

Learners of Mathematics: High School Students' Perspectives of Culturally Relevant Mathematics Pedagogy

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Abstract Culturally relevant pedagogy (CRP) has been suggested by researchers as one method for improving mathematics education among African-American students, but very little research take into account the students' perspectives of CRP. This case study examines students' perspectives of CRP and the effect that participating in culturally relevant mathematics instruction has on students' attitude and interest toward mathematics. Five students that participated in a culturally relevant mathematics intervention were interviewed. African-American students in the study held positive views of CRP and preferred the method over traditional mathematics instruction. There were six themes developed from the results of the interviews: (1) home-like classrooms; (2) ethic of caring; (3) participation opportunities; (4) technology use; (5) confidence; and (6) motivation. In addition, all students that participated in the study experienced an improved attitude and/or interest toward mathematics.

Keywords Culturally relevant pedagogy · Mathematics · High school · Attitude · Interest

In addition to the complexities associated with learning mathematics, African-American students also face certain challenges that have an impact on their learning. Some of the main challenges cited by African-American students themselves deal with stereotypes. Stereotypes that students talked about include: (1) Black males are more likely to dropout; (2) students with dreads are troublemakers; (3) Blacks are intellectually inferior; (4) only smart people take honors courses; and (5) only smart people can be successful in mathematics (Brand, Glasson, & Green, 2006). One particular stereotype that oftentimes clouds the mathematics classroom is the “White male myth” which states that White boys are naturally skilled at mathematics (Stinson, 2013). Failing to confront these stereotypes have a negative impact on students' learning and participation in mathematics classes (Brand et al., 2006).

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Students also cited challenges of individual institutional racism that exists. This is when “individuals intentionally or unintentionally discriminate against students of color in favor of the incorporation of policies and practices that work to the disadvantage of students of color” (Berry, 2005, p. 55). Behavior can also sometimes be an issue when it comes to African-American males. It is sometimes used to evaluate the intellectual ability of African-American students when oftentimes there are just cultural differences in what is deemed appropriate behavior (Berry, 2005). The African-American students in Brand et al. (2006) stated that they typically had to deal with struggles of negative stereotypical images and negative perceptions which guided their teachers' thoughts and had an effect on them in the classroom. These negative stereotypical images effect students' self-esteem and discourage students from choosing science and mathematics careers (Brand et al., 2006).

As mentioned previously, African-American students face many challenges in education, specifically in the mathematics classroom. It would be impossible to know any of these challenges without hearing the students' perspectives, and there is a lack in literature that voices the perspectives of students. The viewpoint from the students themselves is rarely heard in discussion about school reform. Howard (2002) described the absence of the voices of African-American students as footsteps in the dark because the footsteps are trying to tell us something that we need to hear but do not want to hear. There exists a need for descriptions of African-American students' perceptions of their learning environments, and it is important that researchers include these individuals in their studies and include their voices in the development of solutions to the problems (Freeman, 1997; Howard, 2002). There needs to be a space where students can voice potential solutions for what they believe works best for them (Howard, 2002).

In the small amount of literature that presents the voices of African-American students on effective classrooms, these students have voiced what they believe to be effective teaching strategies in helping them be successful in learning. African-American students in Howard's (2002) study believed that effective teaching practices included: (1) teachers who made their classrooms resemble home through family and community practices, beliefs, and values; (2) teachers that demonstrated culturally connected caring; and (3) teachers that used communication that contributes to an increased level of engagement and achievement in school. In addition, African-American male high school students in Moore's (2002) study stated that effective classrooms allowed them to actively participate in the learning process, work collaboratively in groups, and allowed opportunities for student discourse. Also, students in the study of Liang and Zhou (2009) felt that using integrated technology in mathematics instruction helped them to learn mathematics better because they were more engaged in the lessons through the technology. All of these strategies were cited by the African-American students themselves as effective teaching practices.

