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Why Malik Can "Do" Math:

Race and Status in Integrated Classrooms

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This case study reports on the small group interactions and achievements of Malik, an African American sixth grader, who attended a Maryland elementary school in 1997. Student achievement was measured by the Maryland Functional Mathematics Test (MFMT-I), which was given on a pre/post basis. Students' scores on the MFMT-I were analyzed using the ANOVA. The analysis revealed a significant difference ($F = 3.330$, $p < .05$) between the scores of Caucasian ($M = 342.12$) and African American students ($M = 323.56$). However, Malik's MFMT-I score rose from 293 to 353. A passing score is 340. This study examines Malik's interactions to ascertain what factors influenced his achievement. The findings are that Malik had a positive attitude about mathematics and a strong command of mathematical and scientific language. Recommendations are that teachers become cultural brokers to help all children learn the "language" of mathematics and encourage all students to become self-advocates to overcome negative social dynamics in small groups.

Malik is a Black male who attended an integrated elementary school that was 72% Caucasian, 26% African American, and 2% Asian in 1997. The first author, also the teacher-researcher in this study, assessed each student's achievement in the fall of 1996 and found Malik was an average student. However, he made above average gains at the end the school year. The purpose of this paper is to discuss the subtleties of classroom interaction patterns and teacher routines that may encourage full participation from minority students like Malik.

By focusing on the learning and achievement of one student, the findings of this case study are not generalizable. However, it informs teachers and administrators about the complexities of the learning environment and how it might increase the opportunities for minority

students. To improve the achievement of minority students, teachers must be cognizant of how school processes influence student success and must work proactively to ensure that all students have equal opportunities to learn. Teachers must be aware of the social interaction that prevails during group activities where African Americans are paired with others who hold perceived dominance and power and decrease the voice of the minority student. Ladson-Billings' work, as cited in Watkins, Lewis, and Chou (2001), suggests that teachers should focus on building students' cultural competence by helping them develop positive identification with their home culture.

Three bodies of research inform the study described in this paper: *1) mathematics reform, 2) teacher change, and 3) classroom environments*. A review of the literature linking these bodies of research to current knowledge in the field is outlined below. Following the literature review, the methodology, analysis, and results of Malik's case study are presented.

Why Reform Mathematics Instruction?

The *Curriculum and Evaluation Standards for School Mathematics* (National Council Of Teachers Of Mathematics, 1989) promote the idea that all students should learn "big ideas" in mathematics. However, these *Standards* do not go far enough when it comes to equity (Apple). The culture of American schools is based on white middle-class culture (Delpit). When students of color cannot express sufficient understanding of algorithms and procedures, they are labeled as slow learners and tracked into low-level mathematics classes where, more often than not, only the basic skills are taught. Yet all students must also be proficient in problem solving and critical thinking as mathematics remains the gatekeeper course for student placement and access to advanced courses. Therefore, two objectives of mathematics reform have been to change what and how teachers teach in order to make mathematical knowledge accessible to all (Croom).

Changing Teacher's Pedagogy

"Pedagogy is predicated on how the teacher interprets, understands, recognizes and integrates the students' culture within the learning process" (Malloy and Malloy 251). What teachers do or don't do to engage minority students in mathematics has an impact upon these students' performance on standardized tests and their ability to succeed in advanced mathematics courses. Closing the testing gap among Black and white students requires that teachers examine their pedagogy and

use a variety of strategies to improve the participation and achievement of students of color. While changing one's pedagogy does not occur overnight (Leonard 1998), teachers must be willing to try new methods to reach African American students if equity in mathematics education is to become a reality. Strategies that support activities where all students are expected to complete rigorous and challenging tasks include the use of collaborative and cooperative learning (Ladson-Billings 1995) and facilitating student discourse (Hiebert and Wearne 1993). Orr reminds educators that the focus has been on minority students' deficiencies but rarely on differences that might interfere with their performance in mathematics and science. The charge will be to pay more attention to and document the differences that occur from their use of mathematics and science language and terminology and less on one's cultural differences.

