mathematics was that not enough class time is spent on mathematics. Macario, whose now struggling daughter had gone from taking a two period mathematics class back to a one period class after changing schools, raised the subject (Macario). Gabe elaborated on a similar topic saying:

> [We] need a better use of junior and senior year in high school. This could be used as a time to increase number of hours spent on mathematics. My daughter, [it's] her junior year, going into her senior year, she basically had enough credits to graduate. So, I'm thinking: that's a lot of wasted credits. Why couldn't we make them take two hour of math? Then they're good.

*Differences in learning styles***.** Six out of eight participants noted that there was a greater need for teachers to accommodate African American learning styles by incorporating more hands-on exercises and/or visual materials into mathematics classes (Gabe, Nadir, Macario, Rachel, Imani, Wera). Three out of 8 participants stressed the opportunity to now use technology to help students visualize mathematical concepts as well as obtain assistance. Gabe summarized the ideas of other participants (Gabe, Nadir, Wera):   I've seen our kids do very well visually when they can touch something and they

can build. Technology can now really help students understand and visualize concepts. It can now really help students "flourish" (Gabe).

*Need for specific mathematics and study skills.* Half of the participants (4 out 8) identified specific mathematics and study skills they believe students who struggle with mathematics have not been taught to master at home or in school. These encumbered skills include (a) have not necessarily learned a productive strategy for studying math (Nadir); (b) have a hard time seeing the pattern, the "black box which is the formula" (Nadir); (c) have difficulty reading (Macario); (d) are uncomfortable asking for help and only do so late in the process (Macario); (e) have difficulty managing their time and focus (Macario); and (f) are not familiar with test taking strategies so become anxious (Macario, Wera).

*Unfamiliar with the applicability of mathematics.* Four out of eight participants explicitly expressed the view that African American parents and students seem to have minimal insight into how mathematics applies to their "everyday lives" and how it is really used in lucrative careers. However, from responses related to how to engage more students in mathematics to those about the ramifications of poor mathematics skills, this subtheme was implicitly interwoven throughout all participants' responses. Nia and Imani dissected the issue. Nia stated:

Children need to be told what it is. Math is the foundation of so many other things. They need to understand that, because I don't think they understand that. They just think, "I'm learning these numbers because they told me to," but they need to understand the practicality and the real function of math and how it's a

basis for so many other areas that they might want to go into. I think a lot of
young people pursue education, pursue a degree, and then find out that you need
decent math skills to pursue that degree and they didn't know that that was going
to be a roadblock for them.

Imani noted that children need to be educated to see that people running the sports, music
and other entertainment businesses are educated. They need a more complete story.
"They don't have the complete story about the brilliant, educated people that drive the
sports, hip-hop….industries." In summary, responses revealed the view that absent a
deep familiarity with the use of mathematics in a wide range of "real world" endeavors
including the STEM fields and high paying professions, parents as well as students are
not inspired to invest the adequate amount of time, effort and resources in mastering
mathematics.

*Limited home resources for help with homework.* All participants spoke to the
structural barriers that prevent many parents from helping children with mathematics
homework and navigating the academic maze. Participants, compassionately but
repeatedly, reiterated that many local parents do not have strong academic backgrounds
especially in mathematics. These parents often have limited exposure to topics that might
be covered in mathematics courses and homework assignments. Therefore, they cannot or
feel they cannot help children with homework. Ever changing curriculum initiatives like
Common Core coupled with K-12 students not being able to bring "textbooks" (Imani) or
"graded standardized tests" home (Wera) further handicap parents.

Also, because of cultural, socioeconomic and linguistic differences, African American may not relate to the curriculum and/or homework questions assigned. Macario speculated that many parents are unfamiliar with curriculum and assignments (Macario). Gabe, Imani, and Wera all raised the issue of differences in learning and language styles (Gabe, Imani, Wera). Gabe framed the issue this way, given the wording of questions on standardized tests, "I'm already disadvantaged because I don't know what that is. I think sometimes the way things are possibly worded could be difficult for [African Americans] to understand" .

*Few accessible mathematics tutoring and enrichment programs.* With only two affordable or free programs seen as open to the community, the shortage of mathematics tutoring programs was identified as another major problem by all participants. Consequently, limited homework assistance from parents, limited tutoring resources and a lack of academic intervention/enrichment programs designed to address the specific problems, interests, and learning styles of African Americans, leaves them without a lot of concrete support when faced with ongoing problems with mathematics.

*Cultural habits that distract from academics.* With some exasperation, several impediments to African American academic achievement were identified as being culturally pervasive negative habits. These collective and individual habits include: not investing in community based programs that promote and reward academic achievement; over investing in sports; allowing children to spend too much time watching TV and/or playing games (i.e., video and sports) and too little time on homework; and clustering in

peer groups that reinforce poor academic performance. Based on interview responses, a description of each of these habits is described below.

Given that children need to know "that someone will be proud of them for what they have accomplished," (Nia) other than a few college scholarship programs there are too few community lead programs that publically acknowledge and reward African Americans for academic accomplishments. This scarcity coupled with an emphasis on athletics and music serves to reinforce African Americans' stereotypical concentration on sports and entertainment versus academics. When placed in the proper perspective, it was agreed that athletics can serve a useful purpose. However, several participants told of having started tutoring programs only to witness firsthand parents going out of their way to make sure their children got to sports and arts programs but not to tutoring. Gabe put the cultural preoccupation with sports this way:

> I've seen parents being more willing to run their kid an hour each way for basketball, soccer, or volleyball. Many African American parents believe athletics is the best way to pay for college. We struggle with it in our [STEM program]. Parents are running their kids all back and forth, but it's a drop-off for us. It's a babysitter.

Two other closely related nonproductive habits were identified in interviews: the large amounts of time African American students spend watching TV, playing video and sports games, etc. and the little amount of time they spend on homework including the additional practice required to master mathematics. Rachel, who had started a tutoring program, told of going to pick a boy up for tutoring and how his mother let him opt out of

going to tutoring and instead sit and play a video game. Although this story illustrates a worst case scenario, other participants concurred that a lack of time spent on academic tasks is too pervasive in the African American community.

Macario frankly illustrated how the focus of many African American students seems to be on popularity and other non-academic measures of success. When asked: What would motivate African American students to develop a sustained interest in mathematics? Her answer was "Some boy that was grinning in my daughter's face"; that would motivate her" to do better in mathematics (Macario). Related to this quest for popularity and belonging, a dilemma related to negative peer group socialization was identified. Nadir labeled this dilemma as "social clustering." Social clustering, he cautioned, leads many African Americans students to hang around with other African Americans who are not necessarily doing well in mathematics. So if others in my cluster are not doing well in mathematics, "I probably will not do well in math." Nadir went on to add that within the county he sees a lot of clustering among African American adults and children. As a result, he encouraged his own children to have a wide circle of diverse friends (Nadir).

***Parents in survival mode with limited financial resources.*** The term "survival mode" surfaced in two interviews. This term dovetailed with a major observation voiced by 5 out of 8 participants that many African American parents are stuck in "survival mode", struggling to survive or "busy trying to make a living" (Akachi, Gabe, Macario, Imani, Nia). This is especially true for single mothers who according to participants are a significant part of the community. Since, particularly, with mathematics, students need "a

structured system at home that supports them, in terms of checking the homework, helping with the homework, giving them confidence, giving them positive reinforcement and feedback" (Nia). Nia and others recognized that parents stuck in "survival mode" are challenged to provide adequate academic support. As put forward by participants, this support includes providing structured homework time, teaching the strategies needed to master mathematics and considering the determiners of their children's future.

Tied directly to the survival mode subtheme was the idea that finances can impact parents' ability to pay for tutors and some enrichment activities. However, Nadir, who has also tutored, observed "economics is not the primary issue because you can be poor and still do well" (Nadir). Likewise, it was acknowledged by half of the participants (4 out of 8) that limited funds play only a secondary role in impeding some parents from enrolling their children in academic tutoring and enrichment programs (Akachi, Nadir, Macario, Nia).

**Discrepant subtheme.** One discrepant subtheme which did not fit neatly within any of the previously listed subthemes was ascertained.

***Faulty value and reward systems which fuel disengagement.*** Seemingly divergent points made by Wera and Akachi brought to light the need to examine the prevailing values that adults and institutions reinforce; values which fuel disengagement and mediocre aspirations. As the result of attending a seminar, Wera shared how she had improved her own parenting by learning to ask her children "What question(s) did you ask today" rather than simply "What did you learn?" She emphasized: We need to leave

children with a "different mindset" of engagement by changing what we reward; reward questions. That is we need to reward curiosity rather than compliancy (Wera).

On the other hand, Akachi put forward the notion that "Mathematics is a leadership skill," and that it is time for African American to help children understand the need to focus on those endeavors that are really profitable including mastering mathematics. He expanded on his premise by indicating the need to help African American children beyond "just being laborers" into the realm of "entrepreneurship" which is a "mathematical way of thinking," a leadership way of thinking. So, although certainly implicated in other subthemes, Wera and Akachi's responses spotlighted how often values and problems are rooted in institutionalized reward systems. A closer look at this phenomenon and others as they relate to aforementioned subthemes will follow the thematic analysis for Research Questions 2 and 3.

**Analysis of Research Question 2**

Research Question 2: What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?

Participants revealed multifaceted suppositions as to the emotional, psychological, intellectual, physical and financial roles African Americans can play in addressing the academic. Ever mindful of the realities of history and economics, participants acknowledged the primary challenge rested in raising the community's comprehension of the limits of teachers and schools as well as the importance of uniting to leverage own talents plus resources. For Research Question 2, 12 interview questions resulted in 7

subthemes. Table I2 which can be found in Appendix I details the interview questions.

Table 4 found below details the subthemes and is followed by data analysis for each

subtheme.

Table 4

*Research Question 2:  Subthemes*

| Subtheme | Code |
| --- | --- |
| Face the depth of the problem | FaceDepth |
| Pool community knowledge and resources | PoolResources |
| Support parents; educate the community | SupportParents |
| Improve tutoring services for students | ProvideTutoring |
| Improve support for schools and teachers | SupportTeachers |
| Induce African American churches and organizations to sponsor/fund academic initiatives | InduceBlackChurches |
| Hold the school system accountable | HoldSchoolsAccountable |

**Face the depth of the problem.** Given that parents alone do not "have the

knowledge to face or solve the problem" (Nadir), participants pointed out that they and

other concerned African American parents, educators, STEM professionals and leaders

must first and foremost educate themselves, parents plus the community about the depth

of the academic problems it faces and the stronger role the community should play in

solving its own problems. It was widely acknowledged that as a group, African

Americans, suffer disproportionally from a plethora of social and economic liabilities

owing to its low participation in critical mathematics related endeavors (i.e., business,

STEM, finance, technical innovation, etc.). Nadir advised "when individuals are not

successful in math, we as a community lack the critical inventors, business [owners] and

tech-savvy role models needed to help the community set bigger goals" (Nadir).

Other participants concluded that low levels of achievement in mathematics brings into question whether or not African Americans are qualified and can qualify for jobs that require strong skills in STEM (Rachel), as well as leaves the community with a pervasive lack of knowledge as to the possibilities life has to offer (Imani). In short, the consensus was that limited achievements in mathematics "impacts the aspirations of the whole community" (Gabe). Participants agreed that the onus is really on the community to "come together" (Rachel) and "position ourselves in order to compete" (Gabe). Akachi called for a Community Brainstorming Session(s). He noted:

> There is a need for former educators, community leaders [to] acknowledge the fact that there's a problem. We need to get together and have a brainstorming session to say, okay. We see the problem. We know about the problem. What are we doing to fix it? That hasn't taken place, and it needs to take place.

**Pool community knowledge and resources.** In diverse ways, each participant underscored the African American community's need to pool its collective resources in the service of its children and members. Gabe's orientation toward community service was common among participants:

> I joke with my daughter sometimes: 'Oh, go next door and ask if you can borrow a cup of eggs'. We should do that kind of stuff, you know, borrow some sugar or some aluminum foil, and I think somehow, we've kind of gotten away from being a good tight-knit community where we could dip into [and] capitalize on some of the resources. I tutor for free. I can't charge a kid. If a kid comes to me saying I

need help, I'm not charging him. I can't do that. God blessed me. I have a career. I

think there [are] other folks that [are] like that. (Gabe)

It was generally held that this orientation towards shared service and shared sacrifice

would allow the community to pool its efforts and funds in order to staff and fund much

needed community lead academic initiatives. Nia offered a simple suggestion for

community service:  Anyone can have children over and sponsor a gathering of children

based on educational activities (Nia).

**Support parents; educate the community.** "We will not go forward as a

community unless we strengthen ourselves" (Imani). Citing historical precedence,

participants concurred that the responsibility is that of the community's to solve its own

problems starting with better educating and supporting parents. This includes offering

ongoing training which helps parents understand the continued role they must play from

1$^{st}$ grade through college in facilitating academic success. Ideally, training and support

services would be constructed to help parents and other community members become

comfortable with acknowledging their "limits;" move past the fear of mathematics;

proactively assess children's academic engagement plus progress;  understand curriculum

changes; and network in order to obtain "resources needed to help children."  Other

critical academic topics participants noted parents and community members would

benefit from learning more about include how to: "reinforce at home [and elsewhere]

what's being taught in the classroom" (Wera); prevent minor academic issues from

becoming major developmental hurdles; place sports in proper perspective; prepare

children for college; look beyond sports for college scholarship opportunities, etc.

The need to sponsor training related to socioeconomic factors that aggravate academic problems was also recognized. For instance, Nia adamantly interjected that there is a need to provide parents with nutrition education. She emphasized: "[Provide] an education for the parents about good eating, because Black children, they eat, but they eat a lot of junk" (Nia). Imani and Akachi suggested more training programs are needed to help parents combat un/underemployment.

**Improve tutoring services for students.** All eight participants agreed with Macario's assessment that the community should "make more [affordable] math tutors available" to students. Macario and Wera recommended that the community develop a dedicated math lab/center designed to offer tutoring and training. A variety of other formats were suggested including partnerships with community centers and churches.

**Improve support for schools and teachers.** There was consensus that along with parents, teachers are the pivotal force in education. However, views varied as to how much more participants believe teachers as well as school administrators can do to assist African Americans students. At one end of the spectrum, three participants noted schools and teachers have no constraints. While at the opposite end of the spectrum, five participants conceded that schools and teachers are hard pressed to address the complex needs of African American students. These participants felt that owing to differences in culture, learning styles, behavior, and parental involvement coupled with teachers' and schools' heavy workloads plus budget/time constraints, the community will have to do more to help schools address the needs of African American students.

Participants at the "schools and teachers are limited" end of the spectrum also spoke candidly of the impediments teachers and school administrators experience owing to their cultural conditioning and implicit bias. Nia, a participant who had come to appreciate mathematics because of her own recent struggles with the subject in college, put it this way: owing to stereotypes of African Americans, teachers can doubt their capacity to learn, especially, complicated subjects like math. Gabe shared his own experience with having to overcome being stereotyped and that for young African American males "there's a pre-conception in a [teacher's] head already [about] what that kid's going to be". He went on to add "I don't think they fully get the same opportunities" (Gabe).

So, although no explicit suggestions were offered for helping teachers and school administrators address implicit and structural bias, participants did draw attention to the need for the community as a whole to improve its dialogue with teachers and the school board. This would allow them to better align the assistance that parents and the community offer with the pressing needs of teachers and students. Having a close relative who is a teacher, Gabe cautioned against "putting something else on [teachers] that doesn't work, because I think that's been done enough to [them]". Wera stressed the call for the community to take the lead in dismantling the "us versus them" ethos that pervades education.

One strategic resource participants universally agreed that the community could and should provide to schools is access to volunteers including an organized corps of African American professionals and parents. Members of this corps could serve as role

models, presenters, study hall aides and tutors during school hours. Rachel's sentiment–

"I think [teachers] should realize the value of kids being able to see throughout the course

of the day, professionals that look like them"– represented a general opinion. Participants

also expressed gratitude for those teachers that come out of pocket to help students.

However, on a more practical note, Akachi and Imani indicated the need for the

community to ensure that teachers receive the funding needed to purchase supplies and

other items that support classroom instruction.

**Induce African American churches and organizations to sponsor/fund**

**academic initiatives.** With observations such as "I think the churches have failed the

black community" (Gabe), participants called attention to the necessity for African

American churches and civic groups like the National Association for the Advancement

of Colored People (NAACP), Concerned Black Men (CBM) and Concerned Black

Women (CBW) to play a more active role in pooling its resources to develop, coordinate

and fund academic recognition as well as enrichment programs for young people. It was

widely recognized that some African American churches and organizations sponsor

scholarship programs and a few provide limited tutoring program for children of their

members.

However, as far as participants were concerned, the African American churches

and civic organizations failure to provide ongoing coordinated academic programs

including affordable tutoring constitutes a glaring void and community deficiency. Rather

than caste the lack of academic initiatives sponsored by African American churches and

organization as an indictment, some participants emphasized their deep disappointment.

Yet, others were clearly perturbed when it came to this topic, namely, because they felt this lack of coordination translates into many lost opportunities for the community to lead, nurture, enlighten and educate its own children.

Rachel unequivocally criticized the narrow focus within the community. She noted "organizations, my [sorority] included, but [also a] lot of the African-American organizations in the county are so scholarship focused." More focus needs be placed on direct involvement with youth. She went on to tell of asking local African American churches and organizations for tutors for an academic program and how not one person came forward. In another instance, while on a trip with a group of young people who were asked about the NAACP, none of young people could identify the organization. Rachel regretted that "we [as a community] are missing the opportunity to educate young people".

Every participant weighed in and supported the view that African American churches and organizations need to do more to nurture and educate its own children and community. Some participants like Gabe and Akachi expressed a desire to see churches evolve and address the pressing problems of the day. Gabe commented, "I think the churches have failed the black community." Akachi was also direct in his assessment of African American organizations and churches. He emphasized the community's responsibility to role model the very orientation it desires children to undertake by positing:

> We need an "awakening to awaken our children". Nationally and locally, we need
> to use those people that children idolize (i.e., rappers like Snoop) and

organizations including the church to educate children about the realities of the future and the ramifications of failing to focus on sound educational goals and career/financial planning. We need churches to wake up too.

With an interest in the evolution of the cultural milieu of the community, Wera added: We need a more positive context including positive classroom and strong family/community support systems including support from churches and other organizations. Still other participants expressed a desire to see churches offer specific services. For instance, Nia indicated "Since the church has always been the backbone of the African-American community, I think that would be a good place for [tutoring efforts] to start". While Imani indicated churches need to celebrate all graduates and host academic activities throughout the year, Rachel indicated churches could do a better job and sponsor math clubs lead by 1-2 excellent students. Kids can come and work on interesting problems, etc. When it came to funding the development of resources, all participants touched on Nadir's observation:

> The churches, as tax free organizations with facilities, can do more. They can pool resources to offer after school and tutoring programs plus other resources. Not all programs have to be sponsored by churches but organizations can pool money and rent church facilities.

However, other African American organizations were also implicated. For instance, Macario acknowledged "Black civic groups like CBM and CBW need to have some events for kids. Gatherings where young women and men can meet role models, mentors - people to look up to." As the above comments reflect, there was an overwhelming call

for African American Churches and organizations to lead the community's quest for more equitable education outcomes by first breaking out of, to use Akachi's word, "fiefdoms" (Akachi).

**Hold the school system accountable.** "Oversight and accountability are really [the community's] responsibility," as in business, "you get what you look at and what you track." These were sentiments expressed by Akachi. Five out of the eight participants touched on the necessity of the community holding the school system accountable. Akachi articulated the position that at every level of education the community must play a role in assessing the implementation of "common definitions and measures of proficiency as well as accountability, so that problems at one level are not sloughed off" and forced onto the next level. He further stressed this is true because "having to deal with students not prepared at previous levels unfairly impacts budgets as well as teachers" (Akachi).

Gabe also underscored the need for the community to seriously monitor teaching practices and school policies. He critiqued the county schools' practice of allowing students to take tests again. "I've never liked what I saw in the county, and I don't know if it's this way in other places, is this whole idea of [that] you can take the test over, and I'm thinking, that's not real world". "If I can just keep taking the test over, why wouldn't I be able to get an A or B?" (Gabe). Ultimately, views supported that in order to safeguard everyone's interests (i.e., students, community and teachers) the community had to be proactive in assessing school system policies and practices as well as in working for change. Macario summarized the practical perspective: "[We] need African Americans

to get involved. People complain but need to consider what they have not done. Have you

been to a [PTA or School Board] meeting, stood up said something and/or started a

petition?"

**Analysis of Research Question 3**

Research Question 3. What resources do parents and leaders in the local African

American community believe the African American community itself should coalesce

and/or develop in order to alleviate these disparities?

As previously illustrated, participants underscored that African American

churches and civic organizations are in the best position to help the community pool

funds and establish joint academic initiatives. In response to 11 interview questions

which can be found in Table I3 of Appendix I, the development of the resources fell

within six subthemes. Resources widely recognized for development follow Table 5

listing subthemes.

Table 5

*Research Question 3: Subthemes*

| Subtheme | Code |
|---|---|
| Parent and community education program | ParentEducation |
| Affordable well designed tutoring and intervention program | Tutoring |
| Regularly scheduled cultural programs | CulturalPrograms |
| Other academic enrichment initiatives | AcademicEnrichment |
| Corps of school volunteers | VolunteerCorps |
| Family assistance programs | FamilyAssistance |

**Parent and community education program.** All participants indicated a need to

improve the community member's comprehension of the nature of the academic

problems African Americans face and how to appropriately individually plus collectively

prevent as well as address these problems. Workshops are needed to help parents navigate curriculum, improve own mathematics skills (i.e., decrease fears), identify resources for academic support, incorporate mathematics exercises into their children's everyday lives, better prepare students for college, etc. In support of the call for parent training and support, Nadir, told of having gone to high school principals as a church leader with the question– "How can community/church assist school?" The principals indicated that "the greatest thing we need is helping parents understand certain things" (Nadir). Imani and other participants supported the idea that the community needs a "system that allows parents to communicate and dialogue" (Imani). As a complement to developing an educational program for parents and other adults, Gabe counseled that standard ways to dissemination information were essential to "get the word out about available [academic] resources". He suggested setting up "automated robo-calls" (Gabe).

**Affordable well designed tutoring and intervention program.** The necessity for developing affordable community based tutoring and intervention programs for students was widely recognized. One such model program identified by Gabe is Charles County's Purple Boot Initiative where tutors meet with African Americans students each Saturday. Sponsored by an African American fraternity, the tutors are paid teachers. "They're compensating the teachers, so that's been going very well" (Gabe). Again, Gabe offered a complementary technical solution suggesting the development of an online mathematics tutoring and help portal for local students that incorporated the use of social media.

**Regularly scheduled cultural programs.** A wide range of programs designed to celebrate African American history and academic achievement including those academic achievements of local students were suggested for development. Program ideas raised include: Unsung Heroes (Nadir), Business Development (Nia) and College Preparation (Imani).

**Other academic enrichment initiatives.** In addition to the development of cultural programs, participants called for expanding academic opportunities for students. This includes developing mentoring programs, mathematics clubs, and other math enrichment programs plus workshops. The inclusion of visual hands-on activities, games, and competitions with some financial rewards in programs and workshops was seen as vital. Specific mathematics workshops ideas included: How Math Skills Enhance Pay Check (Akachi), Math in Video Games (Nia, Wera, Rachel), Money/Finance (Nia, Rachel), Space Travel (Imani), How Math Used in Every Day Life (Wera, Nadir), and Snap Circuits (Gabe). Nia identified a no/low cost idea for academic engagement that any family or organization could adopt. She suggested that anyone can have children over to their home and sponsor gatherings for children based on educational activities (Nia). Noting that "children are alone too much" and "they need somebody to take an interest in them", Nia also summarized the widespread opinion that children need more mentors and access to enrichment programs. In addition, Nadir identified the need for the community to sponsor "Make Math Fun" events (Nadir) in order to engage both adults and children.

**Corps of school volunteers.** As described in the preceding section, the formation of a volunteer corps to assist schools and teachers by serving as assistants, tutors and much needed African American role models was suggested across the board.

**Family assistance programs.** Individual participants suggested other unique resources for development that would help families mitigate financial and mental health problems that exacerbate academic problems. Nia indicated that there is a need to "provide more food assistance by developing [their own] food banks/pantries" as well as address the "emotional hunger many children and families experience." In a similar vein, Gabe acknowledged the need for African American adults and organizations to show a vested financial interest in the education of young people. He proposed having church members and others financially sponsor students' enrollment in academic endeavors from kindergarten through college (Gabe). Imani reiterated the importance of improving employment prospects of parents by providing them with more training.

Suggested strategies for paying for the development and maintenance of the aforementioned initiatives were remarkably similar and rested primarily on the pooling of resources. With five out of eight participants identifying the same strategies, the top strategies identified were African American churches and organizations pooling funds, parents pooling funds, and applying for grants. Other strategies included hosting fundraisers (4 out of 8); soliciting donations from businesses (1 out of 8); rerouting local taxes (1 out of 8) and using membership fees from mathematics clubs (1 out of 8). Rachel stressed above all the need to stop quibbling and "Just do it!" She reiterated, "Just like we can pay for election signs and campaign donations we can give money to support our

children" (Rachel). Gabe supported Rachel's opinion with heartfelt urgency. He argued the need for parents to ante up:

> I think that the system can do you in. We can't rely on someone else to pay. I tell parents, "I shouldn't care more about your kid than you. You can't expect that the teacher should care more about your kid than you. You can't expect the county school system to care more about your kid than you." (Gabe)

## Discussion of Overarching Themes and Findings

In considering challenges African Americans face in mastering mathematics and the socioeconomic roadblocks not doing so imposes, Gabe's argument listed at the end of the preceding section serves as a potent reminder of the genesis of this study. It also serves as an introduction to an analysis of how the subthemes unearthed during data analysis relate to overarching themes and scholarship. In offering an analysis of the overarching themes unearthed from interviews, the researcher refers back to a previously cited assertion made by Cibulka as cited by Bass and Gerstl-Pepin (2011). Cibulka expressed the critical importance of African Americans daring to use a range of introspective and extrospective frameworks to explicate "the complicated, messy, painful, and potentially embarrassing" internal and external messages as well as structures of oppression in order to pursue equity built on the deployment of holistic structural changes in people, policies and practices (Bass & Gerstl-Pepin, 2011, p. 912).

Indeed, the subthemes explicated thus far represent how difficult it is to delve into the "complicated, messy, painful and potentially embarrassing" legacy of racism and racialized systems in any American community. The researcher expects that rather than

being viewed as another study of African American deficiencies, the study offers an

opportunity to hear directly from members of an upper-middle class African American

community regarding solutions to the educational inequities and problems their children

face (Census Bureau, 2010). Additionally, given that affluent African Americans are

seldom studied despite there being an achievement/opportunity gap at every income

level, the study offers a window into the cultural and socioeconomic capital of such a

community as well as a consideration of why and how this capital might be better

appreciated, realized, developed, and utilized in efforts to ameliorate educational

disparities (Ferguson, 2002; Ogbu, 2003; Vanneman, Hamilton, Anderson, & Rahman,

2009).

Bearing in mind a commitment to community capitol/capacity building situated in

historical context as put forward by in the Black Emancipatory Action Research (BEAR)

model, a Critical Race Theory (CRT) rooted framework, a detailed analysis of how the

aforementioned subthemes relate to four larger overarching themes follows (Akom,

2011).

**Overarching Theme 1:   Absence of a Collective Treatment of Education as a**

**Cultural Function and Parallel Community Controlled Support System Perceived to**

**Contribute to Academic Disengagement**

In considering participants' perceptions of the root causes of disparities in

mathematics achievement for local African American K-14 students, all 14 Research

Question 1 subthemes relate to cultural and academic problems that research

demonstrates is typically offset by other successful involuntary and voluntary immigrant

groups (Ogbu, 2003). Additionally, 8 out of 13 Research Question 2 and 3 subthemes

embody roles and resources undertaken  by academically successful groups (Ogbu 1992,

2003). Table 6 lists these related subthemes.

Table 6

*Summary of Overarching Theme 1 and Subthemes*

| Subthemes | Overarching Theme |
|---|---|
| *Research Question 1–Root Causes*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br>   ■  Stunted aspirations<br>   ■  Discounted African American history and culture<br>   ■  Few African American professional role models and teachers<br>   ■  Low expectations based on stereotypes<br>   ■  Poor in-depth assessment of comprehension | 1: Absence of a Collective Treatment of Education as a Cultural Function and Parallel Community Controlled Support System Perceived to Contribute to Academic Disengagement |

*(table continues)*

| Subthemes | Overarching Theme |
|---|---|
| ▪ Too little class time spent on mathematics | |
| ▪ Differences in learning styles | |
| ▪ Need for specific mathematics and study skills. | |
| ▪ Unfamiliar with the applicability of mathematics | |
| ▪ Limited home resources for help with homework | |
| ▪ Few accessible mathematics tutoring and enrichment programs | |
| ▪ Cultural habits which distract from academics | |
| ▪ Parents in survival mode with limited financial resources | |
| ▪ Faulty value and reward systems which fuel disengagement | |
| *Research Question 2–Recommended Roles* | |
| What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities? | |
| ▪ Face the depth of the problem | |
| ▪ Pool community knowledge and resources | |
| ▪ Support parents; educate the community | |
| ▪ Improve tutoring services for students | |
| ▪ Induce African American churches and organizations to sponsor/fund academic initiatives | |
| *Research Question 3–Recommended Resources for Development* | |
| What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities? | |
| ▪ Parent and community education program | |
| ▪ Affordable well designed tutoring and intervention program | |
| ▪ Regularly scheduled cultural programs | |
| ▪ Other academic enrichment initiatives | |
| ▪ Family assistance programs | |

In short, other academically successful voluntary and involuntary immigrant groups treat

education as a cultural function" and fund their own parallel education support services

and programs (Ogbu, 1992, 2003). In fact, many of the subthemes (i.e., perceived root

causes and suggested roles plus resources for development) unearthed in this study relate to Ogbu's study of another affluent African American community with an "achievement gap". Grounded in social ecology, Ogbu's (1992, 2003) cultural-ecological theory posits that owing to their history as involuntary immigrants and the resulting barriers to socioeconomic opportunities, collectively African Americans' carry a paradoxical dependent yet distrustful disposition towards European American controlled schools. Although not without its critics (Comeaux & Jayakumar, 2007; Farmer, 2001; Gilbert, 2009; Harris, 2006; Whaley & Noel, 2011), Ogbu's study entitled *Black American Students in an Affluent Suburb* remains one of the few collaborative ethnographic studies of an affluent African American community. More importantly, the findings of that study coincide with subthemes raised in this study and offer similar insights into cultural and organizational dynamics of parents, students, communities, teachers and schools. In addition, many of the research based recommendations outlined in the study entitled "are apropos in addressing the problems and suggestions raised by participants in this study (Ogbu, 2003).

As represented by the Research Question 1 subthemes, many of the perceived individual and collective impediments African American students experience in their quest to master mathematics align with the findings of Ogbu and other researchers. Several of these impediments were described in Section 1 and include "[unaddressed] social justice concerns, resource constraints, cultural identity development challenges, differing learning styles, stereotype threats, and the low expectations of teachers, as well

as even their own families/communities". Table 7 depicts how many of the subthemes

voiced by participants tie to the impediments documented and researched in Section 1.