In order for teachers to produce competent persons, teachers need intellectual capabilities and the ability to approach moral education from an ethic of caring perspective (Noddings, 1988). An ethic of caring involves acts done out of love and natural inclination and not out of duty (Noddings, 1988). The teacher responds to the needs, wants, and inclinations of the students. Ethic of caring entails modeling, dialogue, practice, and confirmation (Noddings, 1988). Teachers' can model caring in many ways such as encouraging responsible self-affirmation in the students, being concerned about students' academic achievement, and being interested in the development of the fully moral person (Noddings, 1988). Caring teachers also model desirable ways to interact with people (Noddings, 1988). An ethic of caring involves teachers' allowing opportunities for dialogue

between themselves and the students. In order for effective dialogue to take place, the teacher develops a relationship with the student that involves trust. Caring teachers also want their students to demonstrate caring through practice. The teacher promotes practice by encouraging students to support each other and providing opportunities for students to interact with other students in positive and productive ways. Confirmation involves confirming ethical acts committed by the student in order to shape the students' moral beliefs. An ethic of caring is concerned with the relations in which we all must live.

Culturally Relevant Pedagogy

Culturally relevant pedagogy (CRP) is a theory that was developed by Ladson-Billings (1995d) after studying successful teachers of African-American students. The theory was designed from observing the common traits among the successful teachers and the characteristics of the students participating in the teachers' classes. Therefore, CRP entails two facets in which one deals with the students participating in CRP and the other deals with the teacher implementing CRP. CRP produces students that can (1) achieve academically; (2) maintain their cultural integrity; and (3) recognize, analyze, and critique social inequities. CRP helps students to achieve academically by ensuring that a rigorous curriculum is implemented along with the culturally relevant instruction. CRP also helps students to maintain their cultural integrity by helping them realize that they can be themselves and still be successful academically. This is typically done by using aspects of students' culture in the learning process. Recognizing, analyzing, and critiquing social inequities involve including students in discussions and lessons related to social inequalities that exist within society. The three propositions related to the teacher include: (1) the CRP teacher holds positive conceptions of self, their occupation, and others; (2) the CRP teacher maintains positive social relations with all students, parents, and the community; (3) the CRP teacher is passionate about knowledge and teaching and believe that knowledge is shared, recycled, and constructed (Ladson-Billings, 1995d). CRP was developed to aid in creating successful learning environments for African-American students.

Purpose of Research

Although CRP was developed for educational purposes in general, many scholars have recommended implementing CRP specifically for enhancing mathematics education for African-American students (Allestaht-Snyder & Hart 2001; Cooks, 1998; Gay, 2002; Ladson-Billings, 1995a, b, c, d, 1997, 2009; Leonard et al., 2010; Tate, 1995). Most research on CRP deals with aspects related to teacher implementation or student outcomes (Enyedy and Mukhopadhyay, 2007; García et al., 2010; Hobbs, 2012; Langlie, 2008; Lipman, 1996; Matthews, 2008; McClain & Berry, 2009; Moore, 2012; Walker, 2009) and has shown positive impacts for all students participating. Very few research articles voice the students' perspectives of CRP. Therefore, the purpose of this case study is to capture student perspectives of culturally relevant mathematics instruction for students participating in a culturally relevant mathematics intervention. The following two research questions were addressed in this research study: (1) what are high school students' perspectives of culturally relevant mathematics

instruction, specifically African-American students? and (2) does culturally relevant instruction affect students' attitudes and interests toward mathematics?

Methodology

This case study explores students' perspectives of culturally relevant mathematics instruction by engaging select students attending a culturally relevant mathematics intervention in interviews. Although students of various ethnicities participated, the objective was to listen to the voices of African-American students and to determine if the voices were consistent across ethnicities. By listening to the “footsteps in the dark” (Howard, 2002), I hoped to understand students' feelings toward CRP in a mathematics classroom and whether or not CRP is a preferred method of instruction over traditional instruction.