The Benefits of Small Group Learning

Small group instruction allows peer tutoring and coaching to take place in classrooms and has the potential to engage all students in active learning (Mulryan 1995; Webb; Webb, Troper, and Fall). Both small and cooperative learning groups can be used to engage students in hands-on activities. Campbell (1989) and Ladson-Billings (1994) believe that race minorities prefer hands-on tasks to drill-and-practice. The use of manipulatives encourages exploration, multiple ways of representation, and communication in mathematics classrooms (National Council Of Teachers Of Mathematics 1991). Communication can take the form of mathematical discourse, which Hiebert and Wearne found to increase student achievement.

The Benefits of Facilitating Classroom Discourse

Discourse is the social and cultural use of communication that is shaped by the beliefs, values, and expectations of a group and the institutions and traditions that define it and is defined by it (Gee). Participating in classroom discourse allows students to become members of a community of learners who listen to others explain, justify, and support their answers to mathematics problems (Lo and Wheatley). By facilitating classroom discourse, teachers allow students to articulate their own mathematical ideas, confront their misconceptions, and revise their thinking (Campbell and Johnson). Providing opportunities for students to discuss their mathematical thinking improves African American students' self-esteem, attitude toward mathematics, enrollment in advanced courses, and academic performance (Hollins, Smiler and Spencer). Thus, this case study examines the interactions and discourses

of Malik and other students as they complete a variety of tasks within small group and whole-group contexts.

Classroom Environments

Ebby and Remillard describe the findings of a five-year study of mathematics teaching and learning practices in an urban elementary school. They offer the sociocultural view that learning is negotiated through the practices of teachers and students (Lave; Wenger). The social landscape of the classroom is examined, offering a new framework to examine differences in student responses to mathematical tasks. These researchers discovered that there were subtle but important distinctions in the manner that students worked to accomplish a given task, which led to variant opportunities for students to participate in mathematical talk, reasoning, and problem solving. Embedded in student activity were different definitions of what it meant to "do" mathematics. For one white male, doing mathematics meant doing more problems and being the first one to finish the work. For an African American female, doing mathematics meant socializing with her friend while getting the work done. Thus, the social dynamics of the classroom influenced the value of the mathematics activity to the extent that groups cannot divorce social and mathematical activities from one another. Mathematical meaning varied among students of different groups, reflecting the social agendas of each particular group. As a result, students reconstructed the mathematical task to meet their own needs. This qualitative analysis offers a different view of interpreting the role of race and gender in student learning and provides the framework for interpreting the results of this study.

Methodology

The case study reported in this paper was conducted in the teacher-researcher's classroom where she taught three different mathematics classes and one reading/language arts class. The average enrollment in each class was 32 students. Prior to conducting the study, the teacher-researcher examined the results of the fall MFMT-I pretest that was given to her sixth-grade students to determine what they needed to learn in order to get the best possible placement in seventh grade and pass the state mandated exit test in mathematics (MFMT-II) the following fall. The Maryland State Department of Education administers the exit test, which measures students' ability to solve basic problems in the following domains: Number Concepts, Whole Numbers, Fractions and Mixed Numbers, Decimals, Measurement, Data, and Problem Solving. A passing score is 340, and the highest possible score is 405. Classification consistency and internal consistency coefficients were used to evaluate

the reliability of the test. The PG coefficient of .90 is in the excellent range, and the KR20 coefficient is satisfactory, ranging from .59 to .86 for all subtest domains. The test is also free from racial bias (MSDE, 1990).