Table 7

*Overarching Theme 1 Subthemes Related to Section 1 Research*

| Impediment Related Subtheme(s) | Impediment Identified in Section 1 |
|---|---|
| *Research Question 1–Root Causes*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br>▪ Discounted African American history and culture<br>▪ Few African American professional role models and teachers<br>▪ Limited home resources for help with homework<br>▪ Few math tutoring and enrichment programs<br>▪ Parents in survival mode with limited financial resources<br>*Research Question 2–Recommended Roles*<br>What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?<br>▪ Face depth of the problem<br>▪ Pool community knowledge and resources<br>▪ Support parents; educate the community<br>▪ Improve tutoring services for students | Historical and cultural forces leave African Americans struggling to define, develop and control their own educational agenda and resources in the service of their cultural interests and communities (Clark, Johnson, and Chazan, 2009; Ford & Helms, 2012; Leonard, Brooks, Barnes-Johnson & Berry, 2010; Martin, 2009a, 2009b; Won-Pyo & Youngs, 2008) |

*(table continues)*

| Impediment Related Subtheme(s) | Impediment Identified in Section 1 |
| --- | --- |
| *Research Question 3–Recommended Resources for Development* <br> What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities? <br> ▪ Develop parent/community education programs <br> ▪ Develop tutoring/intervention programs <br> ▪ Sponsor regularly scheduled cultural programs <br> ▪ Develop other academic enrichment initiatives <br> ▪ Provide family assistance programs | |
| *Research Question 1–Root Causes* <br> What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students? <br> ▪ Differences in learning styles | Differing learning styles that do not necessarily align well with Eurocentric values, curriculum, and/or pedagogy (Leonard, Brooks, Barnes-Johnson & Berry, 2010; Martin, 2009a; Martin, 2009b) |
| Research Question 2–Recommended Roles <br> What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities? <br> ▪ Support parents; educate the community <br> ▪ Improve tutoring services for students <br> ▪ initiatives | |

*(table continues)*

| Impediment Related Subtheme(s) | Impediment Identified in Section 1 |
| --- | --- |
| *Research Question 3–Recommended Resources for Development*<br>What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities?<br>  ■ Develop parent/community education programs<br>  ■ Develop tutoring/intervention programs<br>  ■ Develop other academic enrichment initiatives | |
| *Research Question 1–Root Causes*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br>  ■ Discounted African American history and culture<br>  ■ Parents in survival mode with limited financial resources<br>  ■ Faulty value and reward systems which fuel disengagement | Unaddressed social justice concerns (Gutstein, 2012; Leonard, Brooks, Barnes-Johnson & Berry, 2010; Kumasi, 2011; Moses & Cobb, 2001; National Urban League, 2013; Peterson et al., 2011; Woessmann, Hanushek, & Lastra-Anadón, 2011) |
| *Research Question 2–Recommended Roles*<br>What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?<br>  ■ Improve support for schools and teachers<br>  ■ Hold school system accountable | |
| *Research Question 1–Root Causes*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br>  ■ Discounted African American history and culture<br>  ■ Few African American professional role models and teachers | Cultural identity development challenges (Barnett, 2002; Barton & Coley, 2010; Bass & Gerstl-Pepin, 2011; Leonard, Brooks, Barnes-Johnson & Berry, 2010; Martin, 2009a, 2009b) |

*(table continues)*

| Impediment Related Subtheme(s) | Impediment Identified in Section 1 |
|---|---|
| *Research Question 1–Root Causes*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br>   ▪  Low expectations based on stereotypes | Stereotype threats: low expectations of teachers, as well as even their own families/communities  (Ballon, 2008; Martin, 2000, 2009a, 2009b; Pringle, Lyons, & Booker, 2010; Steele 2010; Stinson, 2013; Tenenbaum & Ruck 2007). |
| *Research Question 1–Root Causes*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br>   ▪  Cultural habits which distract from academics | Ineffective cultural habits (Cousins & Mickelson, 2011; Hooper, Roberts, Sideris & Burchinal, 2010; Lee & Bowen, 2006; Martin, 2000) |
| *Research Question 2–Recommended Roles*<br>What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?<br>   ▪  Improve support for schools and teachers<br>*Research Question 3–Recommended Resources for Development*<br>What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities?<br>   ▪  Develop corps of school volunteers | Weak historical ties between African American parents/community and schools owing to limited insight into each other's culture, values and norms (Brandon, 2007; Bridges, Awokoya, & Messano, 2012;Cousins & Mickelson, 2011; Franklin, 2002; Hooper, Roberts, Sideris & Burchinal, 2010; Ingram, 2007; Jeynes, 2003, 2012; Lee & Bowen, 2006; Martin, 2009a, 2009b; Martin, Martin, Gibson, & Wilkins, 2007; Sheldon & Epstein, 2005; Shockley, 2008;  Strayhorn, 2010). |

With a view toward leveraging the community's collective resources and experiences, participants' perceptions centered on the reality that in the long run the African American community must look to offset impediments and protect its own interests. In order to do this, integrated solutions related to community development, family advocacy, parent education, and student services were put forward. At a more significant level, participants' views characterized education as a collective responsibility

and socialization process which cannot be left to schools or limited to perfunctory outcomes like test scores, college preparation or even job training. So, given that children and others are now left with implicit and explicit doubts about the African American community's overall commitment to academic excellence, the academic dilemmas it now faces can serve as an opportunity for the community to rediscover a renewed sense of self determination, collective capacity and responsibility for "our shared lives" (Harwood, 2005, p. 153).

## Overarching Theme 2: Teachers and Adults Perceived as Having *Not* Made a Compelling Case That Mathematics is Meaningful or Accessible

From a lack of exposure to African history that tells of the role Africans have played and continue to play in mathematics, science and innovation to the absence of African American STEM professionals or teachers, 10 out of 27 subthemes voiced by participants related to helping parents and students improve their understanding of the real world uses of mathematics. See Table 8 for list of subthemes.

Table 8

*Summary of Overarching Theme 2 and Subthemes*

| Subthemes | Overarching Theme |
|---|---|
| *Research Question 1–Root Causes* <br> What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students? <ul><li>Stunted aspirations</li><li>Few African American professional role models and teachers</li></ul> | 2: Teachers and Adults Perceived as Having *Not* Made a Compelling Case That Mathematics is Meaningful or Accessible |

*(table continues)*

| Subthemes | Overarching Theme |
|---|---|
| *Research Question 1–Root Causes (Continued)*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br>  ▪ Unfamiliar with the applicability of mathematics<br>  ▪ Cultural habits which distract from academics<br>*Research Question 2–Recommended Roles*<br>What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?<br>  ▪ Pool community knowledge and resources<br>  ▪ Support parents; educate the community<br>*Research Question 3–Recommended Resources for Development*<br>What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities?<br>  ▪ Parent and community education program<br>  ▪ Affordable well designed tutoring and intervention program<br>  ▪ Regularly scheduled cultural programs<br>  ▪ Other academic enrichment initiatives | 2: Teachers and Adults Perceived as Having *Not* Made a Compelling Case That Mathematics is Meaningful or Accessible |

For over 15 years, scholars like Gloria Ladson-Billings have argued that "school mathematics is presented in ways that are divorced from the everyday experiences of most students, not just African American students" (1997, pp. 701). In a widely circulated mathematics education reform polemic written by Paul Lockhart (2009), a research mathematician turned teacher, he laments "Mathematics is an art" but "part of the problem is that nobody has the faintest idea what it is that mathematicians do." He goes on to add:

> [If you believe mathematics is] memorizing algorithms, who will set you
>
> straight? The cultural problem is a self-perpetuating monster: students

learn about math from their teachers, and teachers learn about it from their

teachers, so this lack of understanding and appreciation for mathematics in

our culture replicates itself indefinitely.

As participants surmised and other theorists have speculated, to overcome the epidemic

of high mathematics anxiety experienced by 17–50% of Americans let alone have them

come to see mathematics as an accessible useful art, radical mathematics education

reform and interventions are  necessities (Berch & Mazzocco, 2007; McAnallen, 2010;

Peressini & Peressini, 2007; Sheats-Harkness, 2013). However, to date, no formal studies

of implementations of such reforms were found. With their pressing social justice

concerns coupled with a love of art, music, community, harmony, creative expression

plus other cultural gifts, African Americans are uniquely positioned to implement

innovative ways of helping students explore and learn the relevance of mathematics

(Ladson-Billings, 1997; Moses & Cobb, 2001). They are also uniquely positioned to help

teachers develop culturally relevant curriculum and pedagogy (Murrell, 2002). In fact,

many of the resources (e.g., corps of volunteers, cultural programs, workshops, make

math fun events, etc.) suggested by participants for development illustrate the opportunity

for the community to partner with schools in reframing how mathematics is taught.

**Overarching Theme 3:  African American Churches and Organizations Perceived as Having the Responsibility and Capacity to Do More to Address Academic Inequities**

Although one major subtheme *Induce African American Churches and Organizations to Sponsor/Fund Academic Initiatives* directly reflected participants desire

to see African American churches and organization leverage human, social and economic

capitol on behalf of addressing academic disparities, 12 out of 27 subthemes related to

this desire. Table 9 list these subthemes.

Table 9

*Summary of Overarching Theme 3 and Subthemes*

| Subthemes | Overarching Theme |
| --- | --- |
| *Research Question 1–Root Causes*<br>What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students?<br><ul><li>Few African American professional role models and teachers</li><li>Limited home resources for help with homework</li><li>Few accessible mathematics tutoring and enrichment programs</li><li>Parents in Limited financial resources</li></ul>*Research Question 2–Recommended Roles*<br>What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?<br><ul><li>Face the depth of the problem</li><li>Pool community knowledge and resources</li><li>Induce African American churches and organizations to sponsor/fund academic initiatives</li></ul> | 3: African American Churches and Organizations Perceived as Having the Responsibility and Capacity to Do More to Address Academic Inequities |

*(table continues)*

| Subthemes | Overarching Theme |
|---|---|
| *Research Question 3–Recommended Resources for Development*<br>What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities?<br><ul><li>Parent and community education program</li><li>Affordable well designed tutoring and intervention program</li><li>Regularly scheduled cultural programs</li><li>Other academic enrichment initiatives</li><li>Family assistance programs</li></ul> | |

In keeping with participants' sentiments and under the framework of liberation theology, in his final book originally published in 1967, *Where Do We Go From Here: Chaos or Community?,* Dr. Martin Luther King, Jr. warned "if the church does not recapture its prophetic zeal, it will become an irrelevant social club without moral or spiritual authority" (2010, p. 102). He also went on to warn civil rights groups and the African American middle class that if they failed to do the tough work of maturing and organizing in order to address their own deeper socioeconomic issues as well as to serve the poor, they would pay the price of rising inequality for all (King, 2010). Fast forward, in many respects, participants' perceptions of the meager efforts made by African American churches, organizations and even the middle class to address the everyday problems of their members let alone those of the poor tell of Dr. King's prophetic admonitions having come true.

If participants' disappointment in African American churches, organizations and even the middle class was poignant, so was their hope that these sectors would unite and rally once again on behalf of their children as well as on behalf of living Christian principles. Since Dr. King, a number of scholar-practitioners have articulated theological, psychological, educational, economic and interdisciplinary liberation frameworks rooted in an African ethos (Akbar, 1985; Asante, 2003 originally published in 1988; Boyd-Franklin, 2013; Clark 2013; Cone, 2010 originally published 1970; Karenga, 2010; Ladson-Billings, 2006, Leary, 2005). These liberatory frameworks and initiatives coincide with participants' overarching belief that "the best road to all health, economic, political, cultural and psychological in the African community is through a centered positioning of ourselves within our own story" (Asante as quoted by Clark, 2013, p. 381).

While more studies are needed, Black Church collaborations offer much promise but so does the history of the local community featured in this study (Butler-Ajibade, Booth  & Burwell, 2012; Campbell, et. al., 2000;  Lowe & Shipp, 2014). In a presentation entitled, *African Americans in Calvert County: a Brief History*, Kirsti Uunila,  a Historic Preservation Planner for Calvert County, makes the point that dating back to the 19th century, locally, African Americans were united in using their churches to build schools which in turn contributed to their "[having] a sense of self-determination in the region" (n.d.). She also shares the spirit of self-determination embodied in Harriet Elizabeth Brown's story (Uunila, n.d.). In 1937, as a teacher in Calvert County, Ms. Brown, under the auspices of NAACP lawyer, Thurgood Marshall, sued for the same pay as European American teachers and won leading the way across the nation for equal pay regardless of

race (Uunila, n.d.). These local historical stories of self-determination coincide with a story Akachi shared about African American oyster house workers and tenant farmers living in the southern part of the county. Although less well-off then their better educated northern counterparts, he shared that in the early 1900s these southern county "Black folks" dared to refuse to take script for pay. They said, "You either give us money, or we're not doing the work" (Akachi).

Crafted in the crucible of oppression, the "Black Church" is a very human enterprise that continues to be torn between its conformist and activist roots. Yet, once again, it is called to live up to its often romanticized but formidable history as a moral as well as cogent public servant. Once upon a time the Black Church "provided [for] those who escaped from slavery in the form of services such as schools, meeting places for abolitionists, teaching, and the provision of Underground Railroad stations" (Lowe & Shipp, 2014, p. 246). While it can be argued that Black Churches do not constitute a monolith, as viewed by participants in this study, history and the mutual academic plus socioeconomic problems faced by African Americans across all SES classes renders this argument feeble for the local community. Indeed, participants reiterated a crucial point also raised by Dr. King (1967): Shared problems offer an opportunity for African Americans as a community to question where they invest their collective energies and funds. Needed are endeavors and institutions that bear real power and solve practical problems (King, 1967).

**Overarching Theme 4: Along With Improving Communications and Support for Teachers, Improving Methods for Holding Schools Accountable Perceived as Vital**

In order to improve support for students, participants responses revealed a desire to overcome the parents/community versus teachers/schools orientation that permeates both sides of the equation. What Wera labeled as the "Us versus Them" paradigm. A paradigm largely fueled by unspoken expectations as to the roles and responsibilities of students, parents, teachers and schools. In examining the root causes of the disparities in mathematics between African Americans and European Americans, 9 out of 17 subthemes related to instructional issues that contribute to disengagement. Participants also identified 2 out 7 roles and 1 out of 6 resources the community could undertake in an effort to directly aid and improve communications with teachers and schools. Table 10 lists these subthemes.

Table 10

*Summary of Overarching Theme 4 and Subthemes*

| Subthemes | Overarching Theme |
|---|---|
| *Research Question 1–Root Causes* <br> What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students? <br> ▪ Discounted African American history and culture <br> ▪ Few African American professional role models and teachers <br> ▪ Low expectations based on stereotypes <br> ▪ Poor in-depth assessment of comprehension <br> ▪ Too little class time spent on mathematics. | 4: Along With Improving Communications and Support for Teachers, Improving Methods for Holding Schools Accountable Perceived as Vital. |

*(table continues)*

| Subthemes | Overarching Theme |
|---|---|
| ▪ Differences in learning styles<br>▪ Need for specific mathematics and study skills.<br>▪ Unfamiliar with the applicability of mathematics<br>▪ Faulty value and reward systems which fuel disengagement<br>Research Question 2–Recommended Roles<br>What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities?<br>▪ Improve support for schools and teachers<br>▪ Hold the school system accountable<br>*Research Question 3–Recommended Resources for Development*<br>What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities?<br>▪ Corps of school volunteers | |

In short, participants, recognized all improved roles and resources would ultimately benefit students, teachers, schools and the community. They also voiced a desire to take a more proactive and prepared role in partnering with teachers and schools. However, participants also acknowledged that they were not always welcomed in schools. Therefore, ultimately, more effort is required on the community's part to develop consistent, organized and effective procedures for monitoring school policies, practices and budgets.

## Conclusion

With respect to design, the case study methodology was especially appropriate given the quest to hear and record the individual and collective voices of community

members who would not otherwise have the opportunity to voice concerns that they have

for their children, families, and community in a manner that would be considered by

school administrators, community leaders and other officials. In light of this

responsibility, every effort was taken to remain diligent in obtaining informed consent

and safeguarding plus analyzing data entrusted into the researcher's care. Additionally,

the limitations of using a case study design continue to be recognized. These key

limitations include the lack of transferability, small sample size, time plus resource

constraints and possible unconscious subjective nature of researcher's and participants'

views owing to shared interests and/or previous interactions (Glesne, 2011; Hancock &

Algozzine, 2011; Merriam, 2009). However, in keeping with Solórzano and Yosso's

(2002) contention that critical race theory (CRT) supports "transdisciplinary modes of

inquiry, and suggest a space for insider accounts of their experiences," a case study

proved to be appropriate for this study given its goal and resource constraints (Howard,

2008, p. 956). The case study facilitated the documentation of the perceptions of African

American community leaders, parents and STEM professionals as to the root causes of

disparities in mathematics performance K-14 students experience. It also shed insight into

remedies the community could and should undertake to help ameliorate these disparities.

Analysis of interview responses revealed many consistent beliefs about the

difficulties students experience across all grade levels. Indeed, participants' views of the

root causes of the disparities in mathematics achievement faced by their children and

community were much more nuanced then blaming or casting as deficient any group (i.e.,

society, parents, students, and/or teachers). Rather, given African Americans' complex

history in the face of oppression, participants articulated the importance of not shying away from looking at everyone's role in the problem in order to craft solutions which address not just the symptoms but the root causes of inequities in educational opportunities, aspirations and outcomes. It was recognized that African American students' struggles in mathematics are symptomatic of restricted opportunities and resources based on race coupled with an impeded sense of their culture, identity, life purpose and future. Herein, cultural and academic forces leave many students without a view of themselves as capable of and responsible for conquering those endeavors like mathematics that confer real power.

Thus, although participants fully acknowledged the importance of improved student-teacher relationships, instruction and curriculum, the correction of many of the primary root causes of disparities in mathematics was seen as a community responsibility in keeping with the community's best interests. As represented by Research Question 1 subthemes, these primary root causes include: (a) cultural disconnections and habits which undermine academic success; (b) limited support for parents and students designed to offset discrimination, stereotypes and an historical lack of opportunities to master mathematics; and (c) failure to collectively invest in building an academic infrastructure to celebrate own culture and broaden students' opportunities. Drawing on their rich experiences as African Americans, students, parents, long term residents of the county, community leaders, activists, STEM professionals and lovers of mathematics, participants were well aware of the obstacles students and parents face fending off externalized and internalized stereotypes. Especially, when students see so few STEM

professionals and teachers people who look like them and, therein, demonstrate it is possible for African Americans to master mathematics and related endeavors.

With these obstacles in mind, it was widely recognized students and parents would need more day-to-day exposure and support in order to broaden their academic horizons, improve understanding of the real world applications of mathematics and remedy specific problems they are experiencing in mathematics. Additionally, improved support and training for parents and other adults in the community was viewed as a strategy for better equipping adults to work with teachers, administrators, and the school board in addressing deleterious practices originating from stereotypes and low expectations. With a continued devotion to spiritual principles and armed with a respect for their individual and collective intellectual African heritage along with gifts as overcomers, each participant articulated a desire to see their community not miss the opportunity to role model for their children the importance of pivoting back to self-empowerment.

Given that the purpose of this qualitative case study was to gain insight into African American community leaders, parents and STEM professional's perceptions of the root causes of their children's struggles in mathematics as evidenced by disparities in achievement measures from grades K-14 and solicit ideas as to how the community itself might lead efforts in ameliorating these disparities, the researcher believes community leaders, teachers, administrators, and decision makers should be advised of the results of this study. For beyond improving standardized test scores in order to close the "achievement gap" between African American and European American students, the

insights offered by participants in this study can be used by parents, community leaders, teachers, school administrators and policy/budget makers to improve collaboration, pool resources and  build a stronger village for all students. Principally, insights can help improve services and instruction for all students at-risk of not developing the quantitative skills required for college and for life.

An executive summary of findings along with a copy of the study will eventually be sent to all participants as well as other interested community leaders. Participants will be invited to meet with the researcher. Based on findings detailed in this section, the next section of this study lists several recommended initiatives the community might undertake in response to this study as well as details a draft training curriculum containing materials designed to initiate a training program for African American parents and community members.

Section 3: The Project

**Introduction**

In formulating a follow-on project based on the findings of this study, several recommended initiatives were considered for development. Although only the project related to Recommendation 2 is described in detail, all recommendations considered are first described in this section to assist the community in raising awareness and future planning.

Recommendation 1: With the assistance of participants in this study and as suggested by Akachi, convene a community forum to solicit the opinions and recommendations of a wider range of African American community leaders, parents, STEM professionals and other interested adults (Stewart & Shamdasani, 2014). This recommendation to host an African American forum was not made because members of other ethnic groups cannot offer valuable insights. Rather, given the sensitivity of the problem and ongoing perceptions that African Americans are to blame for the inequities they experience, the chief purpose of the forum should be to increase trust among community members (Boyd-Franklin, 2013, King, 1967; Leary, 2005; Stewart & Shamdasani, 2014). The forum should serve as a springboard for developing a more comprehensive action plan, presenting findings from this study, and forming one or more working groups responsible for implementing programs (i.e., cultural, tutoring, volunteer corps, etc.).

Recommendation 2:  Develop and institutionalize appropriate and effective culturally relevant parental educational strategies (Ogbu, 2003, pp. 279-280). Research

on a variety of fronts demonstrate that unless efforts are made to address African American "parents' educational strategies" at the community level rather than the individual level, changes in teaching and school practices alone will not work (Fan, Williams, & Wolters, 2012; Ogbu, 2003, p. 279). Since for African Americans their parenting and educational strategies are rooted in culture, economics and race-relations, the community should sponsor parental training, which would be constructed to help them collectively address issues that unconsciously undermine academic and mathematics success as well as more effectively communicate and partner with teachers plus schools. Furthermore, as noted by Ogbu (2003), community-created and community-sponsored education for parents would send a "powerful indigenous message" to children about parents own commitment to education, willingness to seek help, and desire for self-empowerment (p. 280). The need to send African American children such a message has been historically articulated by a number of other theorists and researchers (Boyd-Franklin, 2013; Tucker 1999; Wilson, 1978). All participants' perceptions evidenced that support for parents was a primary missing link. A first step would be to educate parents and the broader community as to the severity of the disparities in mathematics and the implication of these disparities not just for individuals but for families and the community (Leach & Williams, 2007). As a result of this study, the researcher developed a draft curriculum guide and training materials. Upon publication of the study, participants and others will be asked to improve the draft curriculum and assist in the implementation of training.

Recommendation 3: Develop a Policy Recommendation Paper describing how local African American churches and organizations might create and fund an umbrella association or Community Development Corporations (CDCs) for the express purposes of uplifting academic achievement (Butler-Ajibade, Booth & Burwell, 2012; Campbell, et. al., 2000; Lowe & Shipp, 2014). Although limited scholarly attention appears to have been paid to African American community development as a whole, research demonstrates that African American church collaborations, especially, in the form of CDCs, can drive community transformation (Butler-Ajibade, Booth & Burwell, 2012; Campbell, et. al., 2000; Lowe & Shipp, 2014). Moreover, nationwide there are already several communities and churches associations that have instituted academic enrichment programs as well as collaborations with school systems (Lowe & Shipp, 2014). A paper detailing these models, related research and how local churches might develop their own initiative should be developed and presented to church leaders along with findings from this study.

Given the findings from this study which represent the strength of participants' responses and in accordance with feedback from doctoral committee, the researcher has elected to base the project study deliverable on Recommendation 2. Therefore, the remainder of this section describes a series of parent/community training workshops designed to raise awareness and improve community members' collective facility in addressing the problems African American students across all grade levels face in mastering and advancing in mathematics. The project's purpose, goals, target audience, rationale, relationship to current literature, and content are included. Finally, the

implications of the project for social change as well as the local community are

contemplated.

## Description and Goals

Mired in a long history of unequal access to a vast range of socioeconomic

opportunities including education and inundated with stereotypes which paint them as

intellectually inferior, African Americans progress in the complex arena of mathematics

continues to be fleeting. As illustrated in Section 1, nationally and locally, at every grade

level and across every socioeconomic class, research plus statistics demonstrate that

European Americans and Asians significantly outperform  African Americans in

mathematics as evidenced by a number of performance measures (i.e., standardized test

scores, enrollment in advance level classes, career aspirations, college graduation rates,

etc.) (Calvert County Public Schools, 2014, Flores, 2007, Harris & Herrington, 2006;

Ladson-Billings, 2006; Leonard, Napp, & Adeleke, 2009; MHEC, 2008, 2011; Walker

2007). Whether grounded in traditional race-based socioeconomic analysis or more

culturally contextualized frameworks like CRT, stereotype threat, and Afro-centered

psychology, research demonstrates that many complex historical, cultural, political,

economic, and pedagological factors contribute not only to the disparities in performance

but to the opportunities students are given to excel in mathematics (Leonard et al., 2009;

Walker, 2007). Given the complex racialized nature of American society, institutions and

schools, participants in this study theorized and research demonstrates successful

education of African American students calls for the dismantling of low expectations

within individuals, families, communities and teachers as well as providing students with

more holistic support that promotes healthy cultural development as a precursor to academic development. However, this dismantling of stereotypes and holistic culturally relevant support must happen inside and outside of school.

As studies of African centered and independent schools and historically black colleges and universities (HBCUs) bear out, positive proactive cultural congruence along with strong parent, family and community involvement is as critical as teacher and/or curriculum reform (Cornelius, 2012; Palmer, Davis, & Maramba, 2010; Parker, 2009; Robinson & Jeremiah, 2011). Additionally, studies and strategic plans of school districts that have decreased the "opportunity/achievement" gap also speak to the importance of improved parent, family and community involvement (The Achievement Gap Initiative at Harvard University, 2008; National Education Association, 2008, 2009).

With 21 out of the 27 subthemes relating to the need for improved parent and/or community involvement, participants perceptions in this study align with the African proverb that "it takes a village to educate [the whole] child" (Murrell, 2002, p. 79). As a central tenant of frameworks connected to culturally sensitive and African-centered psychology as well as pedagogy, this tenant also speaks to the ongoing recognition that improving support for children rests upon improving support for parents by resurrecting a caring village that sees the academic achievement of all children as its collective responsibility (Asante 2003; Boyd-Franklin, 2013; Byrdsong, Mitchell, & Yamatani, 201;Myers 1993; Tucker, 1999; Woodson, 1933) . Especially, in the arena of mathematics, participants' perceptions gave credence to the idea that it will take a village

to also better inform and support parents so that they can better support and advocate on behalf of their children.

Thus, based on suggestions of participants and preponderance of overarching and subthemes which revolved around leveraging parents, family and community involvement, the parent-community training curriculum and materials developed herein are designed to first raise awareness, facilitate deeper dialogue and initiate action planning. This includes dialogue about the role that culture and mathematics play in education and how parents along with other community members can leverage their resources to address academic disparities in general and in mathematics. The participants call for parent and community training coincides with best practices for maintaining a sense of shared responsibility as children grow and for closing the "opportunity/achievement gap". This includes best practices put forward by organizations such as National Council on Educating Black Children (2013), National Education Association (2008), and White House Initiative on Educational Excellence for African Americans (The White House, 2011).

The parent training curriculum and materials are designed to support a 3-day series of workshops with the chief goals of facilitating dialogue, raising awareness, and action planning led by parents and other community members. More detailed objectives include assisting workshop attendees:

1. Dispel myths and raise awareness as to the role culture, parents and community can and must play in helping to ameliorate academic disparities in general and in mathematics.

2. Connect and establish rapport in an effort to increase trust that is the foundation for sharing resources.

3. Articulate and document the aspirations they share for their children and community in order to initiate a common vision and expression of purpose.

4. Increase understanding of the cultural, spiritual, cognitive, physical and psychological developmental phases of African Americans from childhood to adulthood as they relate to academic achievement in mathematics.

5. Share strategies for partnering with schools.

6. Share other academic plus mathematics resources.

7. Answer questions and, where necessary, document questions for follow-up training and/or consultation.

8. Articulate strategies for moving forward in order to develop and implement solutions based on local data, findings of this study and community concerns (e.g., develop action teams, action plan, additional workshops, etc.).

Participants in this study will be asked to critique and edit the training curriculum and materials as well as facilitate workshops. The next section will explore the rationale for developing a parent training program in more detail.

## Rationale

Akin to Harwood's (2005) findings from a study of Americans' retreat from public and civic life, participants' collective insights articulated a desire to re-ignite the shared sense of purpose, urgency, commitment and ownership required to solve shared structural socioeconomic problems. However, as embodied in three of the more

compelling subthemes explicated in this study (i.e., Face the depth of the problem, Induce African American churches and organizations to sponsor/fund academic initiatives, and Develop parent and community education program), re-igniting this shared sense of purpose, urgency, commitment and ownership of problems plus solutions, rests not in outside experts (i.e., educators, politicians, etc.) dictating answers but in serving the disenfranchised in their quest to discover their own answers (Harwood, 2005). This is a point about power consistently made by King (1968), Freire (1998) and other liberation-scholars. Therefore, the rationale for electing to develop curriculum for a series of parent training workshops rests in attending to participants call for parent and community education which promotes awareness of the significance of the problem and the role the parents plus community members can play in developing effective interventions.

Without a shared sense of awareness, organization and planning, it is very unlikely powerful interventions rooted in shared governance, whereby, African American parents, leaders, and other concerned community members are respected as equal partners with school and county officials will ever come to fruition (Ogbu , 2003; Tucker 1999). A series of community lead parent training workshops would offer an opportunity to promote a shared reality that honors the African Americans as equal partners in educational affairs (Ogbu , 2003; Tucker 1999). In short, the sole and soul purpose of the proposed parent training would be to as Freire (1998) contended: "encourage human agency" by encouraging the examination of prevailing conditions and conditioning (p. 10)

On a more pragmatic level, local K-12 policies call for the superintendent and school principals to provide parents with training. Yet, to date no systematic training plan or record of parent training activities targeted at helping African Americans address their unique academic disparities were found. The parent-community training proposed herein would address this gap in service and make possible the dissemination of a critical information and resources. It would also serve as a training model. Additionally, given that annually teachers and other administrators are afforded opportunities to receive training in the form of professional development and continuing education workshops plus courses, the lack of parent training opportunities can only reinforce the unequal power dynamics prevalent today.

So, although based on findings, it might be argued few local African American parents and adults are really aware of the far reaching ramifications of academic disparities in mathematics let alone aware of the role parent-community education and mobilization can and must play in ameliorating these disparities, parent training would make for a more informed community prepared to initiate more effective interventions within the community as well as in partnership with schools. Furthermore, as illustrated in participants' experiences relating to tutoring and mentoring efforts, unless a shared definition of the problem and sense of urgency is championed by parents and other adults throughout the community, albeit unwittingly, they will continue to undermine academic interventions and community development (Kunjufu, 2004; Ogbu, 2003; Tucker, 1999).

Lastly, the rationale for drafting a parent training curriculum stems from considering the range of instructional methods and techniques suited to the philosophy of

the researcher as an educator with progressive-radical values, diverse learning

strategies/styles of African American adult learners, nature of the content and available

resources (Galbraith, 2004). In particular, parent training would allow for the use

instructional methods which facilitate face-to-face and online discussions, critical

thinking exercises, collaborative learning and demonstrations. With a special emphasis on

fostering discussion (i.e., dialogue), these methods make room for learners to (a) consider

diverse perspectives on the problem and plausible solutions; (b) externalize assumptions

and contradictions underlying their" values, beliefs and actions"; (c) reflect on how

European Americans, teachers, policy makers and others view the problem; and (d)

consider the complexity and conflicts inherent in the problem (As written by Brookfield

in Galbraith, 2004, pp. 213-214).

## Review of the Literature

In considering the vital role parent-community education should play in helping

African American students and families overcome challenges faced in mathematics as

well as the development of content for such training, the literature explored in this review

speaks to why improving parent-community involvement is crucial and how an

understanding of the impediments students face can afford all stakeholders the

opportunity to craft more effective interventions. Also, in an effort to ascertain a sound

formula for constructing a culturally responsive parent-community training program,

theoretical frameworks and models for constructing such training programs were

examined. Unfortunately, based on a search of general Internet, Walden University and

Schomburg Center for Research in Black Culture databases for peer reviewed articles and

nonprofit/governmental research reports, a dearth of recent studies exists for parent

training and many of the identified impediments as they relate to African Americans in

general and to middle class students in particular. The databases searched include:

Education Research Complete, Google Scholar, ERIC, ProQuest Central, ProQuest

Research Library, ProQuest Education Journals, PsycINFO, SAGE, and SocINDEX with

Full Text. In conjunction with African American, keywords used to search for articles

include: *aspirations, career aspirations, academic aspirations, racism, middle class,*

*economic disparities, achievement, achievement gap, wealth, wealth gap, social support,*

*community development, cognitive development, comprehension, mathematics*

*comprehension, parent involvement, parent training, academic interventions, academic*

*enrichment, math interventions, teacher relationships, engagement, self-determination,*

*academic self-concept, self-efficacy, agency, academic motivation, homework, homework*

*time, peer group, tutoring, media, stereotypes, culturally aware,* and *culturally*

*responsive*. Research anthologies written or edited by key researchers that appeared

frequently in peer reviewed articles were also utilized. A synopsis of the literature

reviewed follows and includes additional details about the research strategy used to

explicate theoretical frameworks for the development of the parent-community training

program.

**Importance of Educating Parents and Community Members**

Since the 1980s, a call for culturally relevant and even African-Centered

pedagogy has sprung to life in the quest to close the achievement gap between African

American and European American/Asian students (Berry, Ellis & Hughes, 2014; Murrell,

2002). Based on this call, finding opportunities to teach students to leverage cultural

habits in empowering ways (e.g., creativity, communal orientation, love of music,

technology and hands-on learning, etc.) cannot be overlooked by adults at home or at

school. Indeed, a broad range of researchers have highlighted the importance of

recognizing the intellectual salience of the everyday perspectives, needs, practices and

gifts African American students invoke and how they relate to achievement in

mathematics (Berry, Ellis, & Hughes, 2014; Ferguson, 2014; Murrell, 2002; Wright,

2001).

Although greatly understudied, other researchers like the Afterschool Alliance

(2013) and Ferguson (2002) have identified more practical concerns like African

American students' desire for more tutoring and their lack of access to tutoring as well as

other enrichment services. These researchers provide support for the conclusion that in

order to counter many of the impediments articulated by participants in this study African

Americans must draw on their own often still under-appreciated strength and resources to

foster more equitable outcomes. For, as Ogbu (2003) found, often overlooked but equally

as important as any changes teachers and schools might make in practices and

educational policies are the proactive changes the African American community can

make to "increase the academic orientation, effort and performance of their children" (p.

274). In a global study, Kielstra (2012, p. 7) concurred with Ogbu's recommendation by

finding that around the world and across poor as well as rich cultural groups:

> On the surface, money and education seem to create a virtuous circle, with rich
>
> countries – and individuals – buying good educations for their children who, in

turn, benefit economically. A closer look, though, indicates that both higher

income levels and better cognitive test scores are the result of educational

strategies adopted, sometimes years earlier, independently of the income levels

existing at the time. More important than money, say most experts, is the level of

support for education within the surrounding culture. Although cultural change is

inevitably complex, it can be brought about in order to promote better educational

outcomes.

Furthermore and representative of Ogbu's and Kielstra's findings, in schools and districts

that have significantly improved African American achievement, holistic strategies have

been employed. These strategies rest on improving family-community engagement,

instruction, student-teacher relationships, and leadership in each of these areas (The

Achievement Gap Initiative at Harvard University, 2008). In addition, these districts

recognize that emotional and cognitive work has to be undertaken by all stakeholders

(The Achievement Gap Initiative at Harvard University, 2008).

Starting with determining children's ability to deflect stereotype threats plus sense

of self efficacy through establishing effective afterschool and summer cultural,

intervention/enrichment programs, researchers evidence the pivotal role informed

parents, families and communities can play in African Americans continued quest for

equal opportunities and rewards (Dunst, Trivette & Hamby, 2008;  Durla  & Weissberg,

2013; Ogbu, 2003; Sheldon & Epstein, 2005; Sherman, Hartson, et. al., 2013;  The

Achievement Gap Initiative at Harvard University, 2008; Wang, Hill, & Hofkens, 2014).

Ultimately, in many ways, the community's academic problems offer all members a

rebirth; an opportunity to redefine values and reward systems in a manner that promotes

justice and engagement for and by all. However, the call for parent-community training

recognizes that effective community engagement in socioeconomic concerns and ongoing

education must go hand-in-hand for children and adults (Boyd-Franklin, 2013;

Hardwood, 2005).