A culturally relevant intervention was taking place at Frankfort High School (pseudonym), an alternative high school located in a southern state, in which 37 students placed at-risk participated in culturally relevant mathematics instruction taught by myself, the researcher (Hubert, 2014). Permission was granted by the school principal and school district to conduct the research at the site. The students participating in the study were taking a class to prepare for a mathematics state assessment and the researcher was allowed to teach the class for a 10-day period. The students that were selected to participate were given the option to attend the class or continue attending their regularly scheduled test preparation class. Although 37 students participated, because attendance was an issue at this particular school, there was a daily average of 20 students attending the class. The students participated in a pre-assessment and post-assessment on the first and last day, respectively, and they were given the option to be engaged in seven culturally relevant lessons on the topics of quadratic and exponential functions. One of the lessons extended over a 2-day period. The topics of the lessons included: (1) teen pregnancy (two lessons); (2) perinatal HIV; (3) teen smoking; (4) football and soccer; and (5) saving money. The mathematics performance of students who participated in the culturally relevant intervention, on average, increased by one letter grade.

Participants

All 37 of the students participating in the study were students placed at-risk by the school district. The demographics of the 37 students are included in Fig. 1. The ages of the students ranged from 16 to 22 years. Parental and student consent forms were filled out for students 18 years and under, while only the student consent forms were completed by any students over the age of 18 years.

Five students were selected to participate in semi-structured interviews. The five students were selected based on three criteria: (1) difference in pre-assessment and post-assessment; (2) attendance; and (3) ethnicity. I wanted to include students with varying levels of achievement in the intervention in order to capture different perspectives; therefore, I sought to interview one of each of student whose difference from pre-assessment to post-assessment: (1) score decreased the most; (2) score decreased moderately; (3) score was practically unchanged; (4) score moderately increased; and (5) score increased the most. I also only included students who attended at least half of the hours of instruction. There were a total of 16 h of instruction (eight 2-h periods).

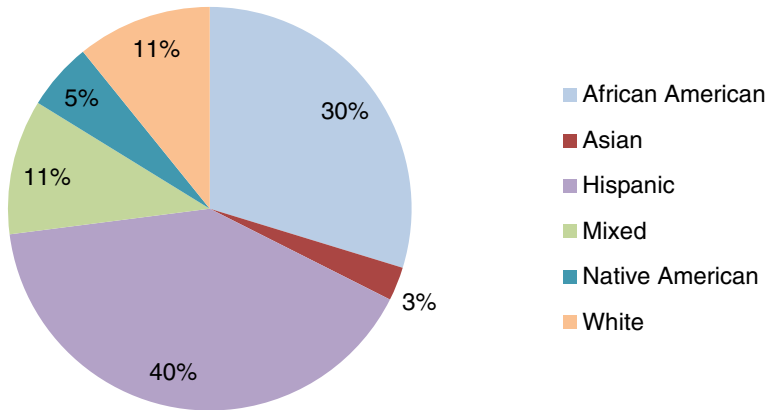


Fig. 1 Demographics of the 37 students participating in the culturally relevant mathematics intervention

Thus, the five students selected to participate in the interviews attended at least 8 h of instruction. Also, the purpose of the study was not only to capture African-American students' perspectives of culturally relevant instruction, but I also wanted to understand if other students felt the same way or different than African-American students. Therefore, I included at least two African-American students and at least two students from different ethnicities. A description of the five selected students is presented in Table 1.

A White male was originally selected to participate in the interview whose score was practically unchanged (+2), but he was absent on the day interviews were conducted. Hence, I had to replace him with a student with similar characteristics. While all three selection criteria were important, ethnicity was paramount to gain perspective for White students which led to the selection of student 3. Student 3 differed by gender and difference in score. Interviews were scheduled to be conducted on the last day which was also the day students took the post-assessment; however, students took longer than expected on the post-assessment which required me to get permission to return to the site on a different day to conduct interviews. The students were taking all of their state standardized assessments the week following the end of the intervention. Therefore, I returned to conduct interviews 2 weeks after the end of the intervention.