The results of the pretest were disaggregated by race and are shown in *Table 1*. The Oneway ANOVA was used to compare the pretest scores, which shows that African American students scored significantly lower than Caucasian students ($F = 3.552$, $p < .05$). These results prompted the teacher-researcher to design a study that she believed would improve her students' mathematics achievement and narrow the gap between Black and White students. She designed a series of tasks to engage her sixth-grade students in nontraditional problems and conducted a pilot study in December 1996 to test her assumptions. The teacher-researcher learned that the students were eager to engage in hands-on mathematical tasks and to work in small groups. However, she was not certain which kinds of tasks would help her students the most. Therefore, she developed three types of task environments for the main study: applied, integrated, and abstract and planned to observe the students to see how they responded to problems in each of these task settings. She hoped that these tasks would allow students to explore genuine mathematics problems, use critical thinking skills, engage in high-quality group interaction, and improve all students' achievement in mathematics.

What teachers do or don't do to engage minority students in mathematics...

The Research Questions

The main research question that guided the study was how do students' interacting or on-task behavior compare and contrast when they engage in mathematics activities within applied, integrated, and abstract contexts? Interacting behavior is defined as "an individual's interacting with the teacher and/or peers in a learning context or engaging in group activities in a way that contributes to the ongoing focal activity" (Mulryan, 1989, 447). On-task behavior is defined as the student working on approved tasks (Mulryan 1995). Another question that emerged after the study was completed is how does the social context enhance or inhibit minority students' learning?

The Setting

The study took place in Prince George's County, Maryland, during the 1996-1997 academic year at the elementary school where the teacher-researcher had been working for three years. The school population of 665 was predominantly white and came from working-class and middle-class families. The unit of analysis included the teacher-researcher and

her ninety-five students (68 Caucasians, 25 African Americans, and 2 Asians).

Procedures

The teacher-researcher developed several thematic units that connected important mathematics content with problem solving. Three of the units were presented during the classroom research study, which took place during a six-week period from January to February 1997. Each unit was designed to specifically address learning in applied, integrated, and abstract task environments. These two-week units focused on architecture (applied), weather (integrated), and algebra (abstract).

In order to capture the students' interactions, two camcorders were set up in opposite corners of the classroom to videotape randomly selected target students. The school counselor chose twelve target students. Eight target students were Caucasians, three were African Americans, and one was Asian. To maintain internal validity, only the counselor and the cameramen knew the identities of the target students. However, after the data was collected the teacher-researcher learned the students' identities. Malik was one of the target students. Therefore, the case of Malik, who was one of twelve African American students in his class, becomes important.

Each unit was designed to specifically address learning . . .

Students worked in small groups as they engaged in each of the three units. Group composition changed often to encourage greater participation (Mulryan 1995). However, the groups were organized by level of achievement in mathematics, gender, and race. Every attempt was made to have diverse groups of two males and two females, but there were more whites than students of color (68 whites, 27 minorities) and there were more males than females in the sixth-grade population (55 males, 40 females). Thus, there were some all male and all white groups.

Four groups of students in each of the three math classes were videotaped every two weeks to obtain qualitative data. The frequency of students' interactions was tallied as they engaged in two lessons from each of the three units described above. Furthermore, the videotapes were transcribed and analyzed to determine what themes and patterns emerged among the students as they participated in each task setting. Other data sources included field notes, target students' interview transcripts, student work samples, and test scores. This paper also includes quantitative analyses of the students' achievement.

The Case of Malik

Following six weeks of data collecting, the teacher-researcher analyzed thirty-six episodes of videotape. The teacher-researcher found that not all of the students were engaged to the same degree. In order to examine the social dynamics, the story of Malik is told. Both qualitative and quantitative research methods were used. The results are presented below.

The Qualitative Analysis

Malik is a bicultural student as are all African Americans (Boykins and Toms 1985). His mother is African American and his father is Nigerian. Unlike most children in the school, who had been enrolled since kindergarten, Malik was a transfer student. He began attending the school in fifth grade and had not developed strong relationships with other children. On the playground, the teacher-researcher noticed that Malik was a loner. However, in the classroom, Malik was quite active. Malik's involvement in each of the task settings is described below.