**Elevate Parents' Understanding of Impediments in Order to Improve Interventions**

In addition to impediments identified in Section 1 and reiterated in Section 2,

research was found that aligns with other perceived impediments broached by

participants and represented by subthemes. These impediments include stunted

aspirations; poor in-depth assessment of comprehension of lessons; parents in survival

mode with limited financial resources; limited home resources for help with homework;

limited access to mathematics tutoring and enrichment programs; and cultural habits that

distract from academics. A summary of findings related to these impediments follow.

**Impediment:  Stunted aspirations.** Starting with the exploration of the "stunted

aspirations" subtheme, as suspected by participants, there is indeed an "aspiration gap".

Research indicates African American children become aware very early of the

occupational disadvantages of their parents and others in their circle as well as the

patterns of job-related iniquities represented in their community and the media (Archer,

Dewitt & Osborne, 2015; Bigler, Averhart & Liben, 2003; Brown, & Segrist, 2015;

Witherspoon & Speight, 2009). In explicit and implicit ways, many get the message

early:  do not trespass in academic and occupational spaces dominated by European

American males. This is especially true when they have few role models to counter their

observations. Therefore, across SES classes African American children develop much lower career aspirations then European Americans (Archer, Dewitt & Osborne, 2015; Bigler, Averhart & Liben, 2003).

In a study of 92 African American children, Bigler et al. (2003) found "both higher and lower SES children agreed that African Americans were unlikely to perform high-status occupations" (p. 573). The findings showed that for lower SES children low occupational aspirations tended to be set as early as 2nd grade (Bigler et al., 2003). Higher SES children only faired a little better as they aged with most aspiring for middle SES occupations (Bigler et al., 2003). Regrettably, more recent 2009 and 2015 studies, report the same trend in low occupational aspirations (Brown, & Segrist, 2015; Witherspoon & Speight, 2009). The good news is that research demonstrates that interventions designed to inoculate students with a strong sense of positive racial identity and self-efficacy as well as provides them with counter messages plus role models can offset stereotypes and externalized plus internalized oppression (Brown, & Segrist, 2015; Witherspoon & Speight, 2009).

**Impediment: Poor in-depth assessment of comprehension.** In one of the few nationwide studies of African Americans in high-achieving predominantly white suburban schools, Ferguson found in 95 schools "Blacks and Hispanics also report less understanding of their teachers' lessons and less comprehension of the material that they read for school" (Ferguson, 2002, p. 4). He also found that for African American students less comprehension translates into them taking "longer to complete the same amount of homework that whites and Asians complete in a shorter time" and turning in less

homework which tends to reinforce teachers' negative perceptions of them (Ferguson, 2002, p. 4). Although no recent direct studies of the homework comprehension issue raised by Ferguson were found, his findings coincide with participants' perceptions and the corresponding subtheme that somewhere in the teaching process African American students' comprehension in reading and mathematics is not being adequately assessed. However, both Ferguson and participants perceptions also coincide with national and local reports showing African Americans continue to struggle with proficiency in reading which in turn impacts ability to advance in mathematics (Calvert County Public School System, 2014; U.S. Department of Education, 2013)

Although the complex influence of social and cultural factors on cognitive development and comprehension has long been recognized by researchers, ferreting out specific factors that affect comprehension in order to develop complimentary parenting and teaching practices is a recent phenomenon and is a very difficult task (Hines & Kritsonis, 2008; Wang & Eccles, 2011). Several studies do show that African American students with difficulties learning mathematics do benefit from tutoring and interventions that teach techniques for improving comprehension (i.e., structuring of word problems based on schema, explaining reasoning to others, improving reading comprehension, etc.) (Jitendra et al., 2013; Peterson, 2013). However, only two recent studies designed to delve into the breakdown of African Americans' comprehension skills in mathematics were found (Moorman-Walker, 2007; Mueller & Maher, 2009).

On the basis of mathematics anxiety levels in an in-depth case study using mixed-methods, Moorman-Walker (2007)  compared the mathematics problem solving

strategies of two low anxiety community college students to two high level anxiety students. Her findings support that high anxiety students internalize negative messages about mathematics, struggle with reading and struggle to consistently use key problem solving steps like drawing pictures of the problem and double-checking their process (Moorman-Walker, 2007). In the second study, Mueller and Maher (2009) demonstrated that by tapping into the fondness 24 African American 6th graders shared for collaborative learning they could be taught to strengthen their reasoning skills. This study also demonstrated the effectiveness of using afterschool programs to supplement learning.

Additionally, research in mathematics and other disciplines demonstrates that differences in comprehension are tied to the previous knowledge and learning strategies a learner brings to any given lesson (Garth-McCullough, 2008; Murrell, 2002; Engel, Claessens & Finch, 2013). Even in mathematics, previous knowledge and learning strategies tend to be rooted in culture elements (Kielstra, 2012). For African Americans, these cultural elements remain incredibly consistent across socioeconomic classes (Boyd-Franklin, 2013). Hence, at home and in school, students benefit from ongoing help developing the inter-cultural prerequisite knowledge and learning strategies needed to master mathematics and other subjects.

**Impediment:  Need for improved understanding of schools and teachers.**
Ferguson also found that African American students relate more strongly to "teacher encouragement" than "teachers' demands" while the converse is true for European Americans and Asians (Ferguson, 2002, p. 4). A number of other studies support this

supposition and reveal that African Americans have different expectations for teacher-student relationships and when these expectations are not met achievement motivation plus self-efficacy can decrease resulting in disengagement (Battey, 2013; Hughes et al., 2012; Pringle, Lyons & Booker, 2010). In this study, participants' answers to questions regarding the role of teachers also illustrate the desire African Americans share for teachers to demonstrate high levels of warmth. Although their expectations of teachers may be justifiable, research lends credence to the more profitable pragmatic expectations shared by more academically successful groups. In this respect, as recommended by Ogbu (2003), African Americans would benefit from socializing their children to share in this pragmatic view which promotes higher levels of academic resiliency and self-efficacy.

**Impediment:  Parents in survival mode; fewer homework resources.** A deeper analysis of economic research also supports participants' perception that despite high household income many African American parents still struggle financially having to work long hours (Lowe & Shipp, 2014; Mishel, Bivens, Gould & Shierholz, 2012). Moreover, U.S. Census (2010a) data shows that locally single parents head 44% of African American families with children under 18 and have more children to support. With parents having less wealth, less education, less availability and more children to support, statistics reveal that African American students are less likely then European Americans to have adequate homework support and have to share resources including work space, books, computers, etc. (Ferguson, 2002; Kaba, 2011). In the few studies of the persistent achievement gap between African Americans in high SES brackets and

high performing schools, evidence also supported Ferguson's supposition that differences in GPA, comprehension of lessons and reading materials as well as standardized test scores likely "reflect race/ethnic differences in home, peer and classroom processes among high SES students" (Ferguson, 2002, p. 10). He further contended these "unexplained racial differences are greatest at the highest SES levels" (Ferguson, 2002, p. 10).

  **Impediment:  Cultural habits which distract from academics.** Harkening back to participants concerns regarding cultural habits that distract from academics, several studies support their perceptions but in a manner that invites compassion and sheds light on the importance of the need for more parent training along with support and mentoring for children. Starting with what can turn into negative peer group interactions, across all SES African Americans prize and make popular "tough" kids (Ferguson, 2002, p. 16). However, this is done in part because they look to peer groups for protection from real and perceived dangers of rejection (Boyd-Franklin, 2013; Ferguson, 2002, 2014). This includes protection from stereotyping and constantly being viewed as outsiders (Boyd-Franklin, 2013; Tatum, 2003).

  Moreover, African American children are primarily left to develop an image of themselves as having to be "tough" amidst difficult socialization processes interlaced with exploitive media images of African Americans (Boylorn, 2008; Dixon, 2008). Given that they spend more time ingesting media (i.e., watching TV, listening to music, texting, playing video games, using computers for socializing, etc.) than any other group, African American children's idolization of "tough" people is consistent with their media exposure

(Rideout, Lauricella & Wartella, 2011). On average, they spend 13 hours a day consuming media versus eight hours spent by European Americans; five hours of that time is spent watching TV content on various platforms (Rideout, Lauricella & Wartella, 2011). Given the current educational values and reward systems, this level of media consumption can only detract African American students from homework time and other academic investments. Though, rather than being seen as the cause of academic disengagement and in order to develop appropriate responses, research reveals a need to look deeper at the root causes of habits and defenses which exacerbate academic troubles.

For Africans Americans, negative peer group influences, quests for popularity, media consumption patterns, and even obsession with sports and entertainment are but symptoms of the strained racialized relationships and identity development experienced at every level of socialization (Boyd-Franklin, 2013; Ferguson, 2014). As Ferguson (2014) concluded based on his research into what African American students do to get peers to like them, young people "need help…as there are aspects of peer culture that many would surely reject if there were no possibility of social repercussion" (p. 116)

**Impediment:  Disconnect between parents and schools.** Participants' desire to improve communications and collaborations with schools aligns with studies which show that there is often a disconnect between African Americans parents, teachers and schools. Although several studies supporting this conclusion  were listed in Section 1, additional studies demonstrate that for productive engagement the community, parents, teachers, administrators and students must "have a clear understanding of what each other's roles entail" (Fan, Williams, & Wolters, 2012, p. 22). Herein lies the key reason for the

disconnect. As emphasized in social disorganization theory, problems can typically be traced back to misconceptions about power and "implicit, hidden, and often times not properly identified factors" that result in disconnected relationships at the individual, community and societal levels (Madyun, 2011, p. 22). In the case of African Americans and teachers, no constituent group really knows much about the other groups. Parents know little about teachers and school authorities, teachers really know little about students and their parents as well as parents and students end up knowing little about each other (Brandon, 2007; Cousins & Mickelson, 2011; Fan et al., 2012; Hooper, Roberts, Sideris, & Burchinal, 2010). As previously cited in Overarching Theme 1, Ogbu's (2003) findings indicate that African Americans' expectations for teachers and schools are often misaligned with the services schools as "delegated agencies" are designed and/or equipped to provide. This misalignment is somewhat evidenced in this study. Teachers were seen by participants as responsible for a vast array of psychological, emotional and instructional services. Only one participant indicated that mathematics teachers need to be proficient in mathematics.

In addition to Ogbu's (2003) recommendation for adopting more pragmatic expectations of teachers and schools, the findings of other researchers also align with the participants' perceptions that better "school, family, and community partnerships" are warranted. These findings provide insight into specific strategies for improving "connections among parents, teachers, students, and [administrators]" (Fan et al., 2012, p. 31). In a longitudinal study of a nationally representative sample of 12,721 students, Fan et al. (2012) found parents and teachers would benefit from more explicit

communications and training about roles and expectations. Since too often punishment

for poor academic performance results in even lower student motivation, self-efficacy

and engagement, training could teach parents and teachers how to communicate with

each other and with students in ways which do not unduly damage engagement (Fan et

al., 2012).

To summarize, in order to create an effective support system for African

Americans students, research demonstrates that in order to overcome what is often a

cultural divide underwritten by assumptions about motives and behaviors, all adults

stakeholders would benefit from training. Training designed to clarify expectations and

advance parent-community involvement, teacher performance, curriculum and home plus

school climate (Fan et al., 2012; Sheldon & Epstein, 2005; Vukovic, Roberts & Green,

2013). As the current state of affairs rests largely on assumptions about motives, roles

and impediments all stakeholders face, parent-community training offers opportunities

for all stakeholders to correct misconceptions and build healthier relationships.

**Theoretical Frameworks for Developing Empowering Community Training**

In considering both a theoretical basis and methodology for developing a parent-

community training program, a search was undertaken for theoretical frameworks and

models associated with reoccurring concepts and keywords found in the literature review

resulting from data analysis and study of subthemes and overarching themes. Keywords

used in the search include *parent involvement, mathematics education, parent training,*

*community training, community capacity, community empowerment, community*

*development, community health, culturally relevant pedagogy/training, cultural capitol,*

*self-determination,* and *agency*. General searches related to these keywords, cross

referenced, and narrowed to focus on *African American* and *minorities* were undertaken.

In addition to conducting general Internet searches, Walden University and Schomburg

Center for Research in Black Culture library databases were queried across disciplines

(i.e., education, history, psychology, sociology, economics and health). Specific

databases searched included: Education Research Complete, Google Scholar, ERIC,

MEDLine with Full Text, National Bureau of Economic Research, ProQuest Central,

ProQuest Research Library, ProQuest Education Journals, PsycINFO, SAGE, and

SocINDEX  Searches and review of peer reviewed articles and government/non-profit

reports repeatedly revealed the importance of *community capacity building, culturally*

*responsive parent involvement,* and *self-determination theory* in developing educational

programs for marginalized communities. Three theoretical frameworks were found which

spoke to the intersectionality of these three topics: The Training for Transformation (TfT)

Methodology, African American Children Self-Empowerment Approach (AACSEA),

and Collective Impact (CI) Model (Harwood, 2005; Hope & Timmel, 2014; Tucker,

1999). However, only the TfT framework delved into the critical role of culture in

designing pedagogy and dialogue for adult learners from disenfranchised communities

(Hope & Timmel, 2014). Therefore, given its compatibility with previously referenced

Critical Race Theory (CRT) and Black Emancipatory Action Research (BEAR)

frameworks, the TfT framework/methodology was selected for use as the primary

theoretical framework for developing the project.

**Training for Transformation (TfT) Methodology**

Based on Freire's approach to adult education called "conscientization (or transformation)", the TfT framework was developed by Anne Hope and Sally Timmel in the 1970s to facilitate community organization and leadership training in South Africa; it has been used globally to design a wide range of community training initiatives (Hope & Timmel, 2014, p. 4). Given its underlying principles, TfT is well suited to the goals of the parent-community training program described herein. These principles are as follows (Hope & Timmel, 2014, pp. 3-4):

- Education must be transformative in values and agency. Transformative education is essentially a spiritual process whereby values of co-operation, justice and concern for the common/community good are recognized.

- Education must be relevant and based on cultural "themes that move a community to take action and claim their own power".

- Dialogue is critical throughout the process which must be rooted in participatory learning.

- Instead of pouring knowledge into learners, education should be viewed as a common search for the causes of problems and for solutions which are owned by learners. The educator is merely a facilitator involved in the search.

- Transformation requires ongoing reflection and action.

- True education liberates people to be responsible, critical, and active agents in their own community. Education is never neutral. It domesticates or liberates.

**African American Children Self-Empowerment Approach (AACSEA)**

Since TfT is intended to only serve as framework for structuring and facilitating transformational community education, the content of training is left to the developer(s). For that reason, the content elected for inclusion in the project stems from the themes unearthed from this study and literature reviewed related to these themes all of which were cross-referenced with topics and strategies outlined by Tucker (1999) in the African American Children Self-Empowerment Approach (AACSEA). The AACSEA framework was the only culturally relevant model discovered which provided insight into intervention strategies wherein students, parents, community leaders, teachers and counselors are lead to share responsibility. The use of both TfT and AACSEA frameworks addresses the saliency of culture and collective responsibility.

At the heart of AACSEA is the goal of enabling the family and community to "enable children to help themselves learn, to teach themselves, and to motivate and support themselves in the educational process" (Tucker, 1999, p. 226). AACSEA focuses on "facilitating self-motivation for academic achievement, self-control of academic progress (i.e., self-instruction-based learning), self-praise of academic progress and success, skills for academic success and academic success behaviors" (Tucker, 1999, p. 226). Although Tucker (1999) recognized that all students are deserving of maximal support, she frames the AACSEA model in the reality that African Americans must be prepared to achieve even in difficult homes, communities, schools and/or work environments. More recent studies of African American students also support Tucker's contention that a strong sense of self-empowerment in the forms of a socially and

academically conscious sense of racial identity plus self-efficacy along with a strong sense of social support plays a critical role overcoming academic impediments (Cokley, McClain, Jones & Johnson, 2012; Young, Johnson, Hawthorne, & Pugh, 2011).

Hence, the underlying principles of Training for Transformation (TfT) Methodology along with elements of the African American Children Self-Empowerment (AACSEA) Approach were used to shape the project approach including objectives, implementation plan, content, evaluation plan, and summary of implications for social change. A special emphasis was placed on incorporating instructional methods and content that encourages dialogue, critical thinking about culture, assumptions plus values, 'problem-posing' and reflection (Hope & Timmel, 2014). The detailed content of the parent-community training curriculum can be found in Appendix A.

## Implementation

At the heart of the project lay the Facilitation Team. Initially, those interviewed for this this study will be invited to join this team and critique/revise curriculum content, implementation plan, and schedule as well as join the researcher in facilitating initial workshops. A description of how the project will be implemented including potential resources, potential barriers, implementation schedule, and evaluation approach along with its social implications is provided next.

**Potential Resources and Existing Supports**

The resources and supports needed to realize the project are as follows.

**Facilitation team**. As previously indicated and in keeping with the TfT framework, the participants in this study will be asked to sponsor the initial training

program and  revise the draft curriculum content, implementation plan, and schedule. They will also be asked to recommend additional people they believe might wish to serve as facilitators for future parent-community training workshops. With the help of workshop participants and other community members, the facilitation team would ultimately determine the best organizational structure for sponsoring ongoing initiatives.

**In kind services.** Local restaurants and organizations will be asked to contribute food, beverages and catering services.

**Meeting place(s).** The local public library and/or community center provides free meeting space for educational programs. Three 6.5 hour workshops will be planned for three consecutive Saturdays. Another option is to ask one of the African American churches to host program. The use of a public facility is preferred as it signals neutral space.

**Photocopying services and loan of laptop computers plus tablets.** The local community college will be asked to donate copying services and, if needed, loan computer and/or tablets from mobile lab.

**Relevant brochures for local social services, businesses and organizations.** Local businesses and organizations that offer related parent and student services will be asked to provide marketing materials and other information. This includes information about tutoring, academic programs, social service agencies, youth programs, etc.

**Office and craft supplies.** The researcher will donate craft and office supplies from warehouse of supplies donated and collected over the years.

**Publicity.** Leaders of African American churches, organizations and businesses will be asked to distribute flyers and announce training opportunity. In addition, members of the facilitation team and other contacts will be asked to spread word and help publicize opportunity at various organization meetings and events held throughout the county.

**Yoga and fitness instructor**. To assist with exercises related to helping students improve focus and health, a yoga and fitness colleague will be asked to facilitate a session on Day 3.

## Potential Barriers

Bearing in mind that the parent-community training project proposed herein is only intended to serve a springboard for community organization and mobilization, several potential barriers to offering and sustaining the program are foreseen. Descriptions of these barriers follow.

**Lack of awareness and confidence of parents plus community members.** As supported by study findings, many parents and community members may not be aware of the significant disparities in attainment in mathematics, the socioeconomic impact of these disparities, and/or role parents plus community can play in solving academic problems. Therefore, believing schools and teachers alone are responsible for academic remedies, they may not believe parent-community training will be beneficial or worth their time. In addition, a desire for simple and quick solutions to problems may result in some participants having expectations that do not align with the lengthy investment of time and effort needed to build trust, resolve conflicts and mobilize community efforts.

**Lack of communication and trust.** For instance, although the county has instituted a "Academic Achievement Gap" initiative, no concrete plans regarding intentions and/or interventions have been made available to the public. In addition, since there is no organized educational information portal, system or organization, it is difficult to determine what kinds of academic support services are already available in the local area. Therefore, other community leaders and/or groups may believe their territory is being infringed on or not well represented in training.

**Resistance to community mobilization and change.** Owing directly to traditional allocation of power both between the African American and European American communities as well as within the African American community, it is anticipated there might be individual and institutional resistance to ordinary citizens, especially, lower income residents, initiating their own training and mobilization.

**Reliance on volunteer facilitators.** Given lack of funding and mathematics education as the subject matter, the reliance on unpaid volunteers may result in a limited volunteer pool, thus, resulting in an inability to sustain the initiative and community mobilization.

**Proposal for Implementation and Timetable**

Bearing in mind the iterative nature of the training design life cycle consisting of analysis, design, development, implementation and evaluation phases, it is anticipated that the pilot project will require approximately 16 weeks to implement (Caffarella, 2010). Ideally, the training would happen at the start of the public school year or term.

Table 11 details a proposed project implementation schedule based on a January 2016

start date.

Table 11

*Project Implementation Timeline*

| Task | Date |
| --- | --- |
| Schedule training dates | January 2 |
| Send participants paper copy of the study along with invitation to Q & A dinner and to consider joining parent-community training facilitation team. | January 2 |
| Host Q & A dinner for study participants | January 20 |
| Publicize parent training | January 20 |
| Arrange for catering | January 20-31 |
| Meet with facilitation team to review draft training approach and materials. | January 27 |
| Revise training materials with help of facilitation team | February 10 |
| Conduct dry run of key workshop exercises with facilitation team | February 15 |
| Finalize and copy training materials for pilot training | February 20 |
| Meet with full facilitation team 2-3 days before Day 1 of training to address last minute issues | February 24-26 |
| Conduct Day 1 training. Facilitation team to meet at the end of the day to review formative evaluations | February 27 |
| Conduct Day 2 training. Facilitation team to meet at the end of the day to review formative evaluations | March 5 |
| Conduct Day 3 training. Facilitation team to meet at the end of the day to review formative evaluations | March 12 |
| Host lesson learned meeting with facilitation team to analyze all formative and summative evaluations | March 26 |
| Draft and publish summary of evaluations and action plan for review by training participants | March 31 |
| Host action planning meeting with facilitation team in order to commit to next steps | April 8 |
| Kick Off Round 2 Tasks | April 16 |

**Roles and Responsibilities of Student and Others**

In order to facilitate an educational climate based on trust, respect and accountability, the following roles and responsibilities are envisioned for facilitators and participants.

**Facilitation team.** To promote the tenants of representative community capacity building based on shared ownership and leadership, community members will be invited to join the initial facilitation team based the qualifications used for participation in this study and recommendations put forward by study participants and the researcher (Harwood, 2005; Hope & Timmel, 1992c). As previously noted, the role of the facilitation team will be to rotate leadership responsibilities; assign tasks; critique and revise curriculum content, implementation plan, and schedule; join researcher in facilitating initial workshops; determine long range plans; and measure effectiveness of the training. In this capacity, facilitators are to not dictate answers, but provide information while enabling the participants to discover and voice own concerns, fears, experiences, misconceptions, analysis, and action plans (Hope & Timmel, 1992c). They are to help participants own the experience and process, monitor the climate as well as solve logistical problems.

For each training day, one team member will play the role of lead-monitor helping other facilitators correct and improve methods as training day progresses. In accordance with promoting a community "posture of ownership" while at the same time promoting accountability for useful outcomes, the facilitation team would define and measure the

success of the initial program and would be asked to help the researcher identify at least two independent evaluators to participate in the initiative (Harwood, 2005, p. 160).

**Independent evaluator**. As identified by the facilitation team, an independent evaluator will be chosen to assess curriculum, evaluations and attend training for the purpose of providing team with independent feedback. The community serves as home to several retired community leaders, college administrators, educators, business and STEM professionals who can serve in this role.

**Parents and community members.** Each participant will be asked to be a responsible advocate for the process and recognize that some effort must be made to relinquish emotional plus intellectual comfort zones. As the process is intended to facilitate dialogue and collective ownership of the training as well as implementation of solutions, participants will be asked to do their part in respecting the time, views and efforts of facilitators and other participants. This includes voicing critiques in a respectful and constructive manner.

<div align="center">

**Project Evaluation**

</div>

In accordance with Training for Transformation (TfT) principles for evaluation that are used to facilitate participatory learning and problem-posing, participatory evaluation methods have been incorporated into formative and summative goal-based evaluations (Hope & Timmel, 1992b). These evaluations can be found in Appendix A. With the primary goals of promoting awareness, dialogue, and trust, as well as debunking myths, training participants and facilitation team members will have the opportunity to

participate in formative evaluation processes in a manner that promotes correcting problems as the process unfolds.

Although all facilitators will be asked to monitor the training process, one team member will serve as the lead monitor each day and an independent evaluator will be asked to attend and assess all three days. As the lead monitor, the team member will help identify problems and remain available to help participants throughout the day. As recommended in the TfT framework, goal-based formative evaluations have been designed to assess affective and cognitive learning related to what participants have come to know and care about (Caffarella, 2010; Hope & Timmel, 1992a, 1992c) These formative evaluations include questions primarily related to facilitation methods, participation, content (i.e., expectations, materials, wording, touchy topics), time and concerns.

On the other hand, the summative evaluation has been designed to be distributed at the conclusion of the three day training series and to gain additional feedback related to affective and cognitive learning along with practical concerns about the training program. Therefore, it includes questions relating to overall training aims/objectives; participation; training methods; content; facilitators; venues; time; planning/coordination; and decision making processes (Hope & Timmel, 1992c). Actual evaluations forms can be found in Appendix A.

At the end of each day of training, the facilitation team and I will meet to weigh lessons learned plus feedback from all formative evaluations, independent evaluator, participant suggestions, requests and other pertinent data. After the completion of the

workshop series, a longer lessons-learned meeting will be held to review all formative and summative data along with other feedback provided by participants, independent evaluator as well as the team's reflections. Based on this meeting and if needed additional meetings, a summary evaluation report and draft action plan will be produced for consideration by facilitation team and the participants who attended initial training. After allowing time for training participants to comment on draft action plan, the facilitation team and I would then meet to determine next steps and make public the first round action plan. This includes planning for additional parent-training projects and/or others activities posed in this research study or by participants in the pilot training.

## Implications Including Social Change

### Local Community

The preparation of parents and adults for raising and educating children is often left to chance. For groups whose culture and interests differ from the dominant cultural norms embodied in the school culture, this difference in preparation can translate into a distinct social and academic disadvantage for children. As acknowledged in research and by participants in this study, this disadvantage is certainly the case for African Americans. The parent-community training curriculum described in this section is intended to help fill the parent-community education void which leaves many parents and adults at a loss when it comes to helping children solve academic and homework problems, especially, in the mathematics realm.

Beyond improving parents and other concerned adults knowledge of strategies for preparing children to advance in mathematics, the chief goal of the project rests in

inspiring African Americans to re-imagine the role they can play as a community in its own socioeconomic and academic progress. Additionally, for local African American leaders, educators, and policy makers, the parent-community training initiative offers an opportunity to re-imagine the role parent-community involvement can play in developing more effective academic interventions. The importance of leveraging untapped resources in the service of ameliorating academic disparities is critical for the hundreds of local African Americans whose life, college and career aspirations go impeded each year owing to limited proficiency in mathematics.

Even more fundamental, a parent-community training program initiated and sponsored by the African American community itself offers an opportunity to role model for children, adult members, and others a collective respect for African culture, intelligence, and commitment to ongoing education. Rather than continuing to impose top-down paternalistic and bureaucratic initiatives on the African American community which ultimately fail for lack of buy-in, a parent-community lead education initiatives offers the "possibility of building a new type of [ownership] based on community [consensus building and respect]" (Hope & Timmel, 1992a, p. 5).

**Far-Reaching**

Rather than casting the challenges African American students face across income classes in mathematics as an "achievement gap" problem and leaving individual students and families to find remedies, the project situates the problem in its historical, cultural, communal and socioeconomic contexts. In situating the project in these contexts, its design speaks to the realities which necessitate African Americans regardless of income

pooling their cultural and socioeconomic capitol in order to serve and safeguard their own children and interests. Thus, the project's use of pedagogical methods which celebrate and reinforce communalism while focusing on raising adults' collective capacity to organize and mobilize offers a liberating narrative about capability and power. This reformed narrative of capability and power is relevant for other marginalized communities and those religious leaders, community leaders, educators, policy makers, etc. who wish to address the root causes of educational and other inequities.

Moreover, as a training model centered in principles of self-empowerment and self-efficacy, the project offers mathematics teachers and other STEM educators a window into the importance of considering affective and cognitive domains in educating both children and adults. Rather than being viewed as a standalone static work, the parent-community training project might be adapted by principals, mathematics teachers and other educators in partnership with community organizations in efforts to improve parent-community-school relationships. Since as Tate affirmed, "the teaching of mathematics needs to be connected to the lives and experiences of African American students to enable them to fully take part in our democracy" (cited by Guststein and Peterson, 2013, p. 42) and parents plus other adults in students' immediate circle serve as the primary bridge between home and school, leaving them to go it alone in this bridging role is detrimental to all. This caution is germane for all citizens who in a democracy are charged with the responsibility of sustaining a viable community, nation, economy and world.

**Conclusion**

It is recognized that curriculum development, especially in the service of community development is a complex endeavor with many barriers and hurdles. Although much touted as a factor in of community development and education for marginalized communities, parent-community involvement and training are under theorized and developed areas of study. This section and study put forward a sample curriculum and implementation plan for a parent-community training program designed to assist and mobilize African Americans in addressing the roadblocks their children face in mastering mathematics.

Utilizing the TfT and AACSEA as frameworks for the design, the curriculum is proposed as a starting point for consideration and facilitation of training that encourages the ongoing dialogue necessary for planning and implementing more effective academic interventions plus partnerships. As supported by the study's findings, the training does not preclude the necessity for expanded tutoring services and enrichment opportunities as well as for local African American churches and civic organizations to play a more proactive role in establishing a community climate that rewards academic achievement.

Section 4 will include reflections on the development and limitations of this project plus overall study, implications of the study along with lessons learned as a scholar, practitioner and leader during my doctoral journey.

Section 4: Reflections and Conclusions

**Introduction**

This section offers reflections on the strengths and limitations of the parent-community training project described in the preceding section. In addition, I reflect on lessons learned as a practitioner, scholar, and project developer during the doctoral process, including lessons learned in conducting the study and crafting the resulting training curriculum. Finally, cognizant of national and local efforts to improve African American parent-community involvement in reforms intended to close the "achievement gap" and address ongoing socioeconomic disparities, the wider implications of this study are discussed along with recommendations for future studies.

**Project Strengths**

The primary strength of this study and resulting project springs from the rich, honest, and forthright discernments voiced by middle class African American parents, community leaders, and STEM professionals (Merriam, 2009). Despite having a wealth of knowledge, success in academic and professional pursuits as well as in parenting children, these types of participants often go underrepresented in research studies and are not consulted in any significant way by school systems as they develop educational interventions, especially, in mathematics (Boyd-Franklin, 2013; Harris & Graham, 2014; Martin, 2009a). Thus, their insights—as inculcated in the structure and content of the parent-community training project—can be useful to parents, policy makers, teachers, principals, and other school administrators as they seek to improve services for African American students and families by promoting a "posture of [shared] ownership"

(Harwood, 2005, p. 160). The principles used to structure and develop the project speak to the critical elements of cultural relevance/respect, social justice, skill remediation and self-empowerment principles found in initiatives shown to improve learning for African American and other disenfranchised students (Boyd-Franklin, 2013; Harris & Graham, 2014; Gutstein & Peterson, 2013).

## Recommendations for Remediation of Limitations

As previously surmised, improving educational outcomes for African Americans must come from changing underlying inter- and intra-group power dynamics. These power dynamics and resulting disparities manifest as inequitable policies, practices and relationships between the people involved (Bass & Gerstl-Pepin, 2011). Moreover, these power dynamics govern parent involvement, teacher performance, curriculum, and school climate (Fan et al., 2012; Sheldon & Epstein, 2005; Vukovic et al., 2013). Still, it is recognized that parent education alone cannot alleviate the power disparities that govern socioeconomic conditioning or school/teaching norms nor does it provide students with the direct services—such as mathematics tutoring, mentoring or enrichment opportunities—needed to supplement in-school efforts. Additionally, since there is no way to ensure that the parent-community training will be used by African American parents and the community to organize or partner with teachers and schools in order to develop more effective interventions, four alternatives are offered.

First, as embodied in Overarching Theme 3 and Recommendation 3 outlined in Section 3, participants in this study and other concerned adults could lobby and, indeed, pressure, African American religious and civic leaders to invest in the creation of a

community organization devoted to academic excellence using their time, resources and money to reward such academic efforts (Ferguson, 2014; Ogbu, 2003). Second, initiate partnership efforts to expand the capacity of the two existing tutoring programs identified by participants. This includes sponsoring online and offline fundraising plus grant writing campaigns. Third, participants in this study and other concerned adults could spearhead efforts to team with me in the development of a parent-community advisory board designed to work with the local community college and existing youth service providers in obtaining grant funding in order to develop a intervention program like Young Black Scholars, Project Algebra or Upward Bound (Moses & Cobb, 2001; U.S. Department of Education, n. d.). Finally, sponsoring a participatory research project lead by students and teachers to design own intervention program(s) and educate parents and community as to the challenges they face is another option.

**Scholarship**

Having encountered new concepts such as ontology, epistemology, semiotics, and meta-cognition, I now appreciate the societal role scholars play in constructing and transmitting ideas, meaning as well as values. This doctoral process has impressed on me the importance of carefully considering the contextualized values I bring to any rendering of scholarship and research. It has also given me an appreciation for keeping an open mind as to what constitutes scholarship. From hearing a heartwarming analysis of a blues song to reviewing a participatory research project grounded in pictures taken by participants, my concept of the beauty and possibility of scholarship has broadened.

As a scholar and practitioner, I now have a much richer appreciation of what constitutes intellectual expression including a deeper admiration of the intellectual traditions prevalent in my culture. In a very real sense, I enjoyed experiencing scholarship as connection; connection to my own and others' humanity that even arises in the midst of the internal and external conflicts that are sure to surface in the name of education as growth.

### Project Development and Evaluation

In developing a project that called for using methods from adult education, community development, culture relevant pedagogy, and mathematics education, connecting the dots proved to be more than a little daunting. In addition, cross-referencing these methods with the historical, cultural, social, psychological, political and economic analysis called for in the TfT and AACSEA all while trying to remember to place people above content and facilitation above instruction constantly called for remembering to keep content as simple as possible. However, in connecting so many dots, borrowing techniques from documented TfT and healthcare training case studies proved to be useful. Thus, the importance of searching across disciplines for relevant project development approaches was brought home.