Table 1 Interview participants' characteristics

Name	Ethnicity and gender	Difference in pre–post	No. of hours of instruction
Student 1	African-American; female	–25	12
Student 2	Mixed race; female	–12	12
Student 3	White; female	+12	10
Student 4	African-American; male	+13	11
Student 5	Hispanic; female	+34	8

+ increase in scores, – decrease in scores

Data Collection

The semi-structured interviews were the data collected for this case study. The interviews were conducted by the researcher at the end of the intervention, addressing the following questions: (1) Before beginning the mathematics intervention, how did you feel about mathematics?; (2) How do you feel about mathematics now?; (3) How does the mathematics instruction used during the intervention compare to the type of mathematics instruction you receive in your regular mathematics class?; (4) Which of these two methods of instruction do you prefer, and why?; and (5) Which of these two methods of instruction helped you to understand and learn mathematics better, and why? All of the data collected were analyzed to capture the students' perspectives and attitudes toward culturally relevant mathematics instruction.

Data Analysis

The three analysis strategies presented by Creswell (2007) were used in the data analysis process. They included: (1) preparing and organizing the data for analysis; (2) reducing the data into themes through a process of coding; and (3) presenting the data in figures, tables, or a discussion. The interviews were audio recorded and were prepared for analysis by transcribing them verbatim. Preexisting codes guided the coding process. These codes were generated before data analysis from the existing literature that voiced African-American student perspectives on effective classroom environments. The codes included: (1) home-like classrooms; (2) ethic of caring; (3) participation opportunities; and (4) technology use. Although I was looking to code data into these themes, I was also open to discovering new themes that existed in the data. The transcriptions of the interviews were then analyzed to find common themes related to students' perspectives of culturally relevant mathematics instruction. The preexisting codes contributed to the ease of categorizing the data in the data analysis process. During the first round of coding, data was coded using the preexisting codes, and during the second round of coding, the data was analyzed for new themes. Findings from the data are presented in a discussion and table.

Results

Overall, the students had positive feelings toward culturally relevant mathematics instruction. All of the students interviewed stated that they preferred being taught mathematics using CRP versus the traditional method of instruction. One student even described traditional instruction as “grandma fashion” teaching, while another student stated that using CRP “made the class feel so alive.” All of the students interviewed also stated that participating in culturally relevant mathematics instruction helped to increase their interest in mathematics. All of the students interviewed made positive comments about participating in CRP; some are listed in Table 2. All of the positivity regarding CRP was attributed to one or more of the themes developed from the data.

Table 2 Student perspectives of CRP

Student	Comment
Student 1	[CRP made it] “more easier” “I got it [the mathematics concepts] easier and faster” “It [CRP] made me like it [mathematics] more”
Student 2	“I felt like an idiot before I came to your class ... but when I came to your class how you taught it [using CRP] I understood everything” “Thank you for opening my eyes” “It [CRP] was pretty fun”
Student 3	“It [CRP] did help ... made it fun” “I really like it [CRP]. It was good and I think that it would help more kids”
Student 4	“It [CRP] helped me understand math better” “I felt happy, I felt like I actually wanted to be there and I actually wanted to learn math”
Student 5	“I understand a little bit more [since participating in CRP]”

Themes

The findings from the data were coded into the four preexisting codes during the first round of coding: (1) home-like classrooms; (2) ethic of caring; (3) participation opportunities; and (4) technology use. There were also two new codes developed from the data during the second round of coding, namely, confidence and motivation. Therefore, the findings resulted in six themes. The first four themes (home-like classrooms, ethic of caring, participation opportunities, and technology use) contributed to the students' positive perspectives of CRP. The last two themes (confidence and motivation) were results of students participating in CRP. Each theme is described in the succeeding subsections.