The Applied Task

For one of the activities, the students were asked to build a structure that would stand between 18.5 and 21.5 centimeters in height and hold the weight of a textbook (Public Broadcasting System). The cooperative group roles of construction engineer, recorder, reporter, and budget analyst were assigned to each group of four students for this task. The roles were predetermined by lottery prior to the students knowing which job they were to perform. However, all students were required to help to build the structure. Malik's job was to serve as the construction engineer. The following vignette reveals Malik's interactions with two Caucasian females and a biracial male (Caucasian/African American), who identified himself as African American.

Text 1

1 Brad: Okay. They (the cards) have to be low to the ground (desk) and thick,
2 but not too thick though 'cause we still have to make it high.
3 **Malik:** Yes.
4 Tina: [Takes possession of the cards.] There.
5 **Malik:** Hold up! Let me think for a minute. [Places finger on head.]
6 We have to do some cutting of index cards 'cause (they are) 7 already 13 (cm) and you can't get it up one more building...

8 Tina: Malik, calm down first of all.
9 Brad: If we had a bunch of cards, it would be easy.
10 Tina: Hold on! No!
11 Brad: Or you could take a couple (of cards) and cut them
in half, but not all the way down and stick these in.
12 Malik: Hold up! [Take the cards.] What if we did something
13 like this? [Shows stair-step like structure with hands.] Put it like
that.
14 Tina: It's got to hold a math book.
15 **Malik:** Let's see if that can hold. Of course it's not going to
16 be that . . **[Holds cards as pillars for support.]**
17 Brad You have to have a platform...or it'll just fall back.
18 Tina: What can I do? Should we make it like a box and
build it up?
19 Brad: They would just collapse.
20 Tina: No, they wouldn't.
21 Brad: Yes, they would!
22 Tina: You got to cut them. [Takes cards back.]
Gretchen:Hey, this will stand up if ...
25 **Malik:** Yes, it will, but how many cards for us to keep it up?
26 Gretchen:You can make it . . .
27 **Malik:** Hold up before you cut. I'll measure this.

During his interview, Malik reported that he particularly enjoyed working with his hands. Thus, it is not surprising that Malik had a high number of verbal interactions in the applied task setting. He fulfilled his role by offering suggestions (Lines 6, 13 and 16). Furthermore, he illustrated his idea with his hands (Line 16), which was to build a stair-step like structure to obtain the height. However, when he tried to show the others what he was thinking, Tina took the cards back. Her control of the materials may have been limiting for all of the students, especially Malik who needed the cards to illustrate his idea. Nevertheless, Malik was an integral part of this task-focused group. He asked a key question (Line 25), which may not have received a response because the students were actively engaged in the brainstorming or they simply did not know the answer. Moreover, Malik was self-motivated, deciding to use the ruler to measure the cards (Line 27) and showed solidarity and resilience even though the group did not accept his idea.

The Integrated Task

The students also participated in an integrated science and mathematics unit on weather. The integrated task environment allowed the students to use scientific tools to measure temperature, humidity, and wind speed. In one of the activities, the students made a

hygrometer to measure the relative humidity in the classroom (Leonard 2000; Yaros). The materials included a card with directions, a milk carton, gauze, rubber bands, thermometers, and water. A wet bulb was made to measure the temperature of the water at room temperature while the dry bulb measured the air temperature. The relative humidity is obtained by finding the difference between the two bulbs. Each group was to make two hygrometers-one with thermometers that measured degrees Celsius and the other Fahrenheit. The following dialogue emerged as Malik worked in a small group with an African American female, a Caucasian male, and Gretchen, the Caucasian female who had worked with Malik before on the structural engineering task.