I also learned the value of focusing first on the process of building relationships and then on providing a mix of content intended to expand participants' awareness and address some of their immediate concerns. Furthermore,  to promote participatory responsibility and learning, I now recognize the significance of minimizing and sharing the facilitation role by utilizing methods and team-oriented exercises that showcase

participants' collective experiences and strengths. In short, as Witte and Witte advised, the process of developing the project illuminated the importance even in the preparation stage of being willing to "be adventurous; …consider all types of change within the education setting; and share responsibility for the learning rather than being consumed by the process [or content]" (Galbraith, 2004, p. 266).

In relationship to producing evaluations, the use of frameworks to design and ground the project provided me with insight into aligning evaluations with the context, spirit and values that undergird the frameworks. In the case of using the TfT and AACSEA frameworks, formative and summative evaluations were designed based on the relevance of assessing participants understanding of connections between individual/community behavior and external plus internal power dynamics. Also, frameworks provided insight into the need to assess participants' sense of self-efficacy as embodied in demonstrated commitment to collaboration and community service.

## Leadership and Change

What I had not bargained on in this doctoral process is continually encountering evidence of my own and other adults', including scholars', complicity in not deeply questioning values, ideologies and systems which depend on all manner of bias to sustain existing power dynamics. Written for another section, I had originally thought to delete the previous sentence before concluding that it embodies the fundamental lesson I learned about leadership in this process:  It is beyond difficult to lead oneself, let alone others in facing tough realities, while sustaining the utmost care for and trust in people during the process. Many of the scholars cited in this study contend that change only occurs where

trust resides and that a great part of a leader's job is to inspire courage, trust and care among all involved in the mission (Galbraith, 2004; Hope & Timmel, 2014; King, 2010). In many ways, it was a relief to find research that acknowledges that building trust can take a long time and that there are really no shortcuts. Also, I have been very impressed by the candor and creativity of scholar-practitioners who honor and make room for spiritual plus emotional ways of knowing and relating (Hope & Timmel, 2014; Leary, 2005; Tucker, 1999).

One major lesson in leadership and caring I gleaned from these scholar-practitioners is the necessity of assessing confidence (i.e., what people believe they are capable of and responsible for doing) before focusing on any agenda. Thus, a significant principle that I gained insight into relates to that at their best leaders serve people in building trust in themselves and each other as they seek to accomplish goals based on a shared vision. A leader does not dictate or own the vision; the people do. Considering that my favorite book is the *Strength to Love* by Dr. Martin Luther King, Jr., I now believe I am a little closer to comprehending the enormous prayer, strength and courage it takes  to lead in the midst of fear and believe in people despite ambivalence.

**Analysis of Self as Scholar**

Throughout my life I have heard African Americans often profess, "We stand on the shoulders of giants."  Although, as an African American scholar-practitioner, I cannot help but concur with this sentiment, I have also long contended "We stand on the sacrifices of our ancestors and elders."  Undertaking this doctoral process and this particular project has taught me more than I ever could have imagined about the

responsibility of taking responsibility for honoring their sacrifices by continuing the quest for justice and equality. As a mathematics and computer science teacher, I started this process with a research idea related to examining the role technology can play in mathematics education for helping at-risk students. How I ended up studying the racial disparities in mathematics education is really owed to my first computer science teacher's supposition – You cannot solve a problem with technology or anything else that you do not understand.

This is not to imply that I now truly understand such complex problems as racism or underdeveloped human potential. As a scholar and as another teacher cautioned me years ago, the true measure of any educational endeavor is that it "raises more questions than it answers."  I certainly now have more spiritual, emotional, social, economic and scholarly questions then I will be able to research in this lifetime. I might also add to my computer science teacher's supposition, the true measure of any educational endeavor is it teaches you to desire to ask better questions.

Additionally,  I now have boundless respect for those scholars who dare take on the responsibility of articulating ideas and scholarship intended to challenge the status quo and elevate public discourse as well as the common good. Added to my boundless respect for these scholars, I am exceedingly grateful for being gifted with more courage, integrity and skill when it comes to questioning values, assumptions and bias regardless of source and regardless of history, tradition and/or academic rhetoric.

**Analysis of Self as Practitioner**

One of the concerns that caused me to pursue a doctoral degree stemmed from encountering so many African American mathematics students, enrolled in my and others' courses, who lamented – "I don't have anyone at home who can help me". Yet, very few of these students utilized the school's tutoring services and/or asked African American, Asian or European American instructors for additional help. In working with these students, I discovered most looked to their immediate and extended family for help. As a practitioner, this doctoral journey has helped me see that there is often a distinct difference between what even adult learners believe their efforts are and their actual efforts as well as a distinct difference between what learners believe constitutes effective learning strategies and actual effective learning strategies. The process has left me cognizant of the fact that the roots of coping skills and academic strategies relate to learners' exposure. This exposure ties largely to their culture, history, politics, and socioeconomic status.

Thus, as a practitioner who serves as teacher and program developer, I now seek to spend much more time, effort, and resources on understanding, teaching, and emphasizing strategies for learning how to learn and cope with adversity. In addition, I am now a more ardent advocate for initiatives that increase access to academic services and enrichment opportunities that broaden horizons and strengthen academic and coping skills starting even before grade school. Conversely, in a certain sense, I believe this process has left me with a much more pragmatic view of formal education, schools, and teaching. A view supported by researchers like Tucker (1999) and Ogbu (2003), who

acknowledged the reality of most schools operating as "delegated agencies" and the importance of empowering students with the ability to assess, filter and adapt their own motivations and learning strategies. In the face of globalization, I would now argue this ability needs to be taught at the community level as well.

In considering my values in practice, I found that researchers like Tyson (2011) caused me to take an even harder look at the values and systems of power I unquestionably buy into and transmit. For instance, after reviewing Tyson's meta-study which found that African American students use the "acting white" analogy for academic achievement primarily in predominantly European American and racially diverse schools where "racialized tracking" results in maintaining de-facto segregation, I could not help but question my complicity and silence as I have been a sporadic proponent and teacher of honors classes.

Furthermore, Tyson's (2011) findings that African American students use the "acting white" analogy in efforts to shield themselves from considering themselves intellectually inferior or having to leave their friends/protectors and/or ethnic identity behind broke my heart. Although a consideration of the "acting white" phenomena is relevant to me as a practitioner, it is the greater understanding that I and other adults, look for young people of all races to thrive and reach across racial divides in systems where they are racially stratified and, therefore, pitted against each other early on. As a practitioner and surrogate parent, I am trying now to consider first and foremost: What values are important to sustain in relationships and to teach? Moreover, I am left with an even deeper sense of responsibility for acknowledging practitioners and practices are

never neutral, privileges must always be questioned, and ongoing system, institutional as well as individual level reflection is not optional.

## Analysis of Self as Project Developer

I found the opportunity to marry scholarship with the creativity of project design gratifying as an expression of my voice united with those of participants, scholars and all who have made the work possible. The time it took to conduct the marriage not so gratifying. A key lesson I continue to keep relearning about myself is to forgo the notion of perfection. In reality, I had to push past wanting to find the perfect concept or content and trust answers would come as I drafted the project. In the name of progress, I had to overcome the tendency to spend too long on drafting content for any one topic or exercise as well as look for simpler approaches to make points.

Perhaps it was owing to the subject matter, but, I believe the most critical lesson I learned about myself as a project developer is that as the project unfolds and transforms so do I. Karimi, a TfT community educator, shared observations related to my experience. In a project report, she concluded transformation takes time, respect, tender support and mentoring as learners discover new information, expand their minds, and learn new skills (Hope & Timmel, 2014). In brief, the need to accept and view the insecurities and conflicts inherent in my work as transformational became clearer as I developed the project.

## The Project's Potential Impact on Social Change

A unique aspect of the study and resulting project is that it situates the educational concerns of African Americans in a broader socioeconomic and community development

narrative. The project considers education a common-cultural-community good that significantly impacts the wellbeing of not just individual African Americans but of the broader African American community. Given the growing wealth gap and struggles middle-class African American children now face in gaining access to the opportunities plus skills needed to remain in the middle-class, the importance of collective solutions to common problems again demands attention (National Urban League, 2013). Findings from this study and discussions that occur during training can be used by educators, community leaders, policymakers, business leaders and others seeking to advance academic interventions, parent-community involvement and community development initiatives which improve the community's capitol, resources and resilience.

Above all, in the service of its children, the parent-community training project offers community members an opportunity to restore and role model for their children a sense of self-determination and agency. In giving of their time and making the effort to educate themselves, define their own problems plus interests, organize their own solutions and utilize their own strengths, adults will send a clear message to children that is critical to do everything in one's power to overcome academic obstacles. Hence, this project's model of parent-community education designed to promote recovery from cultural stigmatization, self-determination and community capacity building is pertinent for African American and other marginalized communities locally and nationally.

## Implications, Applications, and Directions for Future Research

The focus of this study was on understanding the perceptions and feelings of middle class African American adults regarding the disparities in mathematics education

and how their community could lead efforts to address these disparities. The study, therefore, had a limited scope that included interviewing only eight African American community leaders, parents and STEM professionals residing in one upper-middle class predominantly white suburb. Owing to the nature of its design and small sample size, the findings of the study are not necessarily generalizable. However, given that the preponderance of educational studies of African Americans focus on urban and/or poor communities and that there is a paucity of research related to African American academic success, community development and leadership, more educational and socioeconomic studies of middle and upper-middle African Americans are warranted along with studies of the educational interventions and community programs they lead.

This study contributes to the aforementioned body of research and gives voice to the wealth of success, knowledge, commitment and resources that can be found within marginalized communities. So, given that increasing family income and wealth alone does not resolve many of the academic challenges African American students face, this research study and others like it can aid community leaders, policy makers, educators, and others in partnering with parents and the broader community to implement more effective academic interventions across income classes.

Additionally, the efforts and desires for community unity shared by participants in this study reflect the need to study further African American individuals and organizations that are successful in making their community relevant. Although there is now a wealth of scholarship related to race and culturally relevant pedagogy, there are few studies of African American community lead initiatives that are helping solve critical

collective problems by leveraging the cultural assets, resources and unifying relationships found within the community.

Uniquely positioned in the mathematics education and community development domains, this study highlights the opportunity to develop practical teaching and community organization frameworks/models focused on educating learners and communities who feel powerless and disconnected. Building on the works of theorists like Akbar (1985), Horton (1992), Leary (2005) and Tucker (1999), the articulation of at least two additional theoretical frameworks/models would be useful for educators and community developers working with such learners. These suggested frameworks/models include: A Healing and Self-Empowerment Model for the Mathematics Classroom and an Expanded Black Organizational Autonomy (BOA) model.

In respect to mathematics education, this study points to the necessity for more research that puts forward more creative, culturally relevant and comprehensive strategies plus curriculum for teaching "mathematics as art" (Lockhart, 2009). This includes research that showcases how to leverage the power of technology to promote both parent and student engagement, assess interests, lower academic plus math anxiety and help diagnose plus remedy skill gaps. Such research is critical for making mathematics education accessible to the many versus the fortunate few now served with current approaches.

## Conclusion

My father always left me with the charge to "find a fight worthy of getting into." It was a reminder to use my mind, heart, time and resources wisely in serving a worthy

purpose. Summarized in this study are the many challenges African American students and communities face as they continue to fight the "good fight" for opportunities and equality in a sphere riddled with intellectual stereotypes, anxiety and misconceptions –mathematics. As in most fights and journeys, the real challenges tend to lay in conquering fear. This challenge has certainly been the case in my doctoral journey. In this section, I have attempted to summarize what feels like a lifetime of prayers, setbacks, discoveries, surprises, lessons learned, small victories and hopes for how this project might be of service. I pray that I have at least done some justice in translating the voices of the eight thoughtful souls and leaders that dared to go on record in the service of our community.

Throughout this study, I have been reminded that the African American story is the human story. It is the story of democracy and spirit. It is the story of the labor that it takes nations, communities, families and individuals to live up to their spiritual, moral and human ideals. In the traditional Swahili greeting of the Maasai of Kenya, the greeter asks "Are the children well?" In response, the person being greeted is to answer "all the children are well" (Leary, 2005). It must be noted that the Massai have traditionally been a warrior nation thus such a gentle and caring greeting might seem out of place. Except their greeting represents the traditional African values that they share. Those values of putting the care of all children and the vulnerable before whatever daily struggles the adults face.

These values have kept the Massai strong for hundreds if not thousands of years. Lest they forget, their greeting calls warriors to remember their purpose, responsibilities

and priorities as well as to remember the inextricable link between individual and group

survival. When I consider all of the complex variables that constitute the challenges and

the opportunities African Americans face in advancing in mathematics and American

society, I conclude the community is uniquely positioned to lead in changing the

educational equation so that the African American answer becomes the American

answer"– "All the children are well."

References

Afterschool Alliance. (2013). The Importance of Afterschool and Summer Learning

    Programs in African-American and Latino Communities. Issue Brief No. 59 .

    Washington, DC.: Afterschool Alliance.

Aghajani, S., Khormaee, F., Rajabi, S., & Rostamoqli, K. Z. (2012). The relationship of

    self-esteem and self-efficacy to mathematical anxiety in students. *Journal of

    School Psychology, 1*(3), 6-26.

Aguirre, J., Mayfield-Ingram, K., & Martin, D. (2013). *The impact of identity in K–8

    mathematics learning and teaching: Rethinking equity-based practices.* Reston,

    VA: National Council of Teachers of Mathematics.

Aguilar, P., & Keating, K. (2009). Satellite outreach services program to under-

    represented students: Being in their space, not on MySpace. *Reference Librarian*,

    *50*(1), 14-28. doi:10.1080/02763870802546365

Akbar, N. (1985). *Community of self* (Rev. ed.). Tallahassee, FL: Mind Productions.

Akom, A. A. (2011). Black emancipatory action research: Integrating a theory of

    structural racialisation into ethnographic and participatory action research

    methods. *Ethnography and Education*, 6(1), 113-131.

American Association of Colleges for Teacher Education (AACTE). (2013).*The

    changing teacher preparation profession: A report from AACT's professional

    education data system (PEDS).* Washington, DC: AACTE.

Archer, L., Dewitt, J., & Osborne, J. (2015). Is science for us? Black students' and

    parents' views of science and science careers. *Science Education, 99*(2), 199-237.

Asante, M. K. (2003). *Afrocentricity, the theory of social change*. Chicago: African American Images.

Ballon, E. (2008). Racial differences in high school math track assignment. *Journal of Latinos & Education*, *7*(4), 272-287. doi:10.1080/15348430802143428

Barton, P. & Coley, J. (2010). *The black-white achievement gap when progress stopped*. Princeton, NJ: Policy Information Center.

Bass, L. & Gerstl-Pepin, C. (2011). Declaring bankruptcy on educational inequity. *Educational Policy, 25*(6), 908–934.

Battey, D. (2013). 'Good' mathematics teaching for students of color and those in poverty: the importance of relational interactions within instruction. *Educational Studies In Mathematics, 82*(1), 125-144. doi:10.1007/s10649-012-9412-z

Bean, J. (2005). Composing academic identities. *International Journal of Learning*, *12*(8), 241-247.

Bembenutty, H. (2010). Homework completion: The role of self-efficacy, delay of gratification, and self-regulatory processes. *International Journal of Educational & Psychological Assessment*, *6*(1), 1-20.

Berch, D. B., & Mazzocco, M. M. (2007). Why is math so hard for some children. *The nature and origins of mathematical learning difficulties and disabilities.* Baltimore, MD, Paul H. Brookes Pub. Co.

Berry III, R. Q., Thunder, K., & McClain, O. L. (2011). Counter narratives: Examining the mathematics and racial identities of black boys who are successful with school mathematics. *Journal of African American Males in Education*, *2*(1), 10-23.

Berry III, R., Ellis, M., & Hughes, S. (2014). Examining a history of failed reforms and recent stories of success: Mathematics education and Black learners of mathematics in the United States. *Race Ethnicity and Education, 17*(4), 540-568.

Bigler, R. S., Averhart, C. J., & Liben, L. S. (2003). Race and the workforce: Occupational status, aspirations, and stereotyping among African American children. *Developmental Psychology, 39*(3), 572.

Boyd-Franklin, N. (2013). *Black families in therapy: Understanding the African American experience*. New York, NY: Guilford Press.

Boylorn, R. M. (2008). As seen on TV: An autoethnographic reflection on race and reality television. *Critical Studies in Media Communication, 25*(4), 413-433. doi:10.1080/15295030802327758

Brandon, R. P. (2007). African American parents: Improving connections with their child's educational environment. *Intervention in School & Clinic*, *43*(2), 116-120.

Bridges, B. K., Awokoya, J. T., & Messano, F. (2012). *Done to us, not with us: African American parent perceptions of K-12 education*. Washington, DC: Frederick D. Patterson Research Institute, UNCF.

Brittian, A. S., & Gray, D. L. (2014). African American Students' Perceptions of Differential Treatment in Learning Environments: Examining the Moderating Role of Peer Support, Connection to Heritage, and Discrimination Efficacy. *Journal of Education, 194*(1), 1-9.

Brown, D. L., & Segrist, D. (2015). African American Career Aspirations Examining the

  Relative Influence of Internalized Racism. *Journal of Career Development*, doi:

  0894845315586256.

Butler-Ajibade, P., Booth, W., & Burwell, C. (2012). Partnering with the black church:

  Recipe for promoting heart health in the stroke belt. *ABNF Journal, 23*(2), 34-37.

Byrdsong, T. R., Mitchell, A. B., & Yamatani, H. (2013). Afrocentric intervention

  paradigm: An overview of successful application by a grassroots organization.

  *Journal of Human Behavior in the Social Environment, 23*(8), 931-937.

Caffarella, R. S. (2002). *Planning programs for adult learners: A practical guide for*

  *educators, trainers, and staff developers*. Indianapolis, IN: Jossey-Bass/Pfeiffer.

Campbell, M. K., Motsinger, B. M., Ingram, A., Jewell, D., Makarushka, C., Beatty, B., .

  & Demark-Wahnefried, W. (2000). The North Carolina black churches united for

  better health project: Intervention and process evaluation. *Health Education &*

  *Behavior, 27*(2), 241-253.

Calvert County Public School System. (2011). *Calvert county public schools 2011*

  *annual report*. Prince Frederick, MD.

Calvert County Public School System. (2014). *Calvert county public schools 2014*

  *annual report*. Prince Frederick, MD.

Cibulka, J. G. (2003). Educational bankruptcy, takeovers, and reconstitution of failing

  schools. *Yearbook of the National Society for the Study of Education, 102*(1), 249-

  270.

Clark, A. (2013). Honoring the ancestors toward an afrocentric theology of liberation.

*Journal of Black Studies, 44*(4), 376-394.

Clark, L., Johnson, W., & Chazan, D. (2009) Researching African American mathematics teachers of African American students: Conceptual and methodological considerations. In D. B. Martin, (Ed.), *Mathematics teaching, learning, and liberation in the lives of black children*. (pp. 39-62). Routledge: New York.

Cokley, K. O. (2005). Racial (ized) identity, ethnic identity, and afrocentric values: Conceptual and methodological challenges in understanding African American identity. *Journal of Counseling Psychology, 52*(4), 517-526.

Cokley, K., McClain, S., Jones, M., & Johnson, S. (2012). A preliminary investigation of academic disidentification, racial identity, and academic achievement among African American adolescents. *The High School Journal, 95*(2), 54-68.

College of Southern Maryland. (2012). *College of Southern Maryland Strategic Plan 2010-2015*. La Plata, MD.

College of Southern Maryland. (2014). *College of Southern Maryland Facilities Master Plan 2011*. La Plata, MD.

Comeaux, E., & Jayakumar, U. M. (2007). Education in the United States: Is it a Black problem? *The Urban Review, 39*(1), 93-104.

Cone, J. H. (2010). *A black theology of liberation*. Maryknoll, NY: Orbis Books.

Council of the Great City Schools. (2010). *A call for change: The social and educational factors contributing to the outcome of black males in urban schools*. Washington, DC: Author.

Cousins, L. & Mickelson, R. (2011). Making success in education: What black parents believe about participation in their children's education. *Current Issues in Education*, *14*(3), 1-17

Creswell, J.W. (2009). *Research design qualitative, quantitative, and mixed method approaches*. Los Angeles, CA: Sage.

Creswell, J. W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research*. Boston, MA: Pearson Education.

Cross, W. E. (1991). *Shades of Black: Diversity in African-American identity*. Philadelphia, PA: Temple University Press.

DeFilippis, J. (2001). The myth of social capital in community development. *Housing Policy Debate, 12*(4), 781-806.

DeGruy, J. (2010). Post Traumatic Slave Syndrome - Theory and Book. Retrieved from http://joydegruy.com/resources-2/post-traumatic-slave-syndrome/

Department for Professional Employees AFL-CIO. (2012). The STEM Workforce: An Occupational Overview. *Department for Professional Employees, AFL-CIO*. Add city and state.

Diversity in Mathematics Education (DiME) Center for Learning and Teaching. (2007). Culture, race, power and mathematics education. In F. K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 405–433). Charlotte, NC: Information Age.

Dixon, T. L. (2008). Crime news and racialized beliefs: understanding the relationship between local news viewing and perceptions of african americans and crime.

*Journal of Communication, 58*(1), 106-125. doi:10.1111/j.1460-2466.2007.00376.x

Donahoo, S., & Caffey, R. A. (2010). A sense of home: the impact of church participation on African American college students. *Journal of Research on Christian Education*, *19*(1), 79-104. doi:10.1080/10656211003630471

Du Bois, W. E. B. (1935). Does the Negro need separate schools?. *The Journal of Negro Education, 4*(3), 328-335.

Dunst, C. J., Trivette, C. M., & Hamby, D. W. (2008). *Research Synthesis and Meta-Analysis of Studies of Family-Centered Practices*. Asheville, NC: Winterberry Press.

Durlak, J., & Weissberg, P. (2013). Afterschool Programs That Follow Evidence-Based Practices to Promote Social and Emotional Development Are Effective. In T. K. Peterson (Ed.), *Expanding minds and opportunities: Leveraging the power of afterschool and summer learning for student success*. Washington, DC: Collaborative Communications Group.

Edmonds-Cady, C., & Sosulski, M. R. (2012). Applications of situated learning to foster communities of practice. *Journal of Social Work Education, 48*(1), 45-64.

Engel, M., Claessens, A., & Finch, M. A. (2013). Teaching students what they already know? The (mis) alignment between mathematics instructional content and student knowledge in kindergarten. *Educational Evaluation and Policy Analysis, 35*(2), 157-178.

Erdoğan, A., Kesici, S., & Şahin, I. (2011). Prediction of high school students'

mathematics anxiety by their achievement motivation and social comparison. *Elementary Education Online, 10*(2), 646-652.

Executive Order No. 13621, 3 C.F.R. 284-289 (2012).

National Action Council for Minorities in Engineering (2010). *Fact sheet: Engineering degrees in the United States NACME research & policy brief vol. 1 no. 2*. New York, NY:  Author.

Fan, W., Williams, C. M., & Wolters, C. A. (2012). Parental involvement in predicting school motivation: Similar and differential effects across ethnic groups. *The Journal of Educational Research, 105*(1), 21-35.

Farmer, G. L. (2001). Longitudinal exploration of the caste theory of educational aspirations. *Children & Schools, 23*(3), 160-170.

Ferguson, R. F. (2002). *What doesn't meet the eye: understanding and addressing racial disparities in high-achieving suburban schools*. New York, NY:  Rockefeller Foundation.

Ferguson, R. F. (2014). Elements of a 21st century movement for excellence with equity. *The Journal of Negro Education, 83*(2), 103-120.

Fortson, S. B. (1997). An evaluation of a program to influence academic self-concept among African American male college students. *Journal of Employment Counseling*, *34*(3), 104-107.

Ford, D. Y., & Helms, J. E. (2012). Overview and introduction: Testing and assessing African Americans: "Unbiased" tests are still unfair. *Journal of Negro Education, 81*(3), 186-189.

Franklin, V. P. (2002). Introduction: cultural capital and African-American education. *The Journal of African-American History, 87*, 175–181.

Freire, P. (1998). *Pedagogy of freedom: ethics, democracy, and civic courage*. Lanham, MD: Rowman & Littlefield.

Freire, P. (2000). *Pedagogy of the oppressed* (30th anniversary ed.). New York: Continuum. (Original work published in English 1970)

Frye, B. J., & Vogt, H. A. (2010). The causes of underrepresentation of African American children in gifted programs and the need to address this problem through more culturally responsive teaching practices in teacher education programs. *Black History Bulletin*, *73*(1), 11-17.

Galbraith, M. W. (Ed). (2004). *Adult learning methods: A guide for effective instruction (3$^{rd}$ ed.)*. Malabar, FL:  Krieger.Publishing Co.

Gardner, H. (1995). Reflections on multiple intelligences: Myths and messages. *Phi Delta Kappan, 77*, 200-200.

Garth-McCullough, R. (2013). The relationship between reader response and prior knowledge on african american students' reading comprehension performance using multicultural literature. *Reading Psychology, 34*(5), 397-435.

Gerstl-Pepin, C. I. (2006). The paradox of poverty narratives educators struggling with children left behind. *Educational Policy, 20*(1), 143-162.

Gilbert, S. (2009). A study of ogbu and simons' thesis regarding black children's immigrant and non-immigrant status and school achievement. *Negro Educational Review*, *60*(1/4), 71-91.

Glesne, C. (2011). *Becoming qualitative researchers: An introduction*. Boston, MA: Pearson.

Gordon, E. W., Bridglall, B. L., & Meroe, A. S. (Eds.). (2005). *Supplementary education: The hidden curriculum of high academic achievement.* Lanham, MD: Rowman & Littlefield.

Gutiérrez, R. (2000). Advancing African-American, urban youth in mathematics: unpacking the success of one math department. *American Journal of Education, 109*(1), 63-111.

Gutiérrez, R. (2008). A" gap-gazing" fetish in mathematics education? Problematizing research on the achievement gap. *Journal for Research in Mathematics Education, 39*(4), 357-364.

Gutstein, E. (2006). *Reading and writing the world with mathematics: Toward a pedagogy for social justice*. New York, NY: Routledge.

Gutstein, E. (2012). Connecting community, critical, and classical knowledge in teaching mathematics for social justice. In S. Mukhopadhyay & W. Roth (Eds.), *Alternative Forms of Knowing (in) Mathematics* (pp. 300-311). Rotterdam, Netherlands:  SensePublishers.

Gutstein, E., & Peterson, B. (Eds.). (2013). *Rethinking mathematics: Teaching social justice by the numbers* (2nd ed.). Milwaukee, WI: Rethinking Schools.

Hancock, D. R., & Algozzine, R. (2011). *Doing case study research: a practical guide for beginning researchers* (2nd ed.). New York, NY: Teachers College Press.

Hanushek, E., Peterson, P., & Woessmann, L. (2010), *U. S. Math Performance in global*

*perspective: How well does each state do at producing high-achieving students?*
Harvard's Program on Education Policy and Governance Report No.: 10-19.

Hanushek, E & Woessmann, L. (2008), The role of cognitive skills in economic
development, *Journal of Economic Literature*, *46*(3), 607-68. doi:
10.1257/jel.46.3.607

Hanushek, E. A. & Woessmann, L. (2011), How much do educational outcomes matter
in OECD countries? *Economic Policy*, *67*, 1-65.

Harris, A. L. (2006). I (don't) hate school: Revisiting oppositional culture theory of
Blacks' resistance to schooling. *Social Forces*, 85(2), 797-834.

Harris, D. N., & Herrington, C. D. (2006). Accountability, standards, and the growing
achievement gap: lessons from the past half-century. *American Journal of
Education, 112*(2), 209-238.

Harris, W. M. (2012). *African American community development (with twelve case
studies) a plan for self-determination.* Lewiston, N.Y.: Edwin Mellen Press.

Harris, Y., & Graham, J. (2014). *The African American child: Development and
challenges* (2nd ed.). New York, N.Y.: Springer Publishing Company.

Hausmann, L., Schofield, J., & Woods, R. (2007). Sense of belonging as a predictor of
intentions to persist among African American and white first-year college
students. *Research in Higher Education*, *48*(7), 803-839. doi:10.1007/s11162-
007-9052-9

Hill, L. W. (2012). *The business of Black power: community development, capitalism, and corporate responsibility in postwar America*. Rochester, NY: University of Rochester Press.

Hines, M., & Kritsonis, W. L. (2008). An in-depth analysis of the cognitive and metacognitive dimensions of African American elementary students' mathematical problem solving skills. *Focus on Colleges, Universities, and Schools, 2*(1), 1-9.

Hooper, S. R., Roberts, J., Sideris, J., & Burchinal, M. (2010). Longitudinal predictors of reading and math trajectories through middle school for African American versus European American students across two samples. *Developmental Psychology*, 46(5), 1018-1029. doi:10.1037/a0018877

Hope, A., & Timmel, S. (1992a). *Training for transformation: A handbook for community workers book 1*. Gweru: Zimbabwe, Mambo Press.

Hope, A., & Timmel, S. (1992b). *Training for transformation: A handbook for community workers book 2*. Gweru: Zimbabwe, Mambo Press.

Hope, A., & Timmel, S. (1992c). *Training for transformation: A handbook for community workers book 3*. Gweru: Zimbabwe, Mambo Press.

Hope, A., & Timmel, S. (1999). *Training for transformation: A handbook for community workers book 4*. Gweru: Zimbabwe, Mambo Press.

Horton, H. D. (1992). A sociological approach to black community development: Presentation of the black organizational autonomy model. *Community Development, 23*(1), 1-19.

Howard, G. R. (2006). *We can't teach what we don't know: White teachers, multicultural schools* (2ⁿᵈ ed.). New York, NY: Teachers College Press.

Howard, T. (2008). Who really cares? The disenfranchisement of African American males in preK-12 schools: A critical race theory perspective. *The Teachers College Record, 110*(5), 954-985.

Hughes, J. N., Oi-man, K., Villarreal, V., Johnson, A. Y., & Jiun-Yu, W. (2012). Indirect effects of child reports of teacher-student relationship on achievement. *Journal of Educational Psychology, 104*(2), 350-365. doi:10.1037/a0026339

Ife, J. J. & Fiske, L. (2006). Human rights and community work: Complementary theories and practices. *International Social Work, 49*(3), 297-308.

Ingram, M. (2007). The role of parents in high-achieving schools serving low-income, at-risk populations. *Education and Urban Society 39*(4), 479-497.

IPEDS 2-Year College Success Rate. (2009). *Graduation rates compared to other states*. Retrieved from www.ctmirror.org/sites/default/files/documents/Graduation%20rates%20compared%20to%20other%20states.pdf

Jayakumar, U. M., Vue, R., & Allen, W. R. (2013). Pathways to college for young black scholars: A community cultural wealth perspective. *Harvard Educational Review, 83*(4), 551-579,661-662.

Jenkins, R. (November, 2012). *Artifcat 9b: Qualitative data collection*. Unpublished manuscript. EDUC-8106-4, Walden University.

Jett, C. C. (2010). Many are called, but few are chosen: the role of spirituality and religion in the educational outcome of "chosen" African American male mathematics majors. *Journal of Negro Education*, *79*(3), 324-334.

Jeynes, W. H. (2003). A meta-analysis: the effects of parental involvement on minority children's academic achievement. *Education and Urban Society*, *35*(2), 202-218. doi: 10.1177/0013124502239392

Jeynes, W. (2012). A meta-analysis of the efficacy of different types of parental involvement programs for urban students. *Urban Education, 47*(4), 706-742.

Jitendra, A. K., Rodriguez, M., Kanive, R., Huang, J. P., Church, C., Corroy, K. A., & Zaslofsky, A. (2013). Impact of small-group tutoring interventions on the mathematical problem solving and achievement of third-grade students with mathematics difficulties. *Learning Disability Quarterly, 36*(1), 21-35.

Kaba, A. J. (2011). Explaining the causes of the black-white wealth gap in the united states. *Sociology Mind, 1*(3), 138-143.

Karenga, M. (2010). *Introduction to Black studies* (4th ed.). Los Angeles, CA: University of Sankore Press.

Kielstra, P. M. (2012). *The Learning Curve: Lessons in Country Performance in Education: 2012 Report*. Boston, MA: Pearson Education.

King Jr, M. L. (1968). *Where do we go from here: Chaos or community?* (Vol. 2). Boston, MA: Beacon Press.

Kitsantas, A., & Zimmerman, B. (2009). College students' homework and academic achievement: The mediating role of self-regulatory beliefs. *Metacognition & Learning*, *4*(2), 97-110. doi:10.1007/s11409-008-9028-y

Kumasi, K. (2011). Critical race theory and education: Mapping a legacy of scholarship and activism. In B. A.U. Levinson (Ed.) *Beyond Critique: Critical Social Theories and Education* (pp. 196-219). Boulder, CO: Paradigm.

Kunjufu, J. (2004). *Solutions for Black America*. Chicago, IL: African American Images.

Ladson-Billings, G. (1997). It doesn't add up: African American students' mathematics achievement. *Journal for Research in Mathematics Education, 28*(6) 697-708.

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

Ladson-Billings, G. (2006). From the achievement gap to the education debt: Understanding achievement in US schools. *Educational Researcher, 35*(7), 3-12

Ladson-Billings, G., &. Tate, W.F.. (1995). Toward a critical race theory of education. *Teachers College Record 97*(1), 47–68.

Ladson-Billings, G., Tate, W. F. (2006).  Towards a critical race theory in education.  In A.D. Dixson & C.K. Rousseau (Eds), *Critical race theory in education: All God's children got a song* (pp. 1-29). New York, NY:  Taylor & Francis.

LaRocque, M., Kleiman, I., & Darling, S. M. (2011). Parental Involvement: The Missing Link in School Achievement. *Preventing School Failure, 55*(3), 115-122. doi:10.1080/10459880903472876

Leach, M. & Williams, S. (2007). The impact of the academic achievement gap on the

    African American family: A social inequality perspective. *Journal of Human*

    *Behavior in the Social Environment, 15*(2-3), 39-59.

Leary, J. D. (2005). *Post traumatic slave syndrome: America's legacy of enduring injury*

    *and healing*. Milwaukie, OR: Uptone Press.