Home-Like Classrooms

Comments made by the students interviewed were consistent with findings from Howard (2001) in which students stated that the ability of teachers to structure the classroom in a manner that resembled home was a strategy that made CRP teachers effective. Student 1 stated she felt smarter because the lessons dealt with issues related to her life and society which helped her understand the things that were going on in her home environment. Student 2 said she preferred CRP over traditional mathematics instruction because it involved using “real-life stuff.” She also stated that she could relate to the teen pregnancy lessons because her sister is a teenager and has two babies, and she could also relate to the teen smoking lesson because a lot of her friends were smokers. Therefore, she was more engaged in the lessons. Student 3 said she was interested in the topics of the lessons because they involved issues that many people experience at home today such as teen pregnancy and teen smoking. Student 3 even expressed how her mother gave birth to her while she was a teenager and how the lessons encouraged her to not want to follow in her mother's footsteps. She stated “I want better for myself just like my mom wants better for myself.” Student 4 also enjoyed the topics because CRP helped him with both

mathematics and understanding problems that he and his family experienced at home. Student 5 voiced that, because the instruction used life situations that she saw on a daily basis at home, she paid attention to what was going on in class, and therefore, she learned more and understood mathematics better. Student 5 shared that using life situations in instruction made the class more interesting. She stated that it was not just life situations, but the fact that the life situations were issues that “nowadays kids need to learn about.” Overall, the fact that the lessons contained issues that students experienced at home contributed to students' positive perspectives of CRP.

Ethic of Caring

CRP teachers' willingness to care about the students and their ability to bond with the students was noted as one of the most important features of an effective teacher in Howard's (2001) study. Four of the students interviewed all shared a feeling about being cared for that helped them understand the concepts being taught better. This experience was the fact that I (teacher/researcher) took time out to make sure everyone understood the concept before going on to the next concept. The fact that I truly cared about the students and genuinely wanted them to understand the mathematical concepts led me to be patient with the students and really focus on their understanding versus making sure I finish the lessons which helped the students understand the concepts being taught. The following comments contributed to this conclusion:

- “You were like more step-by-step and like actually going back if nobody got it, going back and actually helping us through it.” [Traditional teachers do not do this.]—Student 1
- “[I like the way you teach because] ... if they [students] don't get it then you help them.”—Student 1
- [I understood mathematics better] “because you like talked, you did it step-by-step, and came to us one-on-one.”—Student 2
- “I need somebody to be kind of one-on-one and you went around the classroom going one-on-one with everybody.”—Student 3
- “They [non-CRP teachers] are trying to hurry up and get things done, which you, you take time and if you don't really understand or get it, you take out time to make sure you got us one-on-one and help us understand.”—Student 4
- “You would help us understand the first thing before you moved on to the next.”—Student 4

Student 3 also shared how the teacher being encouraging helped her to enjoy the culturally relevant instruction. Student 3 stated:

“They [traditional teachers] don't like encourage students enough. You know alright they're [students] not going to do it so get out of my class that is basically how it is [in a traditional teacher's classroom]. So you know you're [teacher/researcher] like come on you can do this, like I'm a do it with you, and show you how to do it and go step-by-step and that's what helped me.”

Student 4 shared that my [teacher/researcher] attitude and demeanor [a caring one] caused him to be comfortable to be in class. Student 4 shared with me one day during

class that he typically skipped class, but he attended my class because he felt wanted. He also shared that having a teacher who actually wanted to help him learn mathematics helped him to “feel more encouraged and proud of himself for actually learning something.” These comments made by student 4 were consistent with Berry's (2005) findings that African-American males who were successful in mathematics stated that they came across a teacher who expressed care and provided encouragement and motivation that helped them to succeed. Student 4 also felt enough caring from me that he was compelled to tell me that he loved me and thanked me for taking the time out to work with him during the interview. Because I truly cared about the students, it was manifested in many different ways, such as offering encouragement and motivation to the students. The students were able to feel the sincerity in me wanting to help, and as they noted, the ethic of caring made an influence on their mathematical learning. Meaningful student–teacher relationships have a positive impact on students' level of academic performance and their participation in mathematics courses (Brand et al., 2006).