Lee, J., & Bowen, N. K. (2006). Parent involvement, cultural capital, and the

    achievement gap among elementary school children. *American Educational*

    *Research Journal, 43*(2), 193-204,206,209-218.

Leonard, J. (2008). *Culturally specific pedagogy in the mathematics classroom:*

    *Strategies for teachers and students*. New York, NY: Routledge.

Leonard, J. (2009). "Still not saved": The power of mathematics to liberate the oppressed.

    In D. B.Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives*

    *of Black children* (pp. 304–330). New York, NY: Routledge.

Leonard, J., Brooks, W., Barnes-Johnson, J., & Berry, R. Q. (2010). The nuances and

    complexities of teaching mathematics for cultural relevance and social justice.

    *Journal of Teacher Education, 61*(3), 261-270.

Leonard, J., Napp, C., & Adeleke, S. (2009). The complexities of culturally relevant

    pedagogy: *A case study of two secondary mathematics teachers and their ESOL*

    *students. High School Journal, 93*(1), 3–22.

Levin, H., & Calcagno, J. C. (2008). Remediation in the community college: An

    evaluator's perspective. *Community College Review*, *35*(3), 181–207.

Lockhart, P. (2009). *A mathematician's lament*. New York: Bellevue Literary Press.

Lodico, M. G., Spaulding, D. T., & Voegtle, K. H. (2006). *Methods in educational research: from theory to practice*. San Francisco, CA: Jossey-Bass.

Lowe, J. S., & Shipp, S. C. (2014). Black church and black college community development corporations: Enhancing the public sector discourse. *Western Journal of Black Studies, 38*(4), 244-259.

Lubienski, S. T. (2008). On "gap gazing" in mathematics education: The need for gaps analyses. *Journal for Research in Mathematics Education, 39*(4), 350.

Madyun, N. I. H. (2011). Connecting social disorganization theory to African-American outcomes to explain the achievement gap. *Educational Foundations, 25*, 21-35.

Mandara, J., Gaylord-Harden, N. K., Richards, M. H., & Ragsdale, B. L. (2009). the effects of changes in racial identity and self-esteem on changes in African American adolescents' mental health. *Child Development, 80*(6), 1660-1675.

Marable, M., & Mullings, L. (2009). *Let nobody turn us around: voices of resistance, reform, and renewal: An African American anthology* (2nd ed.). Lanham, MD: Rowman & Littlefield.

Martin, D. B. (2000). *Mathematics success and failure among African-American youth: the roles of sociohistorical context, community forces, school influence, and individual agency.* Mahwah, N.J.: Erlbaum.

Martin, D. B. (2009a). *Mathematics teaching, learning, and liberation in the lives of black children*. New York, NY: Routledge.

Martin, D. B. (2009b). Researching race in mathematics education. *Teachers College Record*, *111*(2), 295-338.

Martin, D. B., Gholson, M. L., & Leonard, J. (2010). Mathematics as gatekeeper: Power and privilege in the production of knowledge. *Journal of Urban Mathematics Education, 3*(2), 12-24.

Martin, D. B., Martin, M., Gibson, S., & Wilkins, J. (2007). Increasing prosocial behavior and academic achievement among adolescent African American males. *Adolescence*, *42*(168), 689-698.

Maryland Higher Education Commission. (2008). *2008 minority achievement report*. Annapolis, MD: MHEC.

Maryland Higher Education Commission. (2011). S*tudent outcome and achievement report (SOAR)college performance of new maryland high school graduates*. Annapolis, MD: MHEC.

Maryland Higher Education Commission. (2011). *2012 performance accountability report maryland public colleges and universities volume 2*. Annapolis, MD: MHEC.

Maryland State Department of Education. (2012). Assessments : Saint Mary's County : 2012 Maryland Report Card. Retrieved from http://msp.msde.state.md.us/Assessments.aspx?K=18AAAA#HSATestPerfGrade 10all

Maryland State Department of Education. (2012). Assessments : Charles County : 2012 Maryland Report Card. Retrieved from http://msp.msde.state.md.us/Assessments.aspx?K=08AAAA#HSATestPerfGrade 11all

Maryland State Department of Education. (2012). Assessments : Calvert County : 2012 Maryland Report Card. Retrieved from http://msp.msde.state.md.us/Assessments.aspx?K=04AAAA#HSATestPerfGrade 12all

McAnallen, R. R. (2010). *Examining mathematics anxiety in elementary classroom teachers* (Order No. 3464333). Available from ProQuest Dissertations & Theses Global. (883120559). Retrieved from http://search.proquest.com/docview/883120559?accountid=14872

McGee, E. O., & Martin, D. B. (2011). You would not believe what I have to go through to prove my intellectual value! Stereotype management among academically successful Black mathematics and engineering students. *American Educational Research Journal, 48*(6), 1347-1389.

Mellin-Olsen, S. (2002). *The politics of mathematics education*. New York, NY: Kluwer Academic Publishers.

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

Mishel, L., Bivens, J., Gould, E., & Shierholz, H. (2012). *The state of working america*. Ithaca, NY: Cornell University Press.

Moorman-Walker, C. (2007). *An investigation of how African American community college students with different levels of mathematics anxiety engage in problem solving tasks.* Retrieved from Electronic Theses, Treatises and Dissertations. Paper 2281.

Moses, R. P., & Cobb, C. E. (2001). *Radical equations: Civil rights from Mississippi to the Algebra Project.* Boston, MA: Beacon Press.

Murrell, P. C. (2002). *African-centered pedagogy: Developing schools of achievement for African American children*. Albany, NY: SUNY Press.

Mwiti, N. (2012, June 22). The best: 72+ African wise proverbs and inspiring quotes | AFRiTORIAL. *AFRiTORIAL.*Retrieved from http://afritorial.com/the-best-72-african-wise-proverbs/

Myers, L. J. (1993). *Understanding an Afrocentric world view: Introduction to an optimal psychology*. Dubuque, IA: Kendall/Hunt Publishing.

National Center for Education Statistics (2011a). *IPEDS data college of southern maryland* (NCES 162122). Institute of Education Sciences, U.S. Department of Education, Washington, D.C.

National Center for Education Statistics (2011b). *The nation's report card: Mathematics 2011* (NCES 2012–458). Institute of Education Sciences, U.S. Department of Education, Washington, D.C.

National Math and Science Initiative. (2012, January 1). Staying Competitive | National Math and Science Initiative. *National math and science initiative*. Retrieved from https://www.nms.org/AboutNMSI/TheSTEMCrisis.aspx

National Urban League. (2013). *2013 State of Black America Redeem the Dream*. New York: National Urban League/Publications Unit, 2013. Print.

Ogbu, J. U. (1992). Adaptation to minority status and impact on school success. *Theory into Practice*, 31(4), 287-295.

Ogbu, J. U. (2003). *Black American students in an affluent suburb: A study of academic disengagement*. New York, NY: Routledge.

Olneck, M. (2000). Can multicultural education change what counts as cultural capital?. *American Educational Research Journal, 37*(2), 317-348.

Peressini, A., & Peressini, D. (2007). Philosophy of mathematics and mathematics education. In *Perspectives On Mathematical Practices* (pp. 175-189). Houten, Netherlands: Springer.

Peterson, P., Woessmann, L., Hanushek, E. A., & Lastra-Anadón, C. A., (2011). *Globally challenged: are U.S. students ready to compete? The latest on each state's international standing in math and reading* (PEPG Report No.: 11-03).

Peterson, T. K. (2013). Expanding minds and opportunities: Leveraging the power of afterschool and summer learning for student success. *Washington, DC: Collaborative Communications Group.*

Pringle, B. E., Lyons, J. E., & Booker, K. C. (2010). Perceptions of Teacher Expectations by African American High School Students. *Journal of Negro Education, 79*(1), 33-40.

Rideout, V., Lauricella, A., & Wartella, E. (2011). Children, media, and race: Media use among White, Black, Hispanic, and Asian American children. *Evanston, IL: Center on Media and Human Development, School of Communication, Northwestern University.*

Ritchie, S. M., Tobin, K., Roth, W., & Carambo, C. (2007). Transforming an academy through the enactment of collective curriculum leadership. *Journal of Curriculum Studies*, *39*(2), 151-175. doi:10.1080/00220270600914850

Rubin, H. J. & Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data* (2nd ed). Thousand Oaks, CA: Sage.

Ryan, G. W., & Bernard, H. R. (2003). Techniques to identify themes. *Field methods*, 15(1), 85-109.

Secada, W. (1992). Race, ethnicity, social class, language, and achievement in mathematics. In D. A. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (pp. 623–660). New York, NY: Macmillan.

Sheats-Harkness, S. (2013). Full STEAM ahead. *School Science & Mathematics, 113*(7), 319-320. doi:10.1111/ssm.12037

Sheldon, S.B., & Epstein, J.L. (2005). Involvement counts: Family and community partnerships and mathematics achievement. *Journal of Educational Research*, 98, 196–206.

Sherman, D. K., Hartson, K. A., Binning, K. R., Purdie-Vaughns, V., Garcia, J., Taborsky-Barba, S., & ... Cohen, G. L. (2013). Deflecting the trajectory and changing the narrative: How self-affirmation affects academic performance and motivation under identity threat. *Journal Of Personality And Social Psychology*, *104*(4), 591-618. doi:10.1037/a0031495

Shockley, K. G. (2008). Africentric education leadership: Theory and practice. *International Journal of Education Policy and Leadership 3*(3), 1-12.

Solorzano, D. & Yosso, T. (2002). Critical race methodology: Counterstorytelling as an analytical framework for educational research. *Qualitative Inquiry, 8*(1), 23–44.

Steele, C. (2010). *Whistling Vivaldi: and other clues to how stereotypes affect us*. New York, NY: Norton.

Stewart, D. W., & Shamdasani, P. N. (2014). *Focus groups: Theory and practice* (Vol. 20). Thousand Oaks, CA: Sage Publications.

Stinson, D. W. (2013). Negotiating the "White male math myth": African American male students and success in school mathematics. *Journal for Research in Mathematics Education*, 44(1), 69-99.

Strayhorn, T. L. (2010). The role of schools, families, and psychological variables on math achievement of Black high school students. *High School Journal*, *93*(4), 177-194.

Tatum, B. D. (2003). *"Why are all the Black kids sitting together in the cafeteria?": and other conversations about race*. New York, NY:  Basic Books.

Taylor, J. D., & Miller, T. K. (2002). Necessary components for evaluating minority retention programs. *NASPA Journal (National Association Of Student Personnel Administrators, Inc.)*, *39*(3), 266-283.

Tenenbaum, H. R., & Ruck, M. D. (2007). Are teachers' expectations different for racial minority than for European American students? A meta-analysis. *Journal Of Educational Psychology, 99(*2), 253-273. doi:10.1037/0022-0663.99.2.253

Trotman, M.F. (2001). Involving the african american parent: Recommendations to increase the level of parent involvement within african american families. *The Journal of Negro Education,* 70(4), 275-285.

Tucker, C. M. (1999). *African American children: A self-empowerment Approach to Modifying Behavior Problems and Preventing Academic Failure*. Boston, MA: Allyn and Bacon.

The Achievement Gap Initiative at Harvard University. (2008). *Getting it done: Raising achievement and closing gaps in whole school systems: recent advances in research and practice 2008 Conference Report.* Retrieved from http://www.agi.harvard.edu/events/2008Conference/GETTING_IT_DONE_02_2 4_09.pdf

The College Board. (2011). Percentage of Students in Remedial College Classes | The College Completion Agenda. *College Completion Agenda - Roadmap for Policymakers and Educators | The College Completion Agenda*. Retrieved from http://completionagenda.collegeboard.org/percentage-students-remedial-college-classes

The College of Southern Maryland. (2011). *Fact book 2011.* Retrieved from http://www.csmd.edu/PIER/pdf/Fact_Book_2011.pdf

The Joint Economic Committee. (2010). *Understanding the economy long-term unemployment in the African American community.* Retrieved from http://www.jec.senate.gov/public/_cache/files/e9a910b5-8bb3-484f-a176-6257a24e27bb/understanding-the-economy---long-term-unemployment-in-the-

african-american-community.pdf

U.S. Census Bureau. (2010a). *Census 2010 sf1 - population and housing characteristics, race & group quarters data : Race profile.*

U.S. Census Bureau. (2010b). *Selected economic characteristics 2006-2010 American community survey selected population tables.* Retrieved from http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid =ACS_10_SF4_DP03&prodType=table

U.S. Census Bureau. (2012, August 16). Calvert county quickfacts from the US census bureau. *State and County QuickFacts*. Retrieved from http://quickfacts.census.gov/qfd/states/24/24009.html

U.S. Census Bureau. (2012, August 16). Charles county quickfacts from the US census bureau. *State and County QuickFacts*. Retrieved from http://quickfacts.census.gov/qfd/states/24/24017.html

U.S. Census Bureau. (2012, August 16). St. Mary's county quickfacts from the US census bureau. *State and County QuickFacts*. Retrieved from http://quickfacts.census.gov/qfd/states/24/24037.html

U.S. Department of Commerce Economics and Statistics Administration. (2011, September). *Education supports racial and ethnic equality in STEM.* Retrieved from http://www.esa.doc.gov/sites/default/files/education_supports_racial_and_ethnic_ equality_in_stem.pdf

U.S. Department of Education. (2008). *The final report of the national mathematics advisory panel*. Retrieved from

http://www2.ed.gov/about/bdscomm/list/mathpanel/report/final-report.pdf

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP). (2013). *NDE Report - Reading Grade 8*. Retrieved from

http://nces.ed.gov/nationsreportcard/naepdata/report.aspx?app=NDE&p=2-RED-2-

20133%2c20113%2c20093%2c20073%2c20053%2c20033%2c20023%2c20003%2c20002%2c19983%2c19982%2c19942%2c19922-RRPCM-SDRACE-NT-ALC_BB%2cALC_AB%2cALC_AP%2cALC_AD-Y_J-0-0-37

U.S. Department of Education. (n.d.). *Upward Bound Program*. Retrieved from

http://www2.ed.gov/programs/trioupbound/index.html

U.S. Department of Labor. (2012, February 29). *The African-American labor force in the recovery*. Retrieved from http://www.dol.gov/_sec/media/reports/blacklaborforce/

Uunila, K. (n.d.). African americans in calvert county:  A brief history. *Calvert County Maryland Government*. Retrieved from http://md-calvertcounty.civicplus.com/DocumentCenter/Home/View/336

Vanneman, A., Hamilton, L., Anderson, J. B., & Rahman, T. (2009). Achievement Gaps: How Black and White Students in Public Schools Perform in Mathematics and Reading on the National Assessment of Educational Progress. Statistical Analysis Report. NCES 2009-455. *National Center for Education Statistics*.

Viadero, D. (2005). Math emerges as big hurdle for teenagers: high school improvement hinges on "critical" subject. *Education Week*, *24*(28), 1-16.

Vukovic, R. K., Roberts, S. O., & Green Wright, L. (2013). From parental involvement to children's mathematical performance: The role of mathematics anxiety. *Early Education & Development, 24*(4), 446-467.

Walker, C. M. (2007). *An investigation of how african american community college students with different levels of mathematics anxiety engage in problem solving tasks* (Order No. 3301606). Available from ProQuest Dissertations & Theses Global. (304873712). Retrieved from http://search.proquest.com/docview/304873712?accountid=14872

Walker, E. N. (2007). Why aren't more minorities taking advanced math?. *Educational Leadership, 65*(3), 48-53.

Walker, S., & Senger, E. (2007). Using technology to teach developmental African-American algebra students. *Journal of Computers in Mathematics & Science Teaching*, *26*(3), 217-231.

Walton, G. M., & Spencer, S. J. (2009). Latent Ability Grades and Test Scores Systematically Underestimate the Intellectual Ability of Negatively Stereotyped Students. *Psychological Science*, *20*(9), 1132-113.

Wang, M. T., & Eccles, J. S. (2012). Adolescent behavioral, emotional, and cognitive engagement trajectories in school and their different relations to educational success. *Journal of Research on Adolescence, 22*, 31–39. doi:10.1111/j.1532-7795.2011.00753.x

Wang, M. T., Hill, N. E., & Hofkens, T. (2014). Parental involvement and African American and European American adolescents' academic, behavioral, and emotional development in secondary school. *Child development, 85*(6), 2151-2168.

Whaley, A. L., & Noel, L. (2011). Sociocultural theories, academic achievement, and African American adolescents in a multicultural context: A review of the cultural incompatibility perspective. *Social Psychology of Education*, 14(2), 149-168.

West, C. (1993). *Race matters*. Boston, MA: Beacon Press.

Williams Shanks, T. R. (2007). The impacts of household wealth on child development. *Journal of Poverty*, *11*(2), 93-116. doi:10.1300/J134v11n0205

Williams Shanks, T. R., Boddie, S. C., & Rice, S. (2010). Family-centered, community-based asset building: A strategic use of Individual Development Accounts. *Journal of Community Practice, 18*(1), 94-117.

Wilson, A. N. (1978). *The developmental psychology of the Black child.* New York, NY: Africana Research Publications.

Witherspoon, K. M., & Speight, S. L. (2009). An exploration of African Americans' interests and self-efficacy beliefs in traditional and nontraditional careers. *Journal of Black Studies*, 39(6), 888-904.

Wolfle, J. D. (2012). Success and persistence of developmental mathematics students based on age and ethnicity. *The Community College Enterprise, 18*(2), 39-54.

Won-Pyo, H., & Youngs, P. (2008). Does high-stakes testing increase cultural capital among low-income and racial minority students?. *Education Policy Analysis*

*Archives*, *16*(6), 1-18.

Woodson, C. G. (1990). *The mis-education of the Negro*. Trenton, NJ: Africa World
    Press. (Original work published 1933)

Wright, B. L. (2011). Valuing the" everyday" practices of african american students k-12
    and their engagement in stem learning: A position. *The Journal of Negro*
    *Education*, *80*(1), 5-11.

Yaffe, D. (2010). After the bell rings: learning outside of the classroom and its
    relationship to student academic achievement. *POLICY NOTES News from the*
    *ETS Policy Information Center, 18*(1), 1-12.

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of
    community cultural wealth. *Race Ethnicity and Education, 8*(1), 69-91.

Young, A., Johnson, G., Hawthorne, M., & Pugh, J. (2011). Cultural predictors of
    academic motivation and achievement: A self—deterministic approach. *College*
    *Student Journal, 45*(1), 151-163.

Zinn, H. (2003). *A people's history of the United States: 1492-present (New ed.).* New
    York, NY: Harper Collins.

Appendix A: Parent-Community Training Curriculum

Publicity Cover Letter

6 August 2015

Dear [Community Leader],

As the result of the completion of a recent local research study entitled: *A Case Study of an African American Community's Perceptions of Problems in Mathematics Education,* parents and other concerned community members are invited to attend a series of free workshops designed to improve their knowledge of the strategies and resources needed to facilitate children's success in mathematics from grade school through college. Given that mathematics now serves as a critical gatekeeper to academic, social and economic advancement, the purpose of the parent-community education program is to demystify mathematics education as well as offer the African American community opportunities to consider how it might coalesce its resources in order to lead in addressing systemic academic problems in mathematics that plague over 60% of African American students regardless of income (U.S. Department of Education, 2012). As a community leader, your help in publicizing the free training would be much appreciated. Copies of a flyer listing dates and details have been enclosed for dissemination. Please feel free to make additional copies.

As a community lead effort, the parent-community education program will serve as a opportunity to role model for children and others the African American's community ongoing commitment to self determination and academic plus socioeconomic progress. We thank you for your ongoing commitment to community service and for your support. If you and/or other potential participants have any questions, please feel free to contact me at 301-467-1191 or renee.jenkins2@waldenu.edu.

Sincerely,

Renee Jenkins
Project Coordinator

Publicity Flyer

# MATHEMATICS
## African American
## Parent-Community Free Training Opportunity

Do you need help helping your children master mathematics?

You are not alone.  Given that mathematics now serves as a critical gatekeeper to academic, social and economic advancement, you are invited to participate in an educational program designed to help parents and other concerned adults understand how to support African American children as they seek to advance in mathematics. A series of 3 workshops will offer the opportunity to  improve understanding of the roadblocks students face, effective intervention techniques, local resources, and methods African American communities can use to coalesce its resources in efforts to offset problems African American students commonly face from grade school through college in becoming *successful* as well as *advanced* learners of mathematics.

You are invited to participate in this training program if you:
- Are or have been a recent African American resident of Calvert County
- Fit into one or more of the following categories:
    - Are a parent/guardian of African American student(s) enrolled in any Calvert County school or college

**3-Day Schedule**
1st Session – Saturday, [TBD]
2nd Session – Saturday, [TBD]
3rd Session – Saturday, [TBD]

Time:  09:00 am – 03:30 pm

Location:  [TBD]

Space is limited, please register early.
Participants are asked to commit to attending all three days.

**EDUCATORS, PASTORS, & OTHER COMMUNITY LEADERS,  YOUR ASSISTANCE IN LETTING MEMBERS KNOW ABOUT THE TRAINING WOULD BE APPRECIATED. PLEASE DISTRIBUTE  & POST COPIES OF THIS FLYER.**

To register or for more information, please contact or text message Renee Jenkins at:
(c) 301-467-1191
renee.jenkins2@waldenu.edu

| Parent-Community Training 3-Day Instructional Plan |
|---|
| **Title:** Changing the Equation for African Americans: Why Culture Matters in Mathematics Education<br>Date and Time: 3 Saturdays 09:00 a.m. to 03:30 p.m., dates to be determined |
| **Instructional Resources/Equipment:**<br>For Facilitators: PowerPoint presentation, LCD projector, computer, whiteboard, easel, registration lists, supplies for registration table and 3-5 digital cameras<br>For Participants: Folders with copies of presentation, exercise handouts, evaluation forms, 5-10 laptops/tablets for small group, 5-10 easels, exercises, art supplies (posters paper, stars, stickers, tape, etc.), pens, pencils, markers and paper |
| **Room Arrangement:**<br>Small group tables with chairs, table up front for facilitators |

| Day 1 Learning Objectives | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |
| Help establish a safe and inclusive learning environment | Registration, breakfast and devotion | Small-group discussion | 60 minutes |
| Describe the three critical types of stories students must be lead to construct and own in order to be successful in mathematics: cultural, academic and resiliency stories | Present overview and agenda slides starting with *Constructing & role modeling new self-empowering stories* | Lecture<br>QA period | 60 minutes |
| Recognize not alone in struggles to help children address academic problems | Facilitate *Introduction Exercise* | Reflection<br>Dyads<br>Large-group discussion | 50 minutes |

| **Day 1 Learning Objectives** | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |
| Consider the common concerns and goals all participants bring into the training | Facilitate Harambee Circle Exercises: *What are Collective Concerns & Visions for All African American Children?* | Small-group discussion<br>Report from small groups<br>Large-group discussion | 60 minutes |
| Identify the role culture plays in academic pursuits and cultural roadblocks African American students face in their quest to excel in mathematics as well as how parents-community can help ameliorate these roadblocks | Present Role of Culture & Racial Identity in Education plus Cultural Roadblocks African American Students Face *(Presentation Slides related to Questions 1-4)* | Lecture<br>QA period<br>Dyads | 90 minutes |
| Consider and articulate a shared academic vision in accordance with cultural and community interests | Facilitate Harambee Circle Exercise: *Create Community Vision Maps – Our Hopes for Our Children* | Small-group discussion and art work<br>Report from small groups<br>Large group discussion | 60 minutes |
| **Assessment Plan:** Introduction Exercise –Community Collage; Harambee Circle Exercises – Formative Evaluations; Harambee Circle Exercise: Create Community Vision Maps – Community Concept Maps; Day 1 Formative Evaluations; Observation Report by Independent Evaluator | | | |

| **Day 2 Learning Objectives** | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |

| Day 2 Learning Objectives | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |
| Help establish a safe and inclusive learning environment | Registration, breakfast and devotion | Small-group discussion | 60 minutes |
| Describe the three critical types of stories students must be lead to construct and own in order to be successful in mathematics: cultural, academic and resiliency stories | Review key concepts from Day 1 and Day 2 agenda slides starting with *Constructing & role modeling new self-empowering academic skills stories* | Lecture QA period | 20 minutes |
| Recognize not alone in struggles to help children address academic problems | Facilitate *Warm-up Exercise* | Video presentation Reflection Dyads Large-group discussion | 30 minutes |
| Consider the implicit stereotypical connections between race/culture and academic plus mathematics ability students are left to develop and how to counter these messages | Facilitate Harambee Circle Exercise: *Impact of Tracking on Racial Identity* | Small-group discussion and art work Report from small groups Large-group discussion | 120 minutes |

| Day 2 Learning Objectives | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |
| Identify the common problems African American students face in developing the academic skills necessary to excel in mathematics as well as how parents-community can help ameliorate these problems | Present Academic Skills Roadblocks/Myths African American Students Face *(Presentation Slides related to Questions 1-4 and Myths)* | Lecture Small-group discussion Report from small groups Large-group discussion | 60 minutes |
| Analyze and demonstrate techniques for making mathematics more relevant to African American students and strengthening their prerequisite academic skills | Introduce Harambee Circle Exercise: *Making Mathematics Meaningful and Culturally Relevant (To be continued on Day 3)* | Lecture Video presentation Small-group discussion QA period | 60 minutes |
| **Assessment Plan:** Warm-up Exercise –Reflection Notes; Harambee Circle Exercises – Formative Evaluations; Harambee Circle Exercise: Impact of Tracking on Racial Identity – Small and Large Group Notes and Drawings; Day 2 Formative Evaluations; Observation Report by Independent Evaluator | | | |

| Day 3 Learning Objectives | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |
| Help establish a safe and inclusive learning environment | Registration, breakfast and devotion | Small-group discussion | 60 minutes |

| Day 3 Learning Objectives | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |
| Describe the three critical types of stories students must be lead to construct and own in order to be successful in mathematics: cultural, academic and resiliency stories | Review key concepts from Days 1 and 2 and Day 3 agenda slides starting with *: Constructing & role modeling new self-empowering courage & resilience stories* | Lecture QA period | 20 minutes |
| Recognize the significance of incorporating physical and intellectual exercises that promote the study of a positive conceptualization of African culture and history as well as self-discipline, focus and stress reduction | Facilitate *Warm-up Exercise (Yoga and its Relationship to African History)* | Physical Exercise Dyads Large-group discussion | 40 minutes |
| Analyze and demonstrate techniques for making mathematics more relevant to African American students and strengthening their prerequisite academic skills | Facilitate Harambee Circle Exercise: *Making Mathematics Meaningful and Culturally Relevant (To be continued on Day 3)* | Lecture QA period Small-group discussion Report from small groups Large-group discussion | 90 minutes |
| Identify the common roadblocks African American students face in developing the resiliency necessary to excel in mathematics as well as how parents-community | Facilitate Tug-of-War Exercise: Examining Emotional Roadblocks African American Students Face *(Presentation Slides related to Questions 1-4 and Myths)* | Buzz-group discussion Large-group discussion | 60 minutes |

| **Day 3 Learning Objectives** | | | |
|---|---|---|---|
| *The participants will be able to:* | **Presentation Content** | **Instructional Techniques** | **Estimated Time** |
| can help ameliorate these roadblocks | Present Strategies for Overcoming Emotional Roadblocks African American Students Face *(Presentation Slides related to Questions 1-4, Myths, Assume Strength)* | Lecture QA period Large-group discussion | 30 minutes |
| Recognize and articulate the importance of academic interventions founded on an ongoing commitment to the pooling of community resources | Facilitate Harambee Circle Exercise: Creating a Community Action Plan | QA period Small-group discussion Large-group discussion | 60 minutes |
| **Assessment Plan:** Harambee Circle Exercises – Formative Evaluations; Harambee Circle Exercise: Making Mathematics Meaningful and Culturally Relevant – Small Group Presentations and Reports; Tug-of-War Exercise: Examining Emotional Roadblocks African American Students Face – Tug-of-War Posters; Facilitate Harambee Circle Exercise: Creating a Community Action Plan – Note Cards and Action Plans; Day 3 Summative Evaluations; Observation Report by Independent Evaluator | | | |

Parent-Community Curriculum Slides with Notes and Evaluations



Welcome to Day 1 of a series of three workshops designed to help African American parents and community explore strategies for empowering children and young adults in their quest to advance in the critical subject of mathematics

## DAY 1- EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING RACIAL IDENTITY - CULTURAL STORY: WORKSHOP AGENDA

| | |
|---|---|
| 09:00 am | • Registration & Breakfast |
| 10:00 am | • Devotion, Overview of Objectives & Introductions |
| 11:00 am | • Harambee Circle Exercises: What are Collective Concerns & Visions for All African American Children? |
| 12:00 pm | • Examine the Role of Culture & Racial Identity in Education |
| 01:00 pm | • Working Lunch Break |
| 01:30 pm | • Examine Cultural Roadblocks African American Students Face |
| 02:00 pm | • Harambee Circle Exercises: Helping Children Envision & Embrace a Positive Racial Identity |
| 03:00 pm | • Q &A and Wrap Up |

Day 1 Agenda – We will focus on the cultural story.

DAY 1- CONSTRUCTING & ROLE MODELING NEW SELF-EMPOWERING STORIES
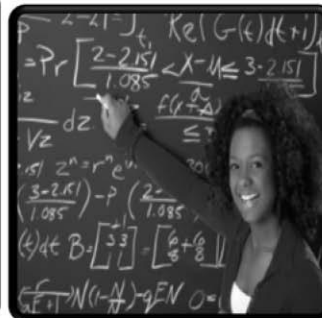
Our Cultural Racial Identity Story — Our Academic Skills Story — Our Courage & Resilience Story

Although there is no easy recipe for academic success, research into African Americans who do well socially, economically and academically, including mastering higher levels of mathematics, reveals common internalized stories. Starting early, we must help children learn and, when warranted correct, the stories they believe about their and our intellectual place in the world as African Americans, why and how to learn and improve academically, and bounce back from failure. However, before leading children to correct stories, we as adults must correct our own stories.

Example Story: My nephew who is now 24 thought Jessie Jackson was somehow related to Michael Jackson and that was his significance. When his mother and I looked at him in somewhat stunned disbelief, he simply said – "Well whose fault is it that I don't know?" I simply said to him – "Touché". Although, the blame game gets us nowhere; the responsibility for correcting any community's problems rests with the community under duress. African American history continues to support this position. Let us dare to be brave in doing our part.

Research reveals the need to consider not only the explicit messages but the implicit impressions we leave our children, others, and ourselves with regarding race, culture, African American competency and responsibility. The purpose of this workshop series is to consider and share skills and strategies for facilitating the emotional, social, academic and economic success of all African American children. Let us re-commit to the African way - all children being our children. In the context of this program, all children are our children. All adults are parents.

DAY 1- EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING RACIAL IDENTITY - CULTURAL STORY: WORKSHOP OBJECTIVES

Examine the challenges African American students face in developing positive racial and academic identities, especially, in mathematics.

Consider the critical role culture and community organization must play in socialization and education.

Begin the development of family and community academic action plans based on culturally aware intervention strategies.

Explore strategies for more effectively partnering with community, schools and teachers.

Day 1 Objectives.

In keeping with a vision of education as a liberating vehicle that frees people to dialogue and think in order to voice and solve their own problems, a chief goal of this workshop series is to promote dialogue/discussion and consider how we can support each other in our mutual quest to help all children and the community realize spiritual, academic and socioeconomic success. This is in accordance with our collective interests.

**EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING RACIAL IDENTITY STORY: WORKSHOP QUESTIONS**

Why is a collective response to the academic challenges they face so critical for the African American community?

Why is improving mathematics proficiency so critical for African Americans?

What do the tenants of education as liberation imply for helping African American students?

What are some practical ways to help African American learners leverage their culture and tenants of education as liberation to master mathematics?

In the last few years the need for American schools to improve STEM education has gained a lot of publicity. The Day 1 workshop is designed to help parents, educators and other interested adults improve awareness of how and why the cultural concerns of African Americans must be addressed in education in general and in mathematics in particular if more African American are to thrive socially and economically as well as thrive in the 21$^{st}$ century. Here are some critical questions African Americans individually and collectively must answer in order to articulate an educational agenda/vision.

We all know the famous proverb -Where there is no vision, the people perish: but he that keepeth the law, happy is he. Proverbs 29:18 King James Version (KJV).

**QUESTIONS: PLEASE JOT DOWN & PLACE IN BOX @ REGISTRATION TABLE**

As many participants may have specific questions that they would like answered and since questions may require a lot of time and/or one-on-one consultation, please feel free to ask questions related to today's topics as we go along. However, please place questions and concerns that we are not able to address today in the Q & A box on registration table. If you would like a direct follow-up response, please include name and contact information on submissions. We will allow time each morning and afternoon for Q & A. If one-on-one consultation advised, a facilitator will contact you. Thanks in advance for helping us use our time wisely.
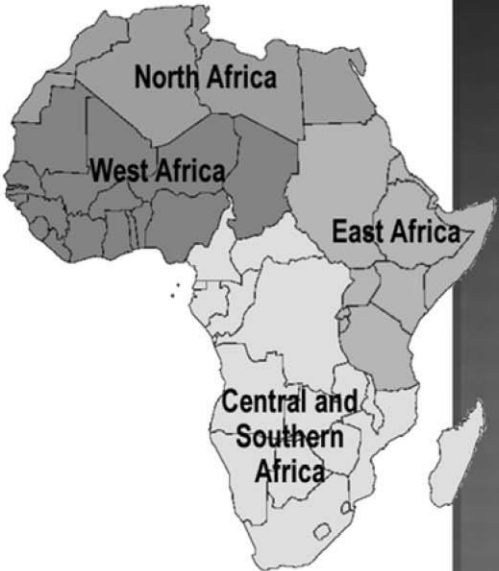
Connection Exercise:  Introductions

Objectives:
Establish the importance of all attendees relating to each other on the basis of culture.
Prompt consideration of own internalized response to the poem and activity.
Demonstrate a simple activity for chipping away at the stereotypical messages related to African heritage (i.e., Blackness).

Time:  50 minutes

Guidelines:
Make sure everyone has a star with a pin.
Ask all participants including facilitators to -
Note, in 1-5 words, one characteristic, value, thing that they appreciate about your African culture/heritage.
Write the characteristic on two stars and pin one to your shirt/top so others can read.
Put second star on community collage.
Write on index cards:  What would you like to get out of this parent-community training program?
Announce time allotted: Let us give everyone 5 minutes to do this and then we will meet and greet each other.

Meet and Greet:

Announce –
Please greet as many people as you can within 10 minutes.
In keeping with the African way, we recognize that could spend half the day meeting, greeting and hugging, etc. but let us resist☐
Tell others your name, etc. and what you appreciate about  your African culture/heritage.
If you have not already, please add star to community collage.

Large Group Discussion:
Have each person introduce themselves by name and what they appreciate about African culture/heritage.
Explore -
What did you discover during meet and greet about people's appreciation of African culture/heritage?
Why and how might we adopt this type of exercise as an ongoing activity at home, church, etc.?
What messages/images do we typically receive and internalize about African heritage, Blackness and race?
What happens when these messages/images go unchallenged?  We will keep coming back to this. Let's discuss briefly.


Materials:
Poster board or canvas for collage.

Facilitator Notes:
Hang board/canvas for collage.
Remind participants several times to add a completed star to the collage.

**BEFORE PROCEEDING TAKE A MOMENT TO REVIEW SUPPLEMENTAL HANDOUT & JOT DOWN YOUR ANSWERS TO THE FOLLOWING QUESTIONS:**

- What are your concerns for African American children, your own and others; for your African American community in general?
- If you were a genie, what belief would you give all children about life and about the importance of *education* and *learning mathematics*?
- What do you believe are some reasons that more African Americans, do not become business owners, scientists, computer scientists, engineers and mathematicians?
- Define the following:
  - Education
  - Culture
  - Liberation
  - The role of culture and education in promoting individual and group interests

*Supplemental worksheet will be distributed.*

EXERCISE

Harambee Circle Exercise:  Collective Concerns for Our Children and Cultural Definitions

Before jumping into the body of the meat of the presentation and workshop,  let's consider our current beliefs and knowledge about culture in preparation for exploring how these concepts factor into mathematics education for African Americans.

Objectives:
Introduce Harambee Circles (Small Groups)
Consider the significance of identifying collective cultural concerns and definitions
Articulate the role of education in addressing cultural concerns.

Time:  90 minutes

Guidelines:
Have participants write down their answers on the worksheet provided.

After 5-10 minutes, have participants form Harambee Circles/Groups.
Explain:  Harambee means "Let's Pull Together!" in Kiswahili.

15-20 minutes - Share thoughts within Harambee Circle.
Come up with a united definition using ideas from each person's individual contribution.
Write on poster paper.
Feel free to come up for additional supplies.
Please hang-up your united definitions. We will discuss as a larger group.

Have all groups discuss definition of education first, definition of culture next, etc.

Facilitator Notes:
How groups are formed is up to facilitator. However, ask participants to get to know new people.
Just in case:  Based on registration, generate a random list of  groups. Ask participants to rearrange groups in effort to get to know someone they don't already know.

**HARAMBEE CIRCLE EXERCISE: WORKSHEET**
**DEFINE OWN INTERESTS & TERMS**

- What are your concerns for African American children, your own and others; for your African American community in general?

- If you were a genie, what belief would you give all children about *life* and about the importance of *education* and *learning mathematics*?

- What do you believe are some reasons that more African Americans, do not become business owners, scientists, computer scientists, engineers and mathematicians?

- Define the following:

    - Education

    - Culture

    - Liberation

    - The role of culture and education in promoting individual and group reality, liberation as well as power.

**EXERCISE**

Worksheet for preceding exercise.

Facilitator Notes: Have participants complete a formative evaluation for this exercise.

**FORMATIVE EVALUATION FORM (PF1)**

Name of Activity: _____     Date: _____

Name (Optional): _____

1. How involved were you in this discussion/activity. Circle the degree of your involvement.
   a) very involved
   b) involved
   c) not involved
   d) bored
2. How useful to you was the discussion/activity. Circle the degree of usefulness.
   a) very useful
   b) useful
   c) not useful
   d) disappointed
3. What helped and what hindered the discussion/activity?

4. How might the information discussed/presented be used in helping implement academic initiatives in home, community, school, mathematics classes, etc.?

*Thank you for helping improve the process.*
*Please give completed form to a facilitator or place in box at registration table.*

Participation – Formative Evaluation Objectives: Gauge level of interest in a given topic and participation in a given discussion. Assess connection of given topic to broader training goals.

Materials: Printed copies of evaluations.

Facilitator Notes:

Facilitator Notes: Make sure participants fill in name of activity and date. Make plenty of copies. Collect completed evaluations.

QUESTIONS 1 & 2

Why is a collective response to the academic challenges they face so critical for the African American community?

Why is improving mathematics proficiency so critical for African Americans?

Let us now look at how history and research relates to our concerns for African American children and definitions of education, culture, etc. Let's start with exploring how cultural and collective beliefs inform our understanding of as well as responses to the academic problems the majority of African Americans face in one way or another.
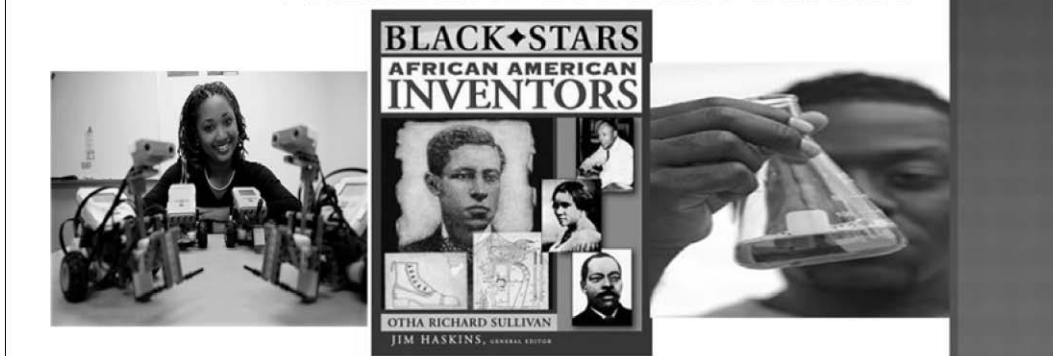
President Obama's quote really summarizes why we need the majority of American's regardless of race, gender, or income class to master mathematics and be STEM proficient. Above all this includes solving African and African American problems in this new age.

## WHY WE MUST CHANGE THE STEM EQUATION: SOME U.S. STATISTICS

- ◉ >80% of African American high school students do not meet the requirements for entry-level college math courses; 90% do not meet the requirements for entry-level science courses (ACT, 2013)
- ◉ Only 15% of college students choose STEM majors (Inside Higher Education, 2011)
- ◉ Since 1995, African/Latino/Native Americans received only 12% of bachelor's degrees in engineering (National Action Council for Minorities in Engineering, 2010)
- ◉ Only 10% of practicing engineers are women; <1% are African Americans; <1% are Latino Americans (National Science Foundation, 2011)

At a time when nations, communities and individuals are becoming increasingly dependent on scientific and technical advances, African American students are struggling with mathematics and science and/or are not majoring in the core STEM subjects that drive innovation. This is across all income levels (i.e., socioeconomic classes – SES). Why is this?

Given that school reforms intended to close the "achievement gap" have been underway for the last 40 years, let us pretend teachers and schools are all tapped out. During this workshop, let us explore what the African American community can do about its own academic problems. For a copy of the full research study which inspired this training, please see or email Renee Jenkins. Her email address is listed at the end of this presentation.
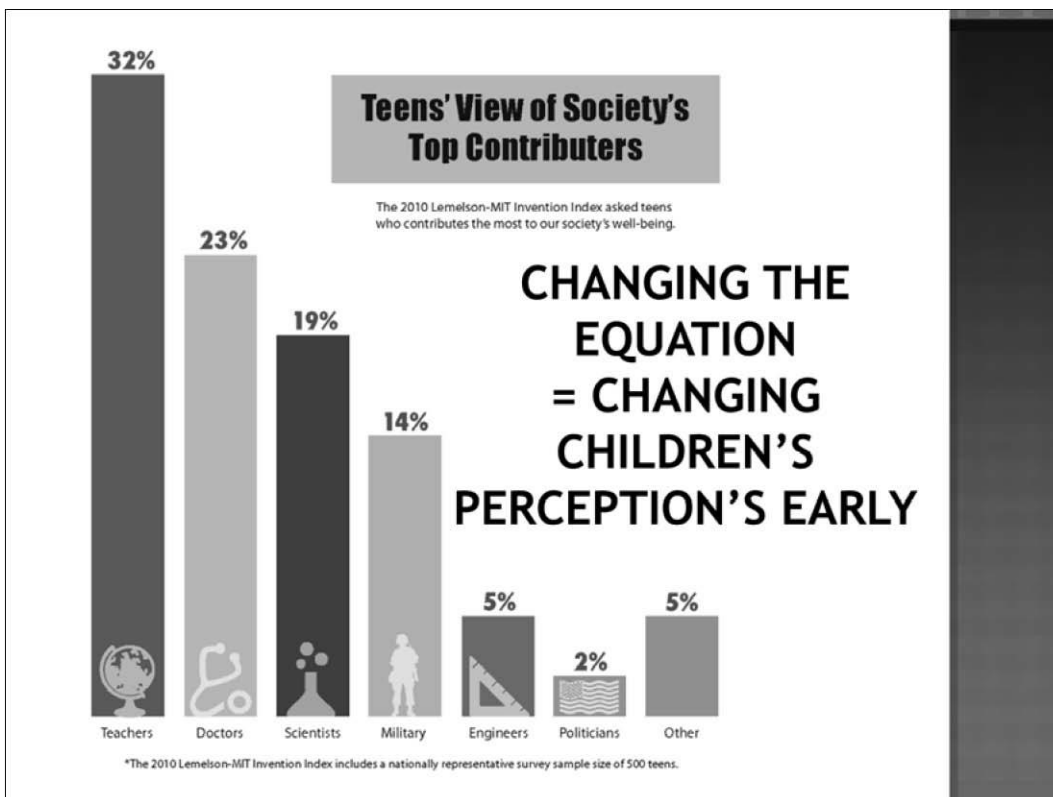
A large part of the lack of interest in STEM subjects and careers can be traced back to childhood perceptions that children have been left to unconsciously develop.

**AFRICAN AMERICANS**

For those groups underrepresented in STEM programs + professions, given historical challenges and images there is an even greater need to change their perceptions about race, intelligence and mathematic as well as provide them with improved support from K-16.

Layered on top of children of all cultures having little awareness of how mathematics and STEM professionals help society, African Americans are faced with additional challenges stemming from the stereotypical images of scientists, engineers, etc. that are presented plus not presented in media as well as school. Put this together with low expectations all around and limited help especially in advanced mathematics, we have a recipe for disaster. We will come back to the low expectations and limited help in a bit. Let's first delve into understanding the role of culture in shaping aspirations and identity. We hear a lot about teachers needing to adopt culturally relevant practices and curriculum but can we really explain to ourselves, children and/or teachers the role culture and cultural relevancy plays in education, in mathematics?
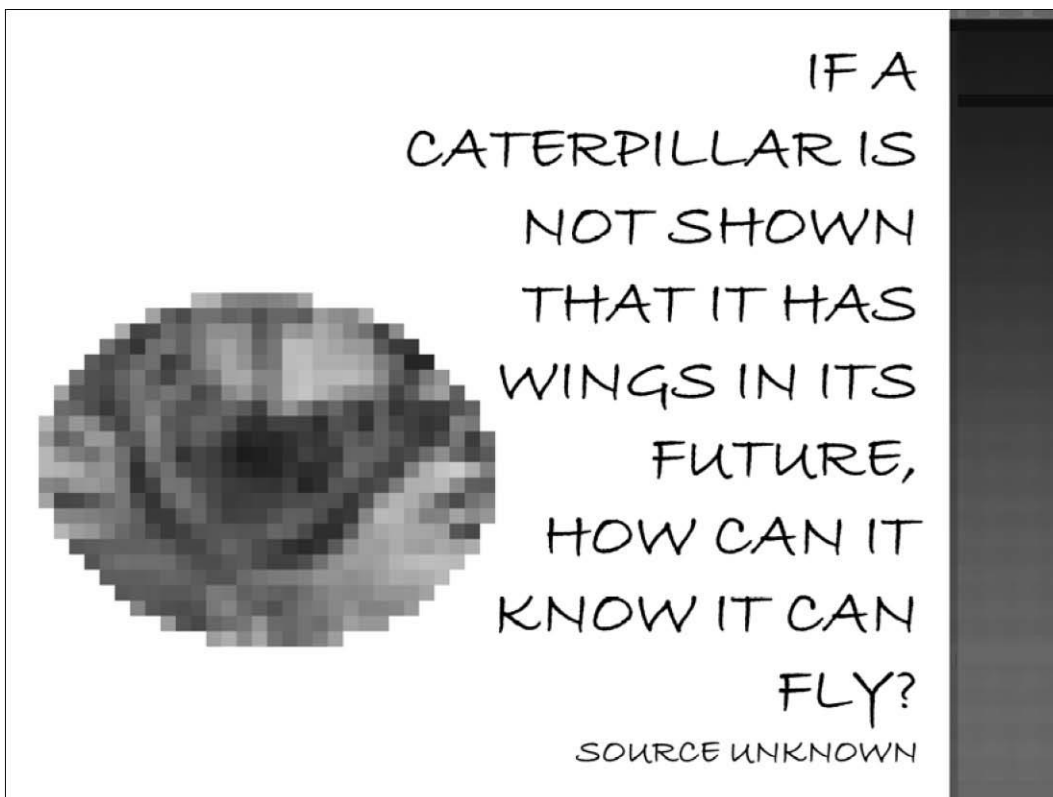
Consider history lessons and media images. In general, what messages do Americans receive about the color and gender of people who are capable of doing advanced science and mathematics or any STEM subject?

**FOOD FOR THOUGHT QUESTION**

Consider the toy aisles for girls and boys. In general, what messages do girls and boys receive from toys regarding their roles and capabilities?

Just consider the toy aisles for girls and boys. In general, what messages do girls and boys receive from toys regarding their roles and capabilities?
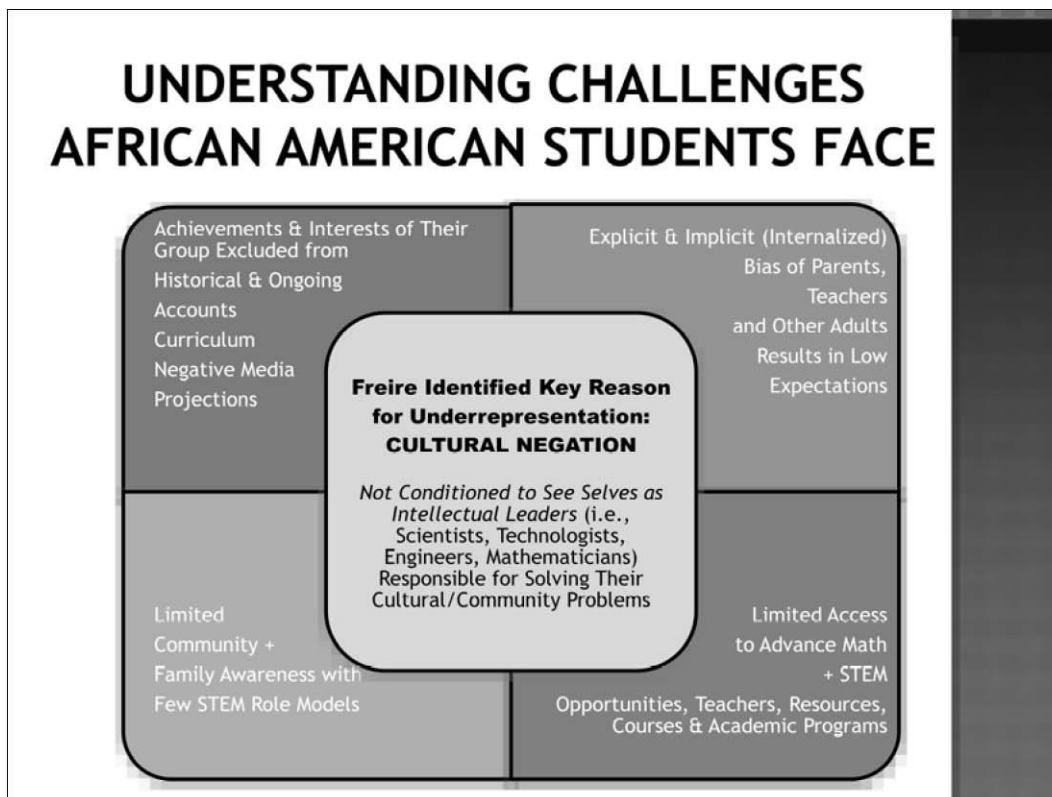
IF A CATERPILLAR IS NOT SHOWN THAT IT HAS WINGS IN ITS FUTURE, HOW CAN IT KNOW IT CAN FLY?

SOURCE UNKNOWN

Large Group Discussion: How does this quote relate to African American students?

## QUESTION 3

What do the tenants of education as liberation imply for helping African American students?

Any group needs to define the purpose of educating its children. Paulo Freire, like Carter G. Woodson, was an educator, theorist and activist, whose educational theories and practices embody Dr. King's message of social justice by making the connection between education and liberation. In this next section, we will explore how many of the principles that Freire put forth in a theory of education as liberation. These principles can be used to explain the cultural disconnects which contribute to the academic problems African Americans face and how to approach solving these problems.

## UNDERSTANDING CHALLENGES AFRICAN AMERICAN STUDENTS FACE

Achievements & Interests of Their Group Excluded from Historical & Ongoing Accounts Curriculum Negative Media Projections

Explicit & Implicit (Internalized) Bias of Parents, Teachers and Other Adults Results in Low Expectations

**Freire Identified Key Reason for Underrepresentation: CULTURAL NEGATION**

*Not Conditioned to See Selves as Intellectual Leaders* (i.e., Scientists, Technologists, Engineers, Mathematicians) Responsible for Solving Their Cultural/Community Problems

Limited Community + Family Awareness with Few STEM Role Models

Limited Access to Advance Math + STEM Opportunities, Teachers, Resources, Courses & Academic Programs

In considering the social-political reality into which African Americans, the concept of cultural negation explains the biases and limiting expectations, self-concepts and beliefs evidenced in the numerous "achievement/opportunity" gap, mathematics, and STEM studies. All of these limiting factors were identified by participants in this study.

We cannot solve problems we are not aware of or ignore.

In order to design effective strategies that help inoculate children and remedy academic

In order to design effective strategies that help inoculate children and remedy academic disparities, all of the above aspects of cultural negation must be addressed. The first step is to recognize the implications of cultural negation.

## UNDERSTANDING HOW CULTURAL NEGATION UNDERMINES RACIAL IDENTITY, VISION & CONFIDENCE

**pedagogy of the oppressed PAULO FREIRE**
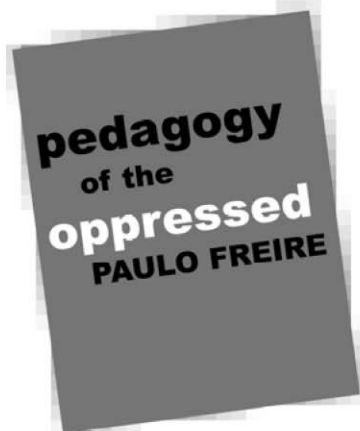
As noted by Freire, Woodson and other scholars, historically oppressed groups (i.e., African Americans, Latino Americans and Women)

⊙ Are largely left unaware of the importance of cultural identity & history

⊙ Define their purpose based on values not of their own culture's making

⊙ Come to believe that their purpose is to serve dominant interests which are not necessarily in their own interests

⊙ Find it difficult to make more conscious empowering choices that result in solving their own problems, namely, reclaiming self-empowerment/determination

Here is a summary of the characteristics of cultural negation/invasion that Freire noted in his seminal work: Pedagogy of the Oppressed. His work corresponds with the findings of numerous other African American scholars including Carter G. Woodson, Asa Hillard and Janice Hale-Benson to name a few. Their works are listed in the list of references provided at the end of this presentation and in the full research study.

Participants in this study highlighted all four of the impediments listed in this slide. However instead of focusing on problems or leaving it to others let's ask: How can we

However, instead of focusing on problems or leaving it to others, let s ask: How can we build collective solutions including partnerships with schools and teachers?

BEHIND THE NEGATIVE STATISTICS IS A CALL TO LOVE.  FOR LOVE IS "NOT MERELY AN EMOTIONAL SOMETHING.  LOVE IS CREATIVE, UNDERSTANDING GOODWILL FOR ALL".  IT IS THE REFUSAL TO SEE ANY INDIVIDUAL DEFEATED.

DR. MARTIN LUTHER KING

So, as Dr. King's messages always embody, the call to help more African Americans feel they can master difficult subjects like mathematics and science is not just about economic viability. It's about investing in more empowering and humanizing values that translate into behaviors, systems, and institutions that put love in action. This is justice.

In the face of cultural negation, a Culturally Relevant Educational Agenda is critical in helping African Americans sustain the ambition to conquer difficult subjects.

So, although millions of dollars continues to be put into mathematics education, STEM education and other diversity initiatives, African American students across all income and grade levels struggle with mathematics. The concern and reason for delving into the topic of improving mathematics education for African Americans is that it is necessary to develop more sustainable initiatives. Therefore, it is useful to articulate the real problem by asking ourselves "Is the problem we are seeking to solve really the problem?" Research supports academic initiatives that truly work for African Americans seek to empower them collectively and individually in the face of the many faces of cultural negation.

**CULTURE: FINDING OUR WAY BACK HOME**

Explicit or implicit knowledge of one's culture dictates in a positive and negative way:

*Culture=Compass*

- ❖ Consciousness
- ❖ Definition of Reality
- ❖ Love for Self, Family & Community
- ❖ Sense of:
    - ❖ Purpose
    - ❖ **Identity**
    - ❖ Relevance
    - ❖ Competency
    - ❖ Ambition
    - ❖ Worth
- ❖ Use of Subjects – e.g. Mathematics & Science
- ❖ Educational Aspirations
- ❖ Allocation of Resources

In order to counter cultural negation, it is useful to develop a deeper understanding of the role of culture.

A word here. Even for the students that are doing well grade wise, staying the course through college without a strong sense of racial/cultural identity spells alienation from self, community and own interests. This carries a disastrous toll.

Large Group Discussion:

Large Group Discussion: How do the attributes listed on this slide relate to the definitions you noted earlier on the "Define own interests & terms?" worksheet.

## HOW WE USE EDUCATION AS LIBERATION TENANTS TO HELP CHILDREN DEVELOP A POSITIVE CULTURAL /RACIAL IDENTITY?
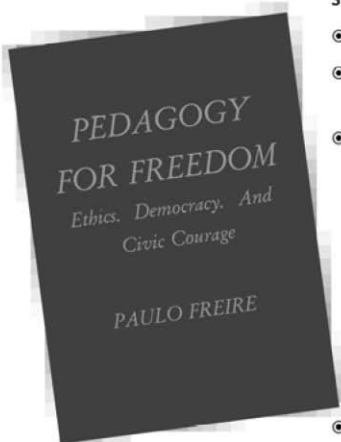
Given that ambition is a product of cultural messages and opportunities, historically oppressed groups (i.e., African Americans, Latino Americans and Women) to serve their own interests must:

- Recognize & resist their oppression
- Unite in their quest to define reality for themselves using humanizing dialogical practices
- Control & use cultural resources to solve their own problems. Cultural resources include
  - Ambitions/Desires/Values
  - Art/Music/Media
  - *Education – Parenting & Teaching*
  - History
  - Investments – Time, Labor, Land
  - Money
  - *Religion & Spiritual Traditions*
- Challenge the voices of internalized oppression that reinforces dependence on other even well intentioned groups

*PEDAGOGY FOR FREEDOM*
Ethics. Democracy. And Civic Courage

PAULO FREIRE

Education as liberation concepts and research supports that until more African Americans see themselves as capable of mastering mathematics, other STEM subjects and any other tasks needed to solve individual and collective problems, academic advancement will continue to falter. Next we will look at practical ways to put these principles into individual and community practice.

**QUESTION 4**

What are some practical ways to help African American learners leverage their culture and tenants of education as liberation to master mathematics?

However, the good news is that successful culturally relevant educational initiatives based on education as liberation tenants/principles are proving to be useful in practice.

AN EXAMPLE OF PUTTING CULTURALLY RELEVANT GOALS INTO SERVICE

What if African American women felt that they had a responsibility for the following?

"We will strive to understand, address, and eliminate factors that contribute to the higher mortality from breast cancer experienced by African American women compared with women of other racial and ethnic groups."

(National Cancer Institute, n.d.)

Example: Robotics Project Vision Statement for GIFTS, a mentoring program for African American girls.

By learning to dialog and explore cultural concerns in teaching, this goal statement came out of a community college service learning program sponsored by middle school girls who participated in a mentoring program lead by the researcher. The goal statement is now being used as a focal point for a STE2M program. Guess: What happens when all roads lead middle and high school students learning to solve real and serious problems?
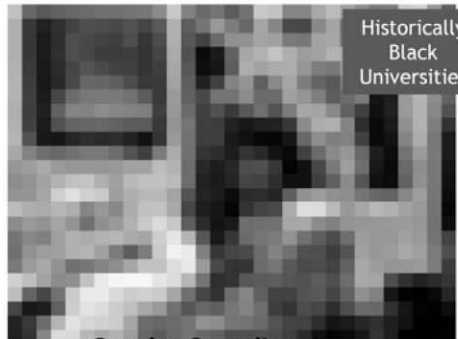
Let us call this a "Cultural Affirmation" approach.
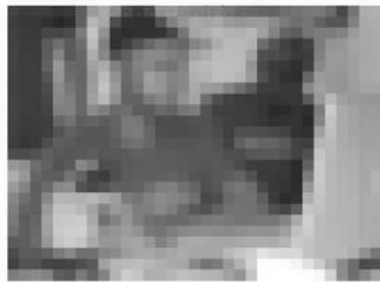
This slide shows other great examples of programs that use cultural affirmation principles and inspire African Americans to excel academically and in mathematics.

**PRACTICAL WAYS TO APPLY TENANTS OF EDUCATION AS LIBERATION & HELP AFRICAN AMERICAN STUDENTS DEVELOP POSITIVE SENSE OF CULTURAL/RACIAL IDENTITY**

EXERCISE

- Accept & teach that there are no quick and simple answers
- **Articulate a community & family vision of education based on cultural values – spirituality, social justice, communal learning, service, etc.**
- Role model how to discuss & deal with internal & external bias by becoming conscious of own biases
- Demonstrate how to become creators versus passive consumers of media, information, science & technology
- Facilitate the development of culturally relevant dialogue & curriculum
- Provide and connect learners with mentors, tutors & academic role models who look like them (must be ongoing)
- Build exposure/confidence with hands-on STEM activities
- Do your part to sponsor ongoing student, parent, family, community and teacher cultural + academic enrichment activities
- Treat education as a partnership (i.e., parents, community members, & educators all must play a ongoing proactive role)

Harambee Circle Exercise: Create Community Vision Maps – Our Hopes for Our Children

Although to-do lists can be overwhelming, here are some key tenants that have repeatedly proven to undergird sustainable community-school partnerships and mathematics interventions wherein there is a collective sense of responsibility and power. We have and will continue explore practical strategies for incorporating these culturally affirming tenants into daily parenting practices as well as working with teachers.

Objectives:
Practice articulate a shared vision.
Put African American culture and learning styles into practice by using creativity, collaboration, visual art, hands-on, etc.
Craft positive messages and content to share with children in the community.
Consider ways to leverage visual media to help counter negative messaging. "A picture is worth a thousand words".

Time:  60 minutes

Guidelines:
Consider one of the concepts listed on the "Culture:  Finding Our Way Back Home"
Slide, what vision and understanding would you like all children to have about African
American culture?
As a group, create a vision map. We will tweet and post pictures of maps online. So,
please make content clear and large.
Hang vision map for all to see.
Take pictures of the vision map. Tweets pictures to [# to be determined].
Go for it. Feel free to consult other groups, grab more supplies but please share.
Share any thoughts and/or ideas with larger group.

Materials:
Poster boards and art supplies.
Digital cameras.

Facilitator's Notes:
Distribute blank poster boards and art supplies.
Take picture of vision maps and post to various social media sites/accounts setup for
training.
Hang maps on Days 2 and 3.

PLEASE COMPLETE A
FORMATIVE EVALUATION.  SEE
FACILITATOR IF YOU DO NOT
HAVE A COPY OF FORM.

DAY 1 EVALUATION
QUESTIONS, ISSUES, CONCERNS &
HOMEWORK

Please complete Day 1 Evaluation which should be in your folders. Wave your hand if need a copy.

Large Group Discussion: Please share any questions, issues and/or concerns.

Individual Exercise: Based on any of the topics discussed today what is one activity you can introduce to your

Based on any of the topics discussed today what is one activity you can introduce to your children, church, program, etc.? When will you complete the activity? Please write down on two index cards. Date and sign both. Leave one card on table or give to a facilitator.

Facilitator:
Distribute index
cards. Collect
signed cards.

**DAY AND SERIES EVALUATION FORM (DS1)**

Workshop Day #: _____     Date: _____

Name (Optional): _____

| Question | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| The objectives of the workshop were clearly defined. | | | | | |
| Participation, interaction and discussion were encouraged. | | | | | |
| Topics were relevant to me. | | | | | |
| Topics were relevant to my community. | | | | | |
| Content was organized and easy to follow. | | | | | |
| The training will be useful to me in parenting, mentoring, and/or teaching. | | | | | |
| Time allotted for training was sufficient. | | | | | |
| Facilitator(s) were knowledgeable and supportive. | | | | | |
| The facilities and meeting room were adequate and comfortable. | | | | | |

*Thank you for helping improve the process.*
*Please give completed form to a facilitator or place in box at registration table.*

Day (Formative) + Series (Summative) Evaluation Objectives: Gauge level of interest and satisfaction at the end of each training day and at the end of the overall series. Assess connection of training to broader parenting awareness and community development goals.

Materials:

Printed copies of evaluations.

Facilitator Notes: Make sure participants fill in name of activity and date. Make plenty of copies. Collect completed evaluations.

**DAY AND SERIES EVALUATION FORM (DS1)**

Workshop Day #: _____     Date: _____

Name (Optional): _____

| Question | |
|---|---|
| What did you like most about this training? | |
| What aspects of the training could be improved? | |
| What topics were relevant to you? | |
| What topics were relevant to your community?. | |
| How do you hope to improve parenting, mentoring, and/or teaching as result of training? | |
| What additional community training and/or academic/mathematics activities would you like to see happen? | |
| How could you assist in future training and/or academic activities? | |
| Please share any other comments related to training. | |

*Thank you for helping improve the process.*
*Please give completed form to a facilitator or place in box at registration table.*

Day (Formative) + Series (Summative) Evaluation Objectives: Gauge level of interest and satisfaction at the end of each training day and at the end of the overall series. Assess connection of training to broader parenting awareness and community development goals.

Materials:
Printed copies of
evaluations.

Facilitator Notes: Make sure participants fill in
name of activity and date. Make plenty of copies.
Collect completed evaluations.

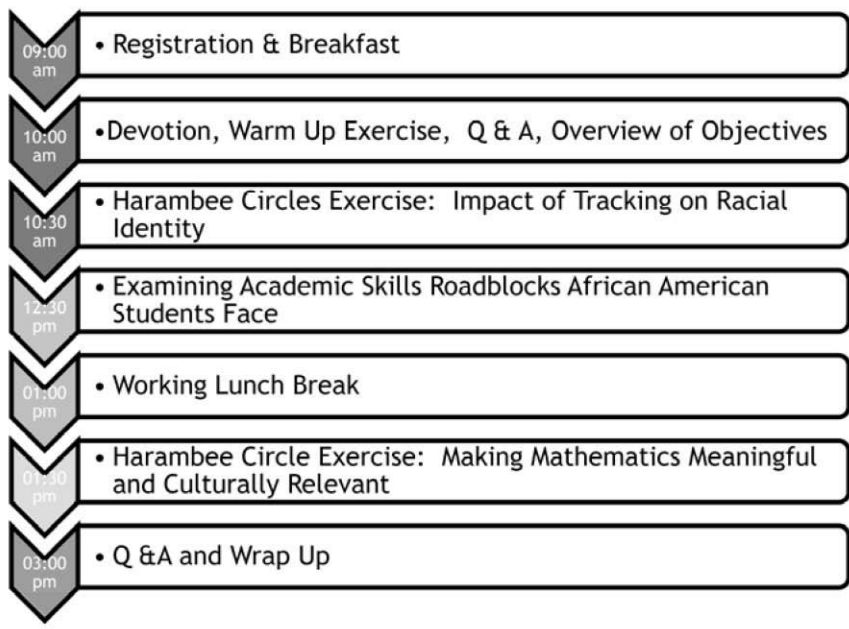for your attention.
Please make sure to fill out the evaluation.

Thanks so much for your attention and feedback. Please take a few minutes to fill out an evaluation. Have a safe trip home. Blessings!

Renee Jenkins
faithrenee@netzero.net
301-467-1191

## DAY 2- EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING ACADEMIC SKILLS STORY: WORKSHOP AGENDA

| Time | |
|---|---|
| 09:00 am | • Registration & Breakfast |
| 10:00 am | • Devotion, Warm Up Exercise, Q & A, Overview of Objectives |
| 10:30 am | • Harambee Circles Exercise: Impact of Tracking on Racial Identity |
| 12:30 pm | • Examining Academic Skills Roadblocks African American Students Face |
| 01:00 pm | • Working Lunch Break |
| 01:30 pm | • Harambee Circle Exercise: Making Mathematics Meaningful and Culturally Relevant |
| 03:00 pm | • Q &A and Wrap Up |

Day 2 Agenda.