Participation Opportunities

Two of the students shared how participation opportunities in the classroom helped contribute to their mathematical understanding. Student 1 preferred CRP over traditional instruction in learning mathematics because “you [teacher/researcher] gave everybody a chance to answer a question ... [and when a student misunderstood a concept or got the answer wrong] you discussed that concept with everybody so everybody can know exactly what that person is talking about.” Student 4 enjoyed working collaboratively as a class and in groups. He stated, “We worked together as a class more than we did by ourselves which really helped us understand a little bit more.” Student 4 also shared that working in groups contributed to his increase in interest in mathematics because he was able to work with some of his friends, have fun, and learn all at the same time. These comments regarding effective CRP strategies are consistent with the feelings of African-American male students that effective classrooms are ones which allow them to actively participate in the learning process, work collaboratively in groups, and participate in student discourse (Moore, 2002).

Technology Use

During the intervention, the students used TI-84 calculators and computers with Internet access. In this study, only one of the five students interviewed mentioned anything about technology use. Student 2 shared that her interest in mathematics increased after learning how to use the calculator. She expressed that learning how to do linear and quadratic regression, plot points, and evaluate functions at certain values changed her life and helped her to really understand mathematics more. Student 2 stated that using the calculator changed her perspective toward mathematics and commented “my calculator is truly my best friend now.” Student 4's comments are consistent with findings from Liang and Zhou (2009) that technology use in the mathematics classroom increases students' learning of mathematics.

Confidence

Four of the five students discussed an increase in confidence. Student 1 expressed that participating in culturally relevant mathematics instruction helped her to “feel more confident” and “feel smart.” Student 2 also shared, “I wasn't really a big fan of math and every since you [teacher/researcher] came I feel like I can take it on. Thank you!” Student 4 commented:

“I feel more encouraged and you know I feel proud of myself that I'm actually learning something or some things that I thought I couldn't truly do when I said I couldn't do, but you helped me to understand them so it kind of changed me and the way I thought of my way of living.”

Also, the class that I was teaching was a preparation course for the state standardized assessment. So, in addition to students talking about an increase in confidence in mathematics overall, they also discussed an increase in confidence for taking the exam. As noted earlier, the interviews were conducted after students had taken the state standardized assessment. Some comments that students made with regard to the assessment are as follows:

- “But I think I did really good on the test [because I participated in the intervention].”—Student 2
- “It [culturally relevant mathematics instruction] helped me for the test.”—Student 2
- “But I actually feel like I did better [on the test], because being in your class I know I didn't act like I listened a lot but it [culturally relevant mathematics instruction] did help.”—Student 3
- “I feel real good. I think I done really well on my math test. I never scored that high. You know I really think I passed my exit level [test because I attended your class].”—Student 4

Therefore, participating in culturally relevant mathematics instruction caused some of the students' confidence in mathematics to increase.

Motivation

All of the students interviewed discussed an increase in motivation. All of the students were motivated in a different way. Student 1 was motivated to make a difference in the lives of others. She stated that, if she had time, she would go to middle schools and talk to them about some of the real-life issues that were discussed as part of the CRP lessons. She said that she would share the truth with them and let them know what not to do and how to do it. Student 2 was motivated to make a difference in her own life. She shared how she was going to work toward stopping smoking and taking the necessary steps to not become a teen parent like her sister. Student 3 was motivated to work harder at studying mathematics. She stated that she wants to attend college after high school, and she realized that college mathematics will be more challenging which will require more work. Student 3 was also motivated to help other people who hated mathematics [like she used to] understand the mathematics concepts that she now understands. Student 4 was also motivated to make a difference in himself and his social circle. He stated that he was working on stopping smoking and not having sex and encouraging his friends to do the