Welcome back to Day 2 in a series of three workshops designed to help African American parents and community explore strategies for empowering children and young adults in their quest to advance in the critical subject of mathematics.
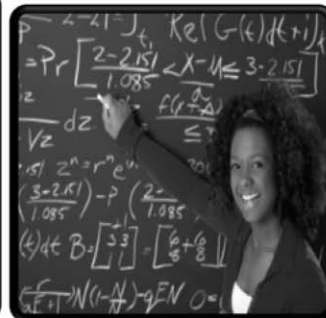
DAY 2: CONSTRUCTING & ROLE MODELING NEW SELF-EMPOWERING ACADEMIC SKILLS STORIES

Our Cultural Racial Identity Story | Our Academic Skills Story | Our Courage & Resilience Story

Just a brief recap before journey into Day 2's agenda. Although there is no easy recipe for academic success, research related to African Americans who do well socially, economically and academically, including mastering higher levels of mathematics, reveals common internalized stories. Starting early, we must help children learn and, when warranted correct, the stories they believe about their intellectual place in the world as African Americans, why and how to learn and improve academically, and bounce back from failure. However, before leading children to correct stories, we as adults must correct our own stories

Large Group Discussion: What is your academic story? What is your experience of mathematics classes?

AFRICAN HISTORY
MASTERS OF INVENTION
FULL LENGTH

https://www.youtube.com/watch?v=pEPT9lwpEjw

Exercise: Introductions

How do we set the record straight for ourselves and others?

Video is about 24 minutes.

Masters of Invention Full Length
https://www.youtube.com/watch?v=pEPT9lwpEjw

Large Group Discussion: What is one concept you would like children to realize about African and/or African American history?

Guidelines:
Invite participants to greet each other -hugs, shakes, high five, etc. Ask participants to write down their answer before sharing their names and answer with group.

**QUESTIONS: PLEASE JOT DOWN & PLACE IN BOX @ REGISTRATION TABLE**

As many participants may have specific questions that they would like answered and since questions may require a lot of time and/or one-on-one consultation, please feel free to ask questions related to today's topics as we go along. However, please place questions and concerns that we are not able to address today in the Q & A box on registration table. Thanks in advance for helping us use our time wisely.

DAY 2 - EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING ACADEMIC SKILLS STORY: WORKSHOP OBJECTIVES

Examine roadblocks African American students face in navigating between African American culture and school culture.

Explore strategies for helping African American students master the school culture and associated academic skills needed to advance in mathematics and society.

Continue the development of family and community academic action plans based on culturally aware intervention strategies.

Day 2: Academic Skills Story

As focused on in Day 1, regardless of income there are distinct features of the African American culture that plays a large role in how the majority of African Americans view reality, race and their intellectual capabilities. In addition, culture influences how we think, learn, communicate and behave to name a few aspects. Of course, there is wide variability. However, research continues to reveal that in order to help more African American students become successful in school especially in mathematics there are some distinct strategies that are needed to assist them in appreciating their own culture/racial identity and gifts while at the same time mastering academic skills called for by the dominant school culture. In other words, strategies are needed to help students become bicultural learners.

**DAY 2 - EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING ACADEMIC SKILLS STORY: WORKSHOP QUESTIONS**

What roadblocks do African American students face in navigating between African American culture and a school culture based on middle-class Caucasian norms?

What strategies are useful for helping African American students master the school culture and associated academic skills needed to advance in mathematics and society.

What are some practical ways to help African Americans leverage their culture and tenants of education as liberation to master mathematics?

Day 2: Academic Skills Story

As focused on in Day 1, regardless of income there are distinct features of the African American culture that plays a large role in how the majority of African Americans view reality, race and their intellectual capabilities. In addition, culture influences how we think, learn, communicate and behave to name a few aspects. Of course, there is wide variability. However, research continues to reveal that in order to help more African American students become successful in school especially in mathematics there are some distinct strategies that are needed to assist them in appreciating their own culture/racial identity and gifts while at the same time mastering academic skills called for by the dominant school culture. In other words, strategies are needed to help students become bicultural learners.

WHAT IS THE MESSAGE ALL CHILDREN RECEIVE ABOUT INTELLIGENCE, RACE?

EXERCISE

Special Education Track

General Education Track

Gifted Honors AP College Prep Track

Harambee Circle and Large Group Exercise:  Impact of Tracking

Research supports, that no other school practice reinforces the racial divide and racialized concepts of intelligence then that of "racialized tracking".
For more detailed information, see Integration Interrupted by Karolyn Tyson.

This may be a tough subject. But, please bear in mind we are here to discuss not indict.

Objectives:
Increase awareness and examination of values.
Examine impact of racialized systems on children.
Consider own and institutionalized forms of bias.
Consider why and how to counter individually and collectively racialized systems  and outcomes.

Discussion Questions:
What are your thoughts about "tracking"?  Is it really necessary?
How do we individually and collectively contribute to racialized systems and outcomes?
How do we individually and collectively counter racialized systems and outcomes?
How do we counter implicit bias and messages about race?

Time:  120 minutes (60 minutes for sharing in circles; 60 minutes for large group).

Guidelines:
Create new Harambee Circle Groups
Allow time for discussion in Harambee Circles.
Ask group to develop consolidated answer for each question.
Ask group to draw a picture related to their answer to "How do we counter implicit bias and messages about race?"
Facilitate group sharing in larger group. All groups share answer to first question, then all share answers to second question, etc.

Materials:
Poster paper.
Drawing supplies – markers, crayons, etc.

Facilitator Notes:
As this may be a tough subject, please reiterate "we are here to discuss not indict".
Formative evaluation should follow this exercise.

# PLEASE COMPLETE A FORMATIVE EVALUATION.  SEE FACILITATOR IF YOU DO NOT HAVE A COPY OF FORM.

MY ROLE AS A "PROGRESSIVE" TEACHER IS
NOT ONLY THAT OF TEACHING
MATHEMATICS OR BIOLOGY BUT ALSO OF
HELPING THE STUDENTS TO RECOGNIZE
THEMSELVES AS THE ARCHITECTS OF THEIR
OWN [IDENTITY AND
INTELLIGENCE].

PAULO FREIRE
BRAZILIAN EDUCATOR, HUMAN RIGHTS
ACTIVIST & CRITICAL PEDAGOGY THEORIST

First to understand Freire's tenants, educators are called to understand the social-political reality in which they operate. Therefore, education and educators, including parents and teachers, can be unconscious or conscious political agents. We must become more conscious of the values, desires, beliefs, images we leave with children. This cannot be stressed enough. This is not just as individual parents but as a collective ethnic community. Our children are brilliant. As we know they do not practice what we preach. They ratchet up our practices. They internalize what we do and fail to do. We can probably all share stories

So, rather than list how African Americans culture differs from middle-class European American culture and how we need to train African American children to conform let's take a different more productive approach. Although, some adaption to the school culture is needed, the need to focus on helping African American children recognize their own unique brilliance and interest is needed first and foremost.

SELF-CONFIDENCE IS A PREREQUISITE FOR ALL LEARNING, AND THAT SELF-CONFIDENCE DEVELOPS FROM GRAPPLING WITH COMPLEX [CONCERNS PLUS] MATERIAL AND FROM UNDERSTANDING THE POLITICS OF KNOWLEDGE.

MARILYN FRANKENSTEIN
MATHEMATICS TEACHER SPECIALIZING IN SOCIAL JUSTICE PEDAGOGY

We must help students see and care about mathematics as vehicle for getting things done in their own world and goals. This often starts with an appreciation of their brilliance as African Americans not despite their race followed by an appreciation of their world.

Next we must help them to develop the protective factors and confidence needed to navigate in a school culture that differs from their home/community life.

CONFIDENCE
DETERMINATION
UNITY
+ DESTRUCTION OF
MYTHS
—————————————
EMPOWERMENT

Let's take a look at some of the major myths related to mathematics that many African America adults and children cannot help but fall prey to given the way that mathematics is talked about, used, and taught at home and in school. We will then practice exercises which parents, tutors, mentors, teachers, and others can do with students young and old. As the real focus is on strategies and principles rather than content, please consider how you can adapt exercises.

**DEBUNK ROADBLOCK/MYTH #1: MATHEMATICS IS CULTURALLY NEUTRAL**

Example mathematics word problem given by teacher to six 3rd graders. Where are the cultural cues?

*It is Thanksgiving, Katie's mother has brought 2 pumpkin pies to dinner and John's mother has brought 3 pumpkin pies to dinner. What is the total number of pumpkin pies?*

Large Group Discussion: Why might African American 3rd graders who can do mathematics well struggle with this problem

Why might African American 3rd graders, who can do mathematics well, struggle with this problem or not even be interested in solving it?

Contrary to popular belief, especially among teachers plus professionals, mathematics and science are not ever culturally or politically neutral. Mathematics is used is by groups to define and control what problems are considered important for solving in order to control property/resources and power. In short, for mathematics to be viewed as important and relevant, an individual and groups must have understanding of how mathematics can be a powerful tool in solving problems that really matter.

Food for Thought Questions:

What are problems children in our community would care about solving, topics they would care about knowing more about?

What are problems that really matter to the African American community?

Please write down ideas. We will use later in exercises.

**DEBUNK ROADBLOCK/MYTH #2:**
**MOST MATHEMATICS TAUGHT**
**IN SCHOOL IS**
**NOT IMPORTANT IN THE REAL**
**WORLD**

Accounting * Bio Engineering * Business Development * Construction Project Management * Civil Engineering * Computer Engineering * Computer Programming * Computer Security * Economics * Electrical Engineering * Environmental Engineering * Finance * Mathematics * Marketing * Mechanical Engineering * Medicine * Multimedia/Mass Communications * Physical Therapy * Political Science * Science & Technical Writers * Urban Farming

As the world requires more mathematics not less, we must repeatedly show children that mathematics is relevant by our actions. Too many children are setting academic, career and life goals based on a blindness to the socioeconomic realities of the 21st century. Put our time, effort and money into endeavors that use mathematics and demonstrate to them its practical and professional uses.

Have to also impress upon children and the community, even if the mathematics taught in school is not relevant in the real world, it is relevant in advancing in education. If shut out of the education game, they shut themselves out of social and economic advancement. This includes advancement for their family, community and future children.

Example Homework:
Divide up jobs listed on slide among every able bodied person in the house. Researches professionals in that area do and average salary. Even if not interested in the particular profession, having a better idea of what skills are and will be in demand is important for all of us.

Food for Thought Questions:
How do we role model instead of just tell our children that is mathematics is used all around us?
How do we sustain children's' interest in mathematics given the way it is taught in schools?
How do we as a community invest in making mathematics savvy and STEM, history, role models and mentors more visible in our community?

Please write down ideas. We will use later in exercises.

$$e = \frac{1}{0!} + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} \dots$$

e

The grade between D and F;
A grade you don't want
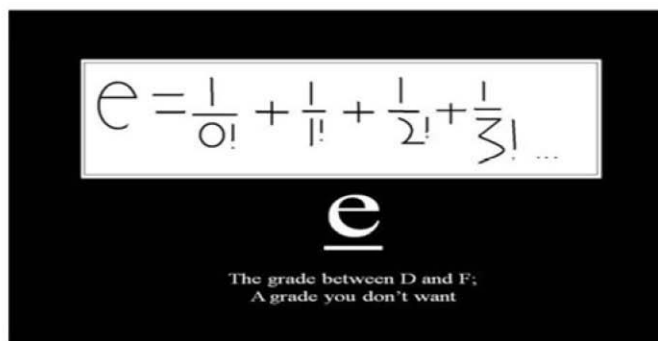
# DEBUNK ROADBLOCK/MYTH #3: MATHEMATICS IS ABOUT NUMBERS, ARITHMETIC + FORMULAS/RULES

Mathematics does not begin with numbers, arithmetic, rules, and/or formulas which are then studied and repeatedly used. Mathematics begins with a group of people or a person saying there is something interesting we/I need to understand, explore and/or CONTROL. We/I then through many experiments, guessing, and working with other people, see if there is a pattern which we/I can turn into a rule that can be used to help predict and explain a certain outcome.

Food for Thought Questions:
What are some interesting topics children in our community would care about understanding, exploring, and/or controlling?

Please write down ideas. We will use later in exercises.

# DEBUNK ROADBLOCK/MYTH #4: PEOPLE WHO ARE GOOD AT MATHEMATICS ARE NATURALLY GOOD AT IT.

THE ANSWER IS

NO

Just like people spend endless hours practicing sports, video games and singing, even people with some natural talents have to practice, practice, practice mathematics. They go to tutoring even if not having problems for extra work; they study with friends; they ask questions and for help early; on their own they do more than was assigned; and they do extra work assigned by teachers, parent, and/or tutors.

Please do not leave it just up to teachers to reinforce the need for homework and practice.

**DEBUNK ROADBLOCK/MYTH #5:**

*SINCE I DO NOT UNDERSTAND MY CHILD'S MATHEMATICS HOMEWORK I CANNOT REALLY OFFER TOO MUCH HELP.*

**Homework Review Questions**
1. When do you have to use the type of math operation, rule, equation...?
2. What does _____ mean?
3. How do you know the problem is correct?
4. Show me how the problem could be expressed/written in a different way.
5. Write a brief summary of how this skill (i.e., math operation, type of equation, principle) might be used in the real world (e.g., can be more specific – in a video game).

There should always be mathematics homework for in the final analysis two major factors make for success: internalized high confidence-expectations based on expectations of parents, extended family and teachers as well as time-on-task (i.e., practice). Ask teacher for practice assignments and/or find/create own. If at mastery level, move ahead in book.

Dr. Ben Carson shares that his mother was functionally illiterate but had her boys do book reports that she pretended to read. She asked questions like – What does this mean? His story goes to illustrate a critical point 21st century mathematics teachers cannot stress enough: To promote engagement, adults must role model high expectations in practice by prompting children to develop critical thinking/reasoning skills rather than just rote memorization.

In addition to using every avenue possible to obtain tutoring for a child, start with the homework review questions listed on the slide. If you cannot, please find someone who can show daily and detailed engagement in homework. Asking homework review questions also role models how to ask questions and helps gauge comprehension skills. Gently introduce questions. Not all questions have to be asked for every assignment.

In proactive mode, even if information posted online, meet with teacher to discuss what content/concepts will be taught that year, term, etc. Ask for suggestions, supplemental exercises, etc.
We will get to this on Day 3. But parents need a systematic way to obtain books and curriculum.

Large Group Discussion:
What homework review questions would you alter, add or delete?

## TED TALK VIDEO:
## MATH CLASS NEEDS A
## MAKEOVER - DAN MEYER

www.youtube.com/watch?v=qocAoN4jNwc

Before completing an exercise that demonstrates how to address all of the myths we went over strengthen the academic skills which sometimes go underdeveloped by African American students because of cultural differences in communication, learning, and behavior styles, let us take a look at a key approach for changing how we teach mathematics. This will approach will be used in the exercise. Bear in mind: the teaching of mathematics must be done in and outside of school.

Video is about 12 minutes.
www.youtube.com/watch?v=qocAoN4jNwc

**HARAMBEE CIRCLE EXERCISE: WORKSHEET**
**MAKING MATHEMATICS MEANINGFUL AND CULTURALLY RELEVANT**

Your are part owner of mathematics modeling and simulation company. A group of hip-hop artists has approached your company regarding creating a formula to be included in software for predicting whether or not a song will be a hit song. Working with your partners you create the formula which can position your company to earn millions in royalties each year. Create a type written report or presentation.

- What is the name of your company?

- Who are the hip-hop artists? (Minimum of four)

- What questions would you ask the hip-hop artists, musicians, music industry business executives, or anyone else?

- Using the Internet and other documented sources determine what factors (i.e., variables) go into determining if a hip-hop song is a hit. What variables would your team include in the formula? You must include in your documentation a description of each variable and why it is important. Document all sources in your list of references. (Minimum of 10 variables.)

- What is the formula?

- What variables should be doubled, tripled, cut in half, subtracted, etc.? (Extra $$$ will be awarded for doing so. However, you must justify your decisions in your documentation).

Notes: Each team member must be able to demonstrate verbally and in writing that they have done their fair share of work. You are free to ask the teacher questions.

**EXERCISE**

Exercise showcases strategies for helping African American students strengthen the academic skills needed to navigate between home/community and school cultures.

- Understanding why mathematics is important
- Reading comprehension and vocabulary
- Critical thinking and mathematical reasoning
- Explaining reasoning verbally and in writing in standard English
- Asking academic questions
- Asking for help early
- Working with peers on academic tasks

---

Harambee Circle Exercise: Making Mathematics Meaningful and Culturally Relevant

Objectives: Demonstrate the relevancy for mathematics in a manner that uses strategies for engaging African American students. Explore a topic students are interested in and that build on their cultural strengths (i.e., music, collaboration, creativity, oral communications, nonlinear/big picture orientation, etc.) Demonstrate how to create exercises which help students strengthen the academic skills which can go under developed and assumed by parents and teachers Move to mathematics as art, as exploration rather than "drill and kill"

Time: 90 minutes

Guidelines: Listed on worksheet. Remind group all answers must be justified in writing and sources documented. Even if don't like hip- hop, put yourselves into the shoes of children and young adults. Learn something. Explore their world so can influence it. How do we conscious hip- hop sell? Feel free to ask questions. Feel free to come up for additional supplies.

Facilitator Notes:

Provide each group with laptop(s) and/or tablets.

Have participants complete a formative evaluation for this exercise.

PLEASE COMPLETE A
FORMATIVE EVALUATION.  SEE
FACILITATOR IF YOU DO NOT
HAVE A COPY OF FORM.

**DAY 2 EVALUATION
QUESTIONS, ISSUES, CONCERNS**

Please complete Day 2 Evaluation which should be in your folders. Wave your hand if need a copy.

Facilitator Notes:
Have participants complete a DS1 form. See Day 1 slides.
Collect evaluations.

# PLEASE COMPLETE DAY 2 EVALUATION. SEE FACILITATOR IF YOU DO NOT HAVE A COPY OF FORM.

**THANK YOU**

for your attention.
Please make sure to fill out the evaluation.

Thanks so much for your attention and feedback. Please take a few minutes to fill out an evaluation. Have a safe trip home. Blessings!

Renee Jenkins
faithrenee@netzero.net
301-467-1191

## DAY 3- EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING RESILIENCE STORY: WORKSHOP AGENDA

| Time | Activity |
|---|---|
| 09:00 am | • Registration & Breakfast |
| 10:00 am | • Devotion, Warm-Up Exercise, Q & A, Overview of Objectives |
| 11:00 am | • Harambee Circles Exercise: Share Results of Making Math Meaningful Exercise from Day 2 |
| 12:30 pm | • Tug-of-War: Examining Emotional Roadblocks African American Students Face |
| 01:30 pm | • Working Lunch Break |
| 02:00 pm | • Examining Strategies for Overcoming Emotional Roadblocks African American Students Face |
| 02:30 pm | • Harambee Circle Exercise: Creating a Community Action Plan |
| 03:00 pm | • Q & A and Wrap Up |

Day 3 Agenda.

Welcome back to Day 3 in a series of three workshops designed to help African American parents and community explore strategies for empowering children and young adults in their quest to advance in the critical subject of mathematics.

Exercise: Introductions/Warm-up Invitation to greet each other in normal fashion – hugs shakes high fives etc.

Invitation to greet each other in normal fashion hugs, shakes, high fives, etc.
Yoga Instruction –lead by yoga instructor Breathing exercises and stress relief (i.e., self-affirmation) Connection between African history and yoga
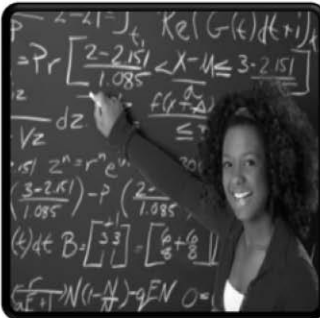
DAY 3: CONSTRUCTING &
ROLE MODELING NEW
SELF-EMPOWERING COURAGE & RESILIENCE STORIES

Our Cultural Racial Identity Story

Our Academic Skills Story

Our Courage & Resilience Story

Just a brief recap before we journey into Day 3's agenda. Although there is no easy recipe for academic success, research into African Americans who do well socially, economically and academically, including mastering higher levels of mathematics, reveals common internalized stories. Starting early, we must help children learn and, when warranted correct, the stories they believe about their and our intellectual place in the world as African Americans, why and how to learn and improve academically, and bounce back from failure. However, before leading children to correct stories, we as adults must correct our own stories

Large Group Discussion:
What is your resilience story?
What do you wish you could change about your academic story?

DAY 3 - EMPOWERING STUDENTS TO DEVELOP AN EMPOWERING RESILIENCE STORY: WORKSHOP OBJECTIVES

Examine emotional roadblocks African American students face in navigating between African American culture and school culture.

Explore strategies for helping African American students overcome setbacks and failure as they strive to advance in mathematics and society.

Continue the development of family and community academic action plans based on culturally aware intervention strategies.

Day 3: Resilience Skills Story

As focused on in Day 1, regardless of income there are distinct features of the African American culture that plays a large role in how the majority of African Americans view reality, race and their intellectual capabilities. In addition, culture influences how we think, learn, communicate and behave to name a few aspects. Of course, there is wide variability. However, research continues to reveal that in order to help more African American students become successful in school especially in mathematics there are some distinct strategies that are needed to assist them in appreciating their own culture/racial identity and gifts while at the same time mastering academic skills called for by the dominant school culture.

Added to this is the ability to remain resilient in the face of bias, difficulties, mistakes and even failures.

# DAY 3:  CONSTRUCTING &
# ROLE MODELING NEW
# SELF-EMPOWERING COURAGE & RESILIENCE STORIES

What are the adaptive skills African American students  must master in order to overcome bias, disappointments, losses, mistakes,  and failures, especially in mathematics?

What are critical roadblocks that impede African American students  from developing the adaptive skills needed to overcome bias, disappointments, losses, mistakes,  and failures, especially in mathematics?

What types of culturally  aware interventions and programs can parents and the community invest in to assist all students in their socioeconomic and academic  advancement?

Today's exploratory questions.

## HARAMBEE CIRCLE EXERCISE: WORKSHEET
## MAKING MATHEMATICS MEANINGFUL AND CULTURALLY RELEVANT

**EXERCISE**

Your are part owner of mathematics modeling and simulation company. A group of hip-hop artists has approached your company regarding creating a formula to be included in software for predicting whether or not a song will be a hit song. Working with your partners you create the formula which can position your company to earn millions in royalties each year. Create a type written report or presentation.

- What is the name of your company?

- Who are the hip-hop artists? (Minimum of four)

- What questions would you ask the hip-hop artists, musicians, music industry business executives, or anyone else?

- Using the Internet and other documented sources determine what factors (i.e., variables) go into determining if a hip-hop song is a hit. What variables would your team include in the formula? You must include in your documentation a description of each variable and why it is important. Document all sources in your list of references. (Minimum of 10 variables.)

- What is the formula?

- What variables should be doubled, tripled, cut in half, subtracted, etc.? (Extra $$$ will be awarded for doing so. However, you must justify your decisions in your documentation).

Notes: Each team member must be able to demonstrate verbally and in writing that they have done their fair share of work. You are free to ask the teacher questions.

Exercise showcases strategies for helping African American students strengthen the academic skills needed to navigate between home/community and school cultures.

- Understanding why mathematics is important
- Reading comprehension and vocabulary
- Critical thinking and mathematical reasoning
- Explaining reasoning verbally and in writing
- in standard English
- Asking academic questions
- Asking for help early
- Working with peers on academic tasks

Harambee Circle Exercise: Making Mathematics Meaningful and Culturally Relevant

Objectives:
Demonstrate the relevancy for mathematics in a manner that uses strategies for engaging African American students.
Explore a topic students are interested in and that build on their cultural strengths (i.e., music, collaboration, creativity, oral communications, nonlinear/big picture orientation, etc.)
Demonstrate how to create exercises which help students strengthen the academic skills which can go under developed and assumed by parents and teachers
Move to mathematics as art, as exploration rather than "drill and kill"

Time: 60-90 minutes (Circles 30 minutes; Presentations 30 minutes) Aim to keep to 60 minutes.

Guidelines:
Listed on worksheet.

Remind group all answers must be justified in writing and sources documented.
Even if don't like hip-hop, put yourselves into the shoes of children and young adults.
Learn something. Explore their world so can influence it. How do we conscious hip-hop sell?
Feel free to ask questions.
Feel free to come up for additional supplies.

****Day 3 –  After 30-60 minutes of preparation time, groups presents their results.
****Follow-up discussion:
What are your thoughts about the approach to mathematics used?
What are other areas of study, more serious problems relevant to the African American community, formulas could be developed for?
Please complete formative evaluation.

Facilitator Notes:
Provide each group with laptop(s) and/or tablets.
Ask if each group to provide an electronic copy of their report/presentation.
Copy all group reports/presentations to facilitator/main computer
Show groups how to use projection system
Have participants complete a formative evaluation for this exercise.

# PLEASE COMPLETE A FORMATIVE EVALUATION. SEE FACILITATOR IF YOU DO NOT HAVE A COPY OF FORM.

Facilitator's Notes: Remind participants to note name of activity and date.

Related to African Americans, all of the roadblocks listed are supported by research. Bear in mind, we are not saying all African Americans or all the time. However, as myths relate to academic endeavors, especially in mathematics, let us suppose on average these myths apply.

Let's discuss each myth as we go along.

New Harambee Circle formation strategy
New Harambee Circle formation strategy: For each myth mix it up by running to find a new table and group of people to converse with. If unable to move, others will come to you.

Materials: Distribute magic ands and journals.

Discussion Questions:
To the extent, to which you are comfortable, briefly describe an example of a mistake/failure you had to come to terms with and how you emotionally did so.
How do we counter these myths?
How might we help children and each other correct misconceptions about failure that impede progress.

Please take notes so we can record ideas and suggestions in order to make available to broader community.

DEBUNK ROADBLOCK /MYTH #2: ASKING FOR HELP IS A WEAKNESS.

Many of us can probably acknowledge that we ourselves role model this misconception.
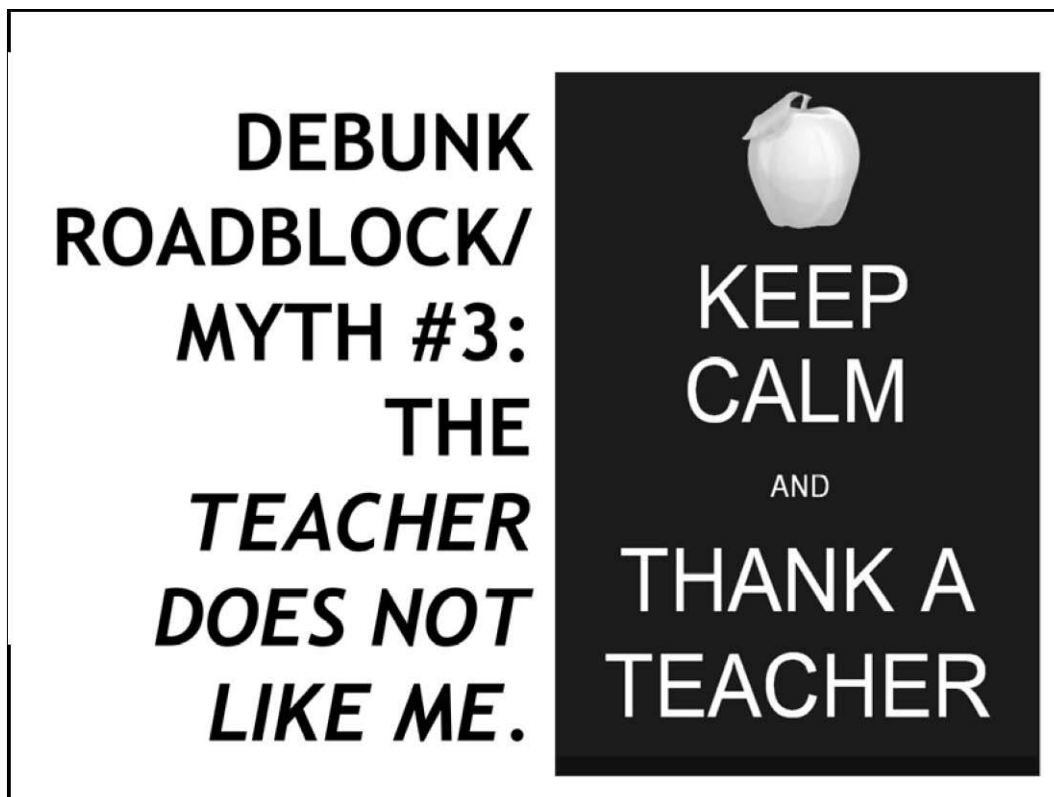
Switch Harambee Circles

Discussion Questions:
How do we correct?
How do we come to see vulnerability, needing others help, as a strength?
How do we accept rejection (no) and still keep asking for help?
How do we accept rejection (no) and still keep asking for help?

Yes, it is ideal to have all teachers like all students in the manner they want to be liked and teach all children in the over 10 different learning styles they exhibit. However, this is where there is a serious disconnect between African American students and European Americans teachers plus to some degree middle-class African American teachers. We must consider the reality of the demands placed on teachers as well as the cultural and class differences in how people relate. Additionally, regardless of how much diversity training European American teachers have, many simply have very limited exposure to African Americans in the real world and are left like all of us to internalize the negative stereotypical images they see in the media. Thus, if public schools are continued to be used for educating African American children more pragmatic/realistic expectations for the role of teachers have to be adopted and relayed to children. Some of the onus is on the community and parents to help build better relationships between parents and schools/teachers.

Switch Harambee Circles

Discussion Questions: How might we as a community, parents and students develop better rapport with European American teachers? How do we work with people who do not necessarily like us?

**DEBUNK ROADBLOCK/ MYTH #4: I NEED MY TEACHER(S) & PARENTS TO ALWAYS MOTIVATE ME & RECOGNIZE MY HARD WORK**

Another reality is that many times and for many reasons we may not get the recognition and positive reinforcement we deserve or think we deserve. Conversely, we may not give the kind of recognition others deserve. We must help African American students move from being extrinsically to intrinsically motivated. What in academic lingo is referred to as self-efficacy and agency.

Switch Harambee Circles

Discussion Questions: How do we as a community and individuals affirm ourselves, respect our own opinions? How do we stop being so dependent on external rewards for motivation?

Materials: Distribute magic wands and journals.

On average African Americans spend more time than any other group in media land with children spending anywhere from 6-11 hours in media entertainment land (TV, video games, music, social media, etc.). Add in sports playing and/or watching, we have a national epidemic. No one can argue arts and sports are fantastic avenues for teaching positive skills. It is a matter of questioning the amount of emotion, time, effort, and money invested while so little goes into academic advancement and pursuit of academic scholarships? Since we are not here to preach, let us discuss mutual solutions.

On the sports as an avenue to college scholarships, please watch the documentary, "Schooled". It is available on Amazon Instant Video.

Switch Harambee Circles

Discussion Questions: Why do we spend so much time, money and effort on entertainment and sports? How do we place entertainment and sports in their proper perspective? How do we wean children and, if necessary, ourselves off of absorption in TV, social media, video games, etc.?

**DEBUNK ROADBLOCK/ MYTH #6: GRADES REPRESENT INTELLIGENCE & WORTH**

**DANGER**

Especially, in the arenas of mathematics and science, resiliency and tenacity play critical roles. We can help students improve these muscles. Many students need much more daily support as they age. This kind of support system cannot be left to the schools. A home-community support system is needed as evidenced in other communities – European American, Jewish, Asian, Indian, etc.

Switch Harambee Circles

Discussion Questions: Have we become obsessed with grades? What if adults rewarded questions, risk taking, a willingness and ability to learn from failure plus relinquish comfort zones? How do we encourage more students to stick with mathematics even when it is not coming g "easy"?

## TUG-OF-WAR EXERCISE:  ESCAPING MYTHS THAT INTERFERE WITH RESILIENCE

### Some Critical Myths

☐  Failure is final.
☐  Asking for help is a weakness.
☐  The teacher does not like me.
☐  I need my teacher(s) and parents to always motivate me and recognize my hard work
☐  The amount of time, effort and money spent on sports as well as entertainment is normal/necessary (aka "I need my chill time!").
☐  Grades represent intelligence and worth.

**EXERCISE**

Guidelines:
For each myth, write on two (2) post it notes: one (1) reason for believing the myth and one (1) reason for changing.
When announced by the facilitator, go to the tug-of-war poster for that myth and place your post your reasons.
You must make sure that you are back In our seat by the time designated by the facilitator.
You cannot post to a tug-of-war line early or late.
There are prizes for each round.  However, to receive the whole group must return to their seats by the start of the next round.
Everyone will be given a chance to review and discuss each tug-of-war line when we are done posting.

Tug-of-War Exercise:

Unfortunately, often what undermines success are the assumptions, values and myths we are taught to unconsciously buy into. Here are some myths commonly encountered in the African American community that interfere with staying the a course in tough academic subjects like mathematics. The purpose of this exercise is to examine these myths and discuss strategies for debunking these myths. Additionally, we will use some teaching methods that demonstrate the use of African American learning styles (i.e., collaboration, movement, visualization, oral communications, thinking out loud, music, etc.) and how to strengthen resiliency by learning to discuss emotions, problems, mistakes and failures and ways to honor and overcome.

Objectives:
Examine myths that undermine resilience and discuss solutions.
Demonstrate how to role model the critical skills of discussing failures, mistakes, emotions and how to overcome with others
Demonstrate how to role model recognizing everyone struggles and needs helps.
Capitalize on African American learning styles including collaboration, creativity, oral communications, music, movement, etc.
Practice cooperation.
Release some physical energy by moving/exercising.