same. Student 4 stated, “[I will] tell my friends and sometimes myself I need to stop having so much sex because it is a lot of different diseases out here and telling myself and my friends that smoking is not cool . . . it [smoking] could cause a lot of damage.” Finally, Student 5 was motivated to think about others' feelings when making decisions. Student 5 shared how she was touched by one of the videos watched in the CRP lessons in which the mother expressed how hurt she was because her teen daughters were pregnant. Student 5 stated watching this video made her realize that your decisions do not just affect you, but also others around you. All of the students felt motivated to make a difference in distinct ways after participating in culturally relevant mathematics instruction.

What are students' perspectives of culturally relevant mathematics instruction? The two African-American students that participated in the interviews had very positive perspectives of culturally relevant instruction. Both of these students preferred CRP over traditional instruction. These two students also both expressed an increase in confidence from participating in culturally relevant mathematics instruction. They shared that participating in CRP created a desire in them to learn and motivated them to do better. These feelings were consistent with the students of other ethnic groups.

Does culturally relevant instruction affect students' attitudes and interests toward mathematics? All of the students interviewed expressed a positive change in their attitudes toward mathematics. The students commonly discussed how participating in CRP positively changed the way they felt about learning mathematics. Also, all of the students stated that participating in CRP increased their interest in mathematics. Therefore, culturally relevant instruction increased the students' interest in mathematics and positively changed their attitudes toward mathematics.

Discussion

The student interviews allowed the students an opportunity to voice their opinions toward CRP in a mathematics classroom. The interview gave the students a comfortable space to express what works and does not work for them in learning mathematics. One hundred percent of the students in the study felt positive about learning mathematics in a culturally relevant format and also voiced that culturally relevant instruction was the preferred method over traditional instruction. In the root of all the positivity of CRP for the students was the fact that CRP entailed classrooms that were similar to their home environment, contained caring teachers, provided opportunities for participation, and used technology. CRP also resulted in increased confidence and motivation for students that participated. Most of these findings are consistent with results from Howard (2001). The only new findings are the improved confidence in doing mathematics and the motivation to impact their world. The findings are not meant to be generalized but are particular for the sample of students interviewed. The results of the study can be used along with results from similar studies to more reliably predict students' perspectives of CRP.

The interviews revealed some very important insights to what works for African-American students, as well as other students, in learning mathematics. Having a classroom with a home-like environment piques the interest of the students to want to listen and pay attention. It also creates a comfortable environment where students feel welcomed, more

relaxed, and more willing to cooperate. Having a teacher that really cares about the students and their academic success causes the students to want to achieve more for themselves and for that teacher that genuinely cares. The teacher's confidence in the students' abilities transfers to the students and they themselves become more confident. Allowing students various opportunities to participate keeps the students engaged and gives them less time to do other things, such as not paying attention, which demonstrate behavior problems (Berry, 2005). Participation opportunities also give students an opportunity to grow and learn from each other. Using technology in a mathematics classroom provides multiple options for students to understand concepts. It also engages the students using a different mechanism. The insights that were revealed in this study can and should be used to improve mathematics education for students, African-American students in particular.

Conclusion

We have heard the “footsteps in the dark,” and now the question is what will we do with the footsteps? Will we let them stay in the dark, or will we lead them to the light? Letting the footsteps stay in the dark is hearing the voices of the students and doing nothing to change their circumstances in the mathematics classroom. Leading the footsteps to the light means to use the voices to better mathematics education for these students. The perspectives voiced lead to suggestions for teachers to create better classroom environments for African-American students. If teachers want to be successful with African-American students in mathematics, they can begin by genuinely caring for these students and their academic success. They can also create classrooms that resemble the homes of these students by using the culture of the students. These classrooms should also provide multiple participation opportunities for students and the use of technology. Although these suggestions may not be a cure-all, they are a starting point for creating positive educational reform for the mathematics education of African-American students.

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