Time:  60 minutes

Guidelines and Facilitator Notes:
For each myth, ask participants to write on two (2) post it notes: one (1) reason for believing the myth and one (1) reason for changing.
Put up slide for each, myth and play a song for that myth.
Ask participants to put their post it notes on just the tug-of-war line for that myth.
Note – We will give you time to take a look at each tug-of-war line; so, please avoid huddling and return to seats. Everyone has to return to seats by the time the next myth and song starts in (TBD) minutes. Let's pretend we are children. We only get candy and treats if the whole group gets it done on time□
You cannot post to a tug-of-war line early or late.
When announced by the facilitator, go to the tug-of-war poster for that myth and place your post notes, your two (2) reasons.

Have all tables review tug-of-war lines. Ask that they circulate. Feel free to photograph and takes notes. But, we will email notes and post pictures to the social media…sites for training.

Announce – We will review and discuss each myth and strategies for helping children and adults work through the myths next.

# ASSUME STRENGTH

Parents and Concerned Adults:
Let's flip the script and reward a willingness to
ask serious questions and learn from mistakes
as well as failures.

There is again no magic solution but we must discuss and institute some practices that help strengthen students emotional and intellectual muscles.

In the final analysis and research supports, we adults must match rhetoric/words with our actions and what we reward.

Food for Thought:
What strategic risks are we ourselves taking/role modeling?
What intellectual challenges have we taken on?

**PRACTICAL WAYS TO APPLY TENANTS OF EDUCATION AS LIBERATION & HELP AFRICAN AMERICAN STUDENTS DEVELOP POSITIVE SENSE OF CULTURAL/RACIAL IDENTITY**

EXERCISE

A. Accept & teach that there are no quick and simple answers
B. Articulate a community & family vision of education based on cultural values – spirituality, social justice, communal learning, service, etc.
C. Role model how to discuss & deal with internal & external bias by becoming conscious of own biases
D. Demonstrate how to become creators versus passive consumers of media, information, science & technology
E. Facilitate the development of culturally relevant dialogue & curriculum
F. Provide and connect learners with mentors, tutors & academic role models who look like them (must be ongoing)
G. Build exposure/confidence with hands-on STEM activities
H. Do your part to sponsor ongoing student, parent, family, community and teacher cultural + academic enrichment activities
I. Treat education as a partnership (i.e., parents, community members, & educators all must play a ongoing proactive role)

Harambee Circle Exercise: Create Community Action Plans – Our Hopes for Our Children

Let us revisit this list of some of the tenants of education as liberation which are useful for educating African American students in mathematics. During this training we sought to demonstrate many of these tenants in action. We now invite you to join us in drafting an academic action plan for the community. The same can/should be done for your family, organization, etc. We will send you a copy via email of the collective draft plan for your review. We hope you will help with implementation of initiatives outlined in the plan.

Objectives:
Practice articulating a shared vision.
Consider ways to leverage collective resources to actively promote creating a community climate of excellence in academics and mathematics.
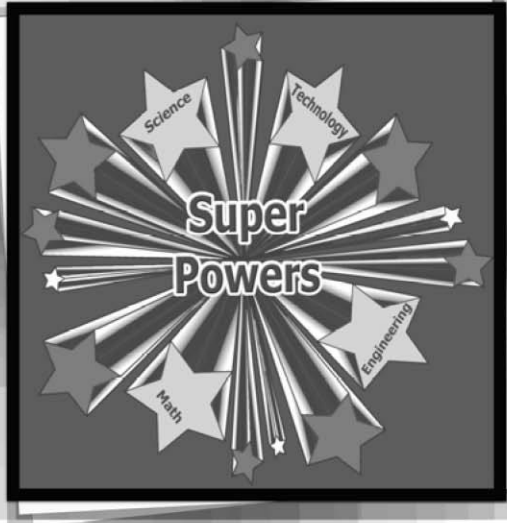
Time:  60 minutes

Guidelines:
Consider one of the tenants listed on the slide. What is activity you would like to see conducted? Share any thoughts and/or ideas with your circle and larger group.

Materials: Index cards

Facilitator's Notes:
Distribute blank index cards
Make sure to collect completed cards.

**SUCCESSFUL ACADEMIC INTERVENTIONS: NO SILVER BULLET ANSWER BUT A COMMON DENOMINATOR**

Help African Americans connect to more empowering images of themselves by seeing selves as :

- Capable scholars
- Responsible to and for serving a higher cultural/communal purpose
- Able to master critical subjects & skills
- Able to overcome failure & roadblocks

In summary, there is no one magic solution to the complex social-political-cultural problems faced by African Americans in their quest for academic and socioeconomic equality. However, in the quest to ensure that the doors of opportunity and positive racial identity development stay open to these students, adults in all spheres can empower students to empower themselves.

THANK YOU for your attention.
Please make sure to fill out the evaluation.

We have come to the end of our journey. On behalf of the facilitation team, we thank you for your patience, honesty and effort. If we can be of assistance, please contact us. Have a safe trip home. Blessings!

# DAY 3 EVALUATION
## QUESTIONS, ISSUES, CONCERNS

Please complete Day 3 Evaluation which should be in your folders. Wave your hand if need a copy.

Facilitator Notes:
Have participants complete a DS1 form. See Day 1 slides.
Collect evaluations.

# PLEASE COMPLETE DAY 3 EVALUATION. SEE FACILITATOR IF YOU DO NOT HAVE A COPY OF FORM.

Renee Jenkins
faithrenee@netzero.net
301-467-1191

# PICTURE REFERENCES

*Any pictures not listed courtesy of Microsoft 2007 Clipart*

African American Grant. (n.d.). College Grant Guide: Find Student Grant Programs Online. Retrieved July 1, 2015,

from http://www.collegegrants.org/eyes-on-the-college-prize-grants-for-african-american-students.html

Eldredge-Stark, M. (n.d.). Math-in-CTE - NSERVE. Retrieved July 7, 2015, from

https://sites.google.com/a/maine207.org/nservenew/math-in-cte

Project Exploration Blog » 2010 » August. (n.d.). Project Exploration - Changing The Face of Science. Retrieved March

18, 2011, from http://www.projectexploration.org/blog/?m=201008

School Profile. (n.d.). Retrieved July 7, 2015, from http://mann.spps.org/6070d1b2-ea0e-4274-b492-fcc40c015330

Scott, T. (2014, November 13). Report: Black Male Students In Boston Dumped Into Special Ed Classes at

Disproportionately High Rates - Atlanta Blackstar. Retrieved July 7, 2015, from

http://atlantablackstar.com/2014/11/13/black-male-students-boston-dumped-special-education-classes/

This Weeks Inspired Goddess! | Black Women, Black Girls, Empowerment Resource Journal - TheNegroQueen.com.

(2011, March 9). Black Women, Black Girls, Empowerment Resource Journal - TheNegroQueen.com. Retrieved

March 18, 2011, from http://www.thenegroqueen.com/2011/03/this-weeks-inspired-goddess-7/

# PICTURE REFERENCES

*Any pictures not listed courtesy of Microsoft 2007 Clipart.*

Aaron Schock. (n.d.). Retrieved July 7, 2015, from https://en.wikipedia.org/wiki/Aaron_Schock

Teens' View of Society's Top Contributors . (n.d.). *EurekAlert! - Science News*. Retrieved March 13, 2011, from

http://www.eurekalert.org/multimedia/pub/19802.php?from=153106

Chute, E., & Post-Gazette, P. (n.d.). Lack of diversity part of equation in STEM fields. *Post-Gazette.com*.

Retrieved March 13, 2011, from http://www.post-gazette.com/pg/09041/947952-298.stm

News from the Center for Educational Improvement. (n.d.).. CEI. Retrieved July, 1, 2013, from

http://archive.constantcontact.com/fs126/1103736720061/archive/1116999892000.html /

What do math and stats graduates do?. (n.d.). *Homepage*. Retrieved March 13, 2011, from

http://www.mathscareers.org.uk/viewItem.cfm?cit_id=382725

Gender Socialization and Its Effects on American Girls. (n.d.). HubPages. Retrieved March 17, 2011, from

http://hubpages.com/hub/Gender-Socialization-and-Its-Effects-on-American-Girls

# REFERENCES

ACT, Inc. (2013). *The condition of college & career readiness 2013 African American students*. Iowa City, IA.

Akbar, N. (1985). *Community of self* (Rev. ed.). Tallahassee, Fla.: Mind Productions.

Dignity, H. (n.d.). S.W.A.G(Something *We Africans Got) by Hodignity*. Retrieved July 2, 2015, from
   http://allpoetry.com/poem/12060361-S.W.A.G-Something-We-Africans-Got--by-Hodignity

Fact Sheet: Engineering Degrees in the United States NACME Research & Policy Brief. (2010).  Vol. 1 No. 2.  Retrieved from
   http://www.nacme.org/user/docs/RBv1no2.pdf.

Freire, P. (1998). *Pedagogy of freedom: ethics, democracy, and civic courage*. Lanham: Rowman & Littlefield Publishers.

Freire, P. (2000). *Pedagogy of the oppressed* (30th anniversary ed.). New York: Continuum.

Girlstart - Empowering Girls in Math, Science and Technology. (n.d.). Girlstart - Empowering Girls in Math, Science and
   Technology. Retrieved February 8, 2011, from http://www.girlstart.org/?gclid=CKmj-PK_-KYCFYnc4AodEl6NFw

Hill, C., Corbett, C., & Rose, A. (2010). Why so few? . Washington, D.C.: AAUW.

Home | Science Education. (n.d.). Home | Science Education. Retrieved February 8, 2011, from http://www.scienceeducation.gov/

hooks, b. (1994). Teaching to transgress: education as the practice of freedom. New York: Routledge.

National Science Foundation, Division of Science Resources Statistics. 2011. Women, Minorities, and Persons with Disabilities in
   Science and Engineering: 2011. Special Report NSF 11-309. Arlington, VA. Retrieved from
   http://www.nsf.gov/statistics/wmpd/.

Latest Books | Dr. Molefi Kete Asante. (n.d.). Latest Books | Dr. Molefi Kete Asante. Retrieved February 8, 2011, from
   http://www.asante.net/

# REFERENCES

Minorities Excluded from America's High-Tech Surge| Science & Technology Education, STEM & TIMSS | Tech News Daily. (n.d.). TechNewsDaily - Where Technology Meets Daily Life. Retrieved February 8, 2011, from http://www.technewsdaily.com/minorities-excluded-from-americas-high-tech-surge-1599/

News:  Graduation Gaps for Science Majors - Inside Higher Ed. (2010, February 17). *Home - Inside Higher Ed*. Retrieved March 6, 2011, from http://www.insidehighered.com/news/2010/02/17/stem

The Condition of College & Career Readiness 2010 | College Readiness Benchmarks by Subject | ACT. (2010, January 1). ACT | Helping People Achieve Education and Workplace Success. Retrieved March 18, 2011, from http://www.act.org/research/policymakers

The Official Kwanzaa Web Site - The Founder's Message 2000. (n.d.). Untitled Document. Retrieved February 8, 2011, from http://www.officialkwanzaawebsite.org/NguzoSaba.shtml

Walker, Kandi L. (2002, March 22). Feminist pedagogy: identifying basic principles. (The scholarship of teaching and learning) The Free Library. (2002). Retrieved February 08, 2011 from http://www.thefreelibrary.com/Feminist pedagogy: identifying basic principles. (The scholarship of...-a085916959

Welcome to Change the Equation. (n.d.). Welcome to Change the Equation. Retrieved February 8, 2011, from http://www.changetheequation.org/

Woodson, C. G. (2009). *The mis-education of the Negro: a black history classic of African-American literature*. S.l.: ReadaClassic.com.

# Appendix B: Request to Distribute Recruitment Flyer Letter

7 September 2014

Dear [Community Leader],

As a part of my doctoral studies at Walden University, I am conducting a research study is entitled: *A Case Study of an African American Community's Perceptions of Problems in Mathematics Education*. Given that mathematics now serves as a critical gatekeeper to academic, social and economic advancement, the purpose of this study is to document the voices, opinions and ideas of members of the African American community regarding how the community itself might coalesce its resources in order to lead in addressing problems African American students in grade school through college face in becoming successful plus advanced learners of mathematics. As a community leader, your help in recruiting volunteers to participate in the study would be much appreciated. I have enclosed copies of a recruitment flyer for dissemination. Please feel free to make additional copies.

It is my hope that this research study will document the common body of knowledge needed locally by parents, educators, school administrators and other community leaders to improve educational services and, thereby, strengthen student achievement in mathematics for diverse populations. If you and/or other potential participants have any questions, please feel free to contact me at 301-467-1191 or renee.jenkins2@waldenu.edu.

Sincerely,

Renee Jenkins
Doctoral Student
Higher Education and Adult Learning
Walden University

Appendix C: Participant Recruitment Flyer

**SEEKING!**
Participants for
African American
Community Research Study

Given that mathematics now serves as a critical gatekeeper to academic, social and economic advancement, the purpose of this research study is to document the voices, opinions and ideas of members of the African American community regarding how the community itself might coalesce its resources in order to lead in addressing problems African American students commonly face from grade school through college in becoming *successful* as well as *advanced* learners of mathematics.

The researcher is seeking 10 participants. You are invited to participate in this study if you:

- Are or have been a recent African American resident of Calvert County
- Have recent active membership in one of more educational, religious and/or civic organizations (i.e., African American church, National Association for the Advancement of Colored People, Concerned Black Men, Parent and Teacher Association, etc.)
- Fit into one or more of the following categories:
  - Are or have been employed as an STEM (science, technology, engineering and/or mathematics/finance) professional
  - Are or have been employed as an educator
  - Are a parent/guardian of African American student(s) enrolled in any Calvert County school or college

Participants will participate in an individual face-to-face audio-recorded interview lasting 1-1.5 hours. Each participant will also have the opportunity to review a draft abstract of research findings in order to verify their interview information. In total, it is estimated that all activities will take 2.5 hours.

EDUCATORS, PASTORS, & OTHER COMMUNITY LEADERS, YOUR ASSISTANCE IN LETTING MEMBERS KNOW ABOUT THE STUDY WOULD BE APPRECIATED. PLEASE DISTRIBUTE & POST COPIES OF THIS FLYER. POTENTIAL PARTICIPANTS CAN CONTACT RESEARCHER FOR ADDITIONAL INFO.

To participate or for more information, please contact or text message Renee Jenkins at:
(c) 301-467-1191
renee.jenkins2@waldenu.edu

Appendix D: Participant Invitation Letter

Tuesday, January 26, 2016


Dear Potential Research Study Participant,

I am a Walden University student pursuing an EdD in Higher Education and Adult Learning. My research study is entitled: *A Case Study of an African American Community's Perceptions of Problems in Mathematics Education*. Given that mathematics now serves as a critical gatekeeper to academic, social and economic advancement, the purpose of this study is to document the voices, opinions and ideas of members of the African American community regarding how the community itself might coalesce its resources in order to lead in addressing problems African American students in grade school through community college face in becoming successful plus advanced learners of mathematics. You have been invited to participate in the study because you are a community leader, STEM (science, technology, engineering or mathematics) professional, educator and/or parent who can offer insight into the academic and/or socioeconomic conditions of Southern Maryland's African American community.

Participation in the research study is voluntary and confidential. You will be asked to participate in one interview which will be scheduled at your convenience. All information provided by you will be kept confidential. In this envelope you will find a copy of a consent form which details the interview process. If you wish to participate, please sign the consent form and return it to me in the envelope provided. I will contact you to schedule an interview. No special preparation will be needed. I will take notes and audio record the interview. Please be assured that no personally identifiable information will be included in the published research results.

I thank you for your consideration and, if you elect, for your participation. It is my hope that this research study will document the common body of knowledge needed locally by parents, educators, school administrators and other community leaders to improve educational services and, thereby, strengthen student achievement in mathematics for diverse populations. I will be contacting you by phone and email within the week. If you have any questions, please feel free to contact me at 301-467-1191 or renee.jenkins2@waldenu.edu.

Sincerely,


Renee Jenkins
Doctoral Candidate
Walden University

Appendix E: Interview Guide and Questions

| Interviewer | | | |
|---|---|---|---|
| Date and Time | | Location | |

| Full Name | |
|---|---|
| Address: | |
| Mobile Phone # | Alternative Phone # |
| Email | |
| Educational Level | |
| Role(s) (i.e., parent, educator, community leader, STEM professional, etc.) | |
| Notes | |
| Consent Form Completed & Signed | Yes ☐ No ☐ | Date | |

**Introduction**

Thank you again for agreeing to be interviewed for this research study. Let us take a few minutes to review your signed consent form. At any point, please feel free to ask questions or interject. Here are just a few key interview reminders:

- You will not be identified by name or other identifiable information in any publication of this research
- You will be given an opportunity to meet with me in order to review the completed research and check information you contributed before final publication.
- You may stop the interview at any time or decline to answer any question.
- Please feel free to ask me for clarification at any point.
- Some questions may sound redundant. The seemingly redundant nature of some questions serves to ensure that I have correctly captured participants' views.

*Additionally, I may ask you to explain and/or expand on your answers as we go along*. Your patience is appreciated.

- I will provide you with a copy of your signed consent form as well as my business card before we conclude our meeting today.

## Interview Questions

*Please note:  Based on recommendation of URR, crossed out questions were not asked but were retained for record keeping purposes.*

1) Please tell me a little about your interest in educational and other community endeavors in the local community as well as in the African American community? (Research Question(s) 1-2)

2) Do you have children that have attended or now attend county schools?  If so, which schools?  (R1)

3) What does it mean to be successful in mathematics? (R1)

4) ~~What impact do you believe having mathematically astute African Americans have on any African Americans community? (R1-2)~~

5) Why do you think successful completion of mathematics from grade school through college is important?  (R1-2)

6) What factors do you believe motivate an African American child to do well in mathematics?  In this context, "success" would include the ability to complete calculus, score high in mathematics on standardized exams (i.e., MSA, AP, and SAT exams) and avoid taking remedial math courses in college. (R1)

7) What knowledge about learning plus school do you believe African American children need to be successful in mathematics? (R1)

8) ~~What skills/abilities about learning plus school do you believe African American children need to be successful in mathematics? (R1)~~

9) What attitudes about learning and school do you believe African American children need to be successful in mathematics? (R1)

10) What do you believe is the relationship between ethnicity and academic performance? (R1)

11) As a group, how might African Americans' academic performance in the area of mathematics impact the African American community? (R1)

12) ~~What coping skills do you believe African Americans need to develop in order to be academically successful? (R1)~~

13) In the local county, what factors do you believe would account for their being a significant gap between African American children's scores in mathematics on Maryland State Assessments (MSAs) and the scores of European American and Asian students? (R1)

14) To your knowledge, are there any tutors and/or programs located within a reasonable distance from where you live available to help African American students learn mathematics? If so, please provide names and tell me a little about these individuals and/or programs. (R3)

15) What types of real world math-related topics and activities might engage more African American students in developing a sustained interested in mathematics from grade through high school? (R3)

16) How might parents and other adults help more African American children develop a sustained interest in mathematics from grade through high school? (R2-3)

17) What do you believe are some academic resources and initiatives the African American community itself might develop and make available to help *students* master mathematics? (R3)

18) What do you believe are some academic resources and initiatives the African American community itself could develop and make available to help *parents* to help them help their children master mathematics? (R3)

19) What do you believe is the role of teachers in ensuring African American students are academically successful in mathematics? (R2)

20) ~~What are specific measures you believe teachers can take to ensure African American students are academically successful in mathematics (R2).~~

21) If a child is not doing well in mathematics, what steps do you believe teachers should take to help remedy problems? (R2)

22) What do you see as the limitations school administrators and teachers face in addressing the ongoing problems African American students have in mathematics? (R1-3)

23) What do you believe are some academic resources and initiatives the African American community itself could develop and make available to schools and teachers in an effort to make mathematics more culturally relevant for African American students?  (R3)

24) How might parents and mathematics teachers improve their collaborative working relationships to support student success? (R1-2)

25) What role do you believe ethnicity plays in how children learn and how teachers teach? (R1)

26) ~~What do you believe is the primary role of parents in helping children master academic subjects? (R2)~~

27) What do you believe is the primary role of parents in helping children with mathematics homework? (R2)

28) If a child is not doing well in mathematics, what measures do you believe parents should take to help remedy problems? (R2)

29) ~~What role do you believe the African American community collectively should play in addressing the problems African Americans students experience?  (R2-3)~~

30) What role do you believe the community can play in helping students advance in mathematics in grade school through high school?  Please explain in detail. (R2-3)

31) How might the African American community fund educational initiatives? (R3)

32) What difficulties might parents face in addressing the ongoing problems African American students have in mathematics? (R1-3)

33) Are there any other thoughts you would like to share with me on any of the topics we have discussed? (R1-3)

## Probing Questions

 As a follow-up to the above questions, these questions are to be asked as needed.

1) Could you please explain in more detail?
2) Could you provide me with some examples?
3) Could you please tell me more about….?

Appendix F: Artifact/Document Provided by Participant Review Guide

Artifact/Document Number:_____               Date:_____

Artifact/Document Title:_____

Source Artifact/Document:_____
(Where applicable, please note participant's alias)


Artifact/Document Description:




1. This artifact/document supports the following research question(s):




2. This artifact/document supports the following themes:




3. This is a ___Academic, ___ Community, ___ Parent, ___ STEM Professional
resource.

4. Does this artifact/document contain content:
   a) Which has or can have a ___ direct or ___ indirect impact on mathematics
      instruction?
   b) Which identifies root causes of disparities?
   c) Which clarifies role(s) of participant?
   d) Which identifies resources?


Notes:

Appendix G: Peer Reviewer Consent Form

**PEER REVIEWER CONSENT AND CONFIDENTIALITY AGREEMENT FORM**

You are invited to server as a peer reviewer/consultant for a project entitled *An African American Community's Perceptions of Problems in Mathematics Education*. You are asked to serve as a Peer Reviewer for this project. Please read this form and ask any questions you have before agreeing to be part of the project.

This project is being conducted by a researcher named Renee Jenkins, who is a doctoral student at Walden University. Renee Jenkins is also a Professor at the College of Southern Maryland.

**Background Information:**
Given that mathematics now serves as a critical gatekeeper to academic, social and economic advancement, the purpose of this interview is to document the voices, opinions and ideas of members of the African American community regarding how the community itself might coalesce its resources in order to lead in addressing problems African American students in grade school through community college face in becoming successful plus advanced learners of mathematics.

**Procedures:**
If you agree, you will be asked to review approximately 10 transcripts from taped interviews along with the researcher's analysis of these transcripts. You are asked to play the devil's advocate and challenge the researcher to substantiate any and all research interpretations as well as conclusions.

**Voluntary Nature of the Interview:**
Your participation in this project is voluntary. Therefore, you may leave the project at any time.

**Compensation:**
There is no compensation for participating in this project.

**Confidentiality:**
You agree to keep any information provided to you confidential. This means you will not use any information provided for any purposes outside of this research study.

**Contacts and Questions:**
The researcher's name is Renee Jenkins. The researcher's doctoral chairperson is Dr. Jennifer McLean. You may ask any questions you have now. Or if you have questions later, you may contact the researcher via 301-467-1191 and renee.jenkins2@waldenu.edu or the chairperson at jennifer.mclean@waldenu.edu. If you want to talk privately about

your rights as a participant, you can call Dr. Leilani Endicott. She is the Director of the Research Center at Walden University. Her phone number is 1-612-312-1210.

The researcher will give you a copy of this form to keep.

**Statement of Consent:**

☐ I have read the above information. I have received answers to any questions I have at this time. I am 18 years of age or older, and I consent to participate as a peer reviewer in the project.

| | |
|---|---|
| Printed Name of Peer Reviewer | |
| Peer Reviewer's Phone Number | |
| Peer Reviewer's Email Address | |
| Peer Reviewer's Written or Electronic* Signature | |
| Researcher's Written or Electronic* Signature | |

Electronic signatures are regulated by the Uniform Electronic Transactions Act. Legally, an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically.

## Appendix H: Transcription Service – Rev.com – Confidentiality Agreement

**CLIENT NON-DISCLOSURE AGREEMENT**

This CLIENT NON-DISCLOSURE AGREEMENT, effective as of the date last set forth below (this "Agreement"), between the undersigned actual or potential client ("Client") and **Rev.com, Inc.** ("Rev.com") is made to confirm the understanding and agreement of the parties hereto with respect to certain proprietary information being provided to Rev.com for the purpose of performing translation, transcription, video captions and other document related services (the "Rev.com Services"). In consideration for the mutual agreements contained herein and the other provisions of this Agreement, the parties hereto agree as follows:

### 1. Scope of Confidential Information

**1.1.** "Confidential Information" means, subject to the exceptions set forth in Section 1.2 hereof, any documents or other text supplied by Client to Rev.com for the purpose of performing the Rev.com Services.

**1.2.** Confidential Information does not include information that: (i) was available to Rev.com prior to disclosure of such information by Client and free of any confidentiality obligation in favor of Client known to Rev.com at the time of disclosure; (ii) is made available to Rev.com from a third party not known by Rev.com at the time of such availability to be subject to a confidentiality obligation in favor of Client; (iii) is made available to third parties by Client without restriction on the disclosure of such information; (iv) is or becomes available to the public other than as a result of disclosure by Rev.com prohibited by this Agreement; or (v) is developed independently by Rev.com or Rev.com's directors, officers, members, partners, employees, consultants, contractors, agents, representatives or affiliated entities (collectively, "Associated Persons").

### 2. Use and Disclosure of Confidential Information

**2.1.** Rev.com will keep secret and will not disclose to anyone any of the Confidential Information, other than furnishing the Confidential Information to Associated Persons; provided that such Associated Persons are bound by agreements respecting confidential information. Rev.com will not use any of the Confidential Information for any purpose other than performing the Rev.com Services on Client's behalf. Rev.com will use reasonable care and adequate measures to protect the security of the Confidential Information and to attempt to prevent any Confidential Information from being disclosed or otherwise made available to unauthorized persons or used in violation of the foregoing.

**2.2.** Notwithstanding anything to the contrary herein, Rev.com is free to make, and this Agreement does not restrict, disclosure of any Confidential Information in a judicial, legislative or administrative investigation or proceeding or to a government or other regulatory agency; provided that, if permitted by law, Rev.com provides to Client prior notice of the intended disclosure and permits Client to intervene therein to protect its interests in the Confidential Information, and cooperate and assist Client in seeking to obtain such protection.

### 3. Certain Rights and Limitations

**3.1.** All Confidential Information will remain the property of Client.

**3.2.** This Agreement imposes no obligations on either party to purchase, sell, license, transfer or otherwise transact in any products, services or technology.

### 4. Termination

**4.1.** Upon Client's written request, Rev.com agrees to use good faith efforts to return promptly to Client any Confidential Information that is in writing and in the possession of Rev.com and to certify the return or destruction of all Confidential Information; provided that Rev.com may retain a summary description of Confidential Information for archival purposes.

**4.2.** The rights and obligations of the parties hereto contained in Sections 2 (Use and Disclosure of Confidential Information) (subject to Section 2.1), 3 (Certain Rights and Limitations), 4 (Termination), and 5 (Miscellaneous) will survive the return of any tangible embodiments of Confidential Information and any termination of this Agreement.

### 5. Miscellaneous

**5.1.** Client and Rev.com are independent contractors and will so represent themselves in all regards. Nothing in this Agreement will be construed to make either party the agent or legal representative of the other or to make the parties partners or joint venturers, and neither party may bind the other in any way. This Agreement will be governed by and construed in accordance with the laws of the State of California governing such agreements, without regard to conflicts-of-law principles. The sole and exclusive jurisdiction and venue for any litigation arising out of this Agreement shall be an appropriate federal or state court located in the State of California, and the parties agree not to raise, and waive, any objections or defenses based upon venue or forum non conveniens. This Agreement (together with any

agreement for the Rev.com Services) contains the complete and exclusive agreement of the parties with respect to the subject matter hereof and supersedes all prior agreements and understandings with respect thereto, whether written or oral, express or implied. If any provision of this Agreement is held invalid, illegal or unenforceable by a court of competent jurisdiction, such will not affect any other provision of this Agreement, which will remain in full force and effect. No amendment or alteration of the terms of this Agreement will be effective unless made in writing and executed by both parties hereto. A failure or delay in exercising any right in respect to this Agreement will not be presumed to operate as a waiver, and a single or partial exercise of any right will not be presumed to preclude any subsequent or further exercise of that right or the exercise of any other right. Any modification or waiver of any provision of this Agreement will not be effective unless made in writing. Any such waiver will be effective only in the specific instance and for the purpose given.

**IN WITNESS WHEREOF**, the parties have caused this Agreement to be executed below by their duly authorized signatories.

**CLIENT**

Print Name:_____

By: _____
    Name:
    Title:
    Date:

Address for notices to Client:

_____
_____
_____
_____

**REV.COM, INC.**

_____

By: _Cheryl Brown_____
    Name: Cheryl Brown
    Title: Account Manager
    Date: November 10, 2014

Address for notices to Rev.com, Inc.:

251 Kearny St. Suite 800
San Francisco, CA 94108

Appendix I: Research Questions and Related Interview Questions

Table I1

*Research Question 1: Interview Questions*

| What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students? | |
| --- | --- |
| Question # | Question |
| 1 | Please tell me a little about your interest in educational and other community endeavors in the local community as well as in the African American community? (Research Question(s) 1-2) |
| 2 | Do you have children that have attended or now attend county schools? If so, which schools? (R1) |
| 3 | What does it mean to be successful in mathematics? (R1) |
| 5 | Why do you think successful completion of mathematics from grade school through college is important? (R1-2) |
| 6 | What factors do you believe motivate an African American child to do well in mathematics? In this context, "success" would include the ability to complete calculus, score high in mathematics on standardized exams (i.e., MSA, AP, and SAT exams) and avoid taking remedial math courses in college. (R1) |
| 7 | What knowledge about learning plus school do you believe African American children need to be successful in mathematics? (R1) |
| 9 | What attitudes about learning and school do you believe African American children need to be successful in mathematics? (R1) |
| 10 | What do you believe is the relationship between ethnicity and academic performance? (R1) |
| 11 | As a group, how might African Americans' academic performance in the area of mathematics impact the African American community? (R1) |
| 13 | In the local county, what factors do you believe would account for their being a significant gap between African American children's scores in mathematics on Maryland State Assessments (MSAs) and the scores of European American and Asian students? (R1) |
| 22 | What do you see as the limitations school administrators and teachers face in addressing the ongoing problems African American students have in mathematics? (R1-3) |
| 24 | How might parents and mathematics teachers improve their collaborative working relationships to support student success? (R1-2) |
| 25 | What role do you believe ethnicity plays in how children learn and how teachers teach? (R1) |

*(table continues)*

| | |
|---|---|
| What do parents and leaders in the local African American community believe are the root causes of disparities in mathematics achievement for K-14 students? | |
| Question # | Question |
| 32 | What difficulties might parents face in addressing the ongoing problems African American students have in mathematics? (R1-3) |
| 33 | Are there any other thoughts you would like to share with me on any of the topics we have discussed? (R1-3) |

Table I2

*Research Question 2:  Interview Questions*

| | |
|---|---|
| What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities? | |
| Question # | Question |
| 1 | Please tell me a little about your interest in educational and other community endeavors in the local community as well as in the African American community? (Research Question(s) 1-2) |
| 5 | Why do you think successful completion of mathematics from grade school through college is important?  (R1-2) |
| 16 | How might parents and other adults help more African American children develop a sustained interest in mathematics from grade through high school? (R2-3) |
| 19 | What do you believe is the role of teachers in ensuring African American students are academically successful in mathematics? (R2) |
| 21 | If a child is not doing well in mathematics, what steps do you believe teachers should take to help remedy problems? (R2) |
| 22 | What do you see as the limitations school administrators and teachers face in addressing the ongoing problems African American students have in mathematics? (R1-3) |
| 24 | How might parents and mathematics teachers improve their collaborative working relationships to support student success? (R1-2) |
| 27 | What do you believe is the primary role of parents in helping children with mathematics homework? (R2) |
| 28 | If a child is not doing well in mathematics, what measures do you believe parents should take to help remedy problems? (R2) |
| 30 | What role do you believe the community can play in helping students advance in mathematics in grade school through high school?  Please explain in detail. (R2-3) |

*(table continues)*

| | |
|---|---|
| What role do parents and leaders in the local African American community believe they and other African Americans can play in addressing these disparities? | |
| Question # | Question |
| 32 | What difficulties might parents face in addressing the ongoing problems African American students have in mathematics? (R1-3) |
| 33 | Are there any other thoughts you would like to share with me on any of the topics we have discussed? (R1-3) |

Table I3

*Research Question 3: Interview Questions*

| | |
|---|---|
| What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities? | |
| Question # | Question |
| 14 | To your knowledge, are there any tutors and/or programs located within a reasonable distance from where you live available to help African American students learn mathematics?  If so, please provide names and tell me a little about these individuals and/or programs. (R3) |
| 15 | What types of real world math-related topics and activities might engage more African American students in developing a sustained interested in mathematics from grade through high school? (R3) |
| 16 | How might parents and other adults help more African American children develop a sustained interest in mathematics from grade through high school? (R2-3) |
| 17 |  What do you believe are some academic resources and initiatives the African American community itself might develop and make available to help students master mathematics? (R3) |
| 18 | What do you believe are some academic resources and initiatives the African American community itself could develop and make available to help parents to help them help their children master mathematics? (R3) |
| 22 | What do you see as the limitations school administrators and teachers face in addressing the ongoing problems African American students have in mathematics? (R1-3) |
| 23 | What do you believe are some academic resources and initiatives the African American community itself could develop and make available to schools and teachers in an effort to make mathematics more culturally relevant for African American students?  (R3) |

*(table continues)*

What resources do parents and leaders in the local African American community believe the African American community itself should coalesce and/or develop in order to alleviate these disparities?

| Question # | Question |
|---|---|
| 30 | What role do you believe the community can play in helping students advance in mathematics in grade school through high school? Please explain in detail. (R2-3) |
| 31 | How might the African American community fund educational initiatives? (R3) |
| 32 | What difficulties might parents face in addressing the ongoing problems African American students have in mathematics? (R1-3) |
| 33 | Are there any other thoughts you would like to share with me on any of the topics we have discussed? (R1-3) |