Text 2

1	Mitch:	So do we do Fahrenheit or Celsius?
2	**Malik:**	Celsius. [Asks Gretchen.] Do we get Celsius and Fahrenheit?
3	Gretchen:	No, you Celsius and Celsius.
4	**Malik:**	We're Celsius.
5	Gretchen:	We're Fahrenheit then.
6	Neka:	Me and Gretchen are a group.
7		I'll put on the rubber bands, and you (Gretchen) pour the water.
8	Don't touch the red! Don't touch the red!	
9	Mitch:	Last year this boy dropped a thermometer, and it broke.
10	He got red all over his hand, and he had to go to the doctor....	
11	**Malik:**	Mercury absorbs into the skin.
12	Mitch:	That's why he had to go to the doctor because he was sick.
13	**Malik:**	[Puts thermometers inside the milk carton.]
14		There! I am sure that will hold.
15	Neka:	You're supposed to put it (thermometer) on the side of the thing.
16	Mitch:	She said to wet the cloth (gauze).
17	**Malik:**	If there's a hole in the side, how are you supposed to put the water in?
18	Mitch:	[Reads the directions.] It says to wet the rags (gauze).
19	Neka:	You have to wet the rags first.
20	**Malik:**	[Unwraps a thermometer.] Okay, hold that.
21	Mitch:	First, you have to tie the thing (thermometer) down.
22	Neka:	Hey, we did it. [The girls finish making one hygrometer.]
23	**Malik:**	Y'all put the rag on the side where there's a slit.
24	Gretchen:	You have to put the rag through the hole.
25	**Malik:**	I know. [Boys finish the second hygrometer.]

Once again, Malik had a high number of verbal interactions in his group. The students paired up and had greater access to materials since two products had to be made. Although this group divided along gender lines, which is typical of pre-adolescents, they shared ideas and tried to answered each other's questions. Malik's comments suggest that he had scientific knowledge. He used the correct vocabulary, identifying the Celsius thermometer and calling Mercury by name, describing how it reacts when spilled onto the skin (Lines 2, 4 and 11). Furthermore, Malik processed the task by questioning why the hole was on the side of carton (Line 17). Once again, no answer was provided, which may imply that none of the other students knew why. They were engrossed in the task, but they had little understanding about what they were doing.

The Abstract Task

The abstract task setting allowed students to participate in whole-group classroom discussions around algebraic problems. However, when students worked on problems in the abstract task setting, they often worked independently and competed with one another to be the first to give the answers. The activities, which included solving problems that dealt with order of operations, integers, and exponents, did not lend themselves to cooperative or small group learning. However, students collaborated with other members in the class during whole-group instruction to scaffold or build on someone else's answer. The students also agreed or disagreed with other students by showing the "touchdown" signal in football for agreement and the "no good" field goal signal for disagreement (Phillips and Ebrahimi). A segment of one of the lessons where Malik was a participant is presented below. In this text, the teacher presented the students with the following problem: 3 x 4 + 5 - 8 ¸ 2 = ___. The discussion reveals that this problem was a challenge for the students.

Text 3

1	Teacher: I saw a lot of different answers for the problem I have on the board.
2	**Malik**: [Mumbles to himself.] That one was tricky.
3	Teacher: Raise your hand if you would like to share your idea. Neka.
4	Neka: Eighteen.
5	Teacher: I am looking around, and I see disagreement signals.
6	Who has another idea? Betty.
7	Betty: Three.
8	Teacher: I see some support. Who had another idea? Mitch.
9	Mitch: Four.

10	Elliot:	I think it's 13.
11	Teacher:	Okay, I will put 18, 3, 4, and 13 on the board. Any more ideas? Noah.
12	Noah:	I think it's 4.5.
13	**Malik:**	[Shows agreement with 4.5 by raising both hands in the air.]
14	Teacher:	I need one student to explain his/her answer. Dwight.
15	Dwight:	3 x 4 is 12, 12 + 5 is 17, 17 - 8 is 9, and 9 ¸ 2 is 4.5.
16	Rebecca:	My Dear Aunt Sally. [Refers to the order of operations.]
17	Teacher:	What are you talking about?
18	Elliot:	You have to multiply, divide, add, and subtract. I think the answer is 13.
19	Teacher:	If I put parentheses, does that help? [Writes (3 x 4) + 5 - (8 ¸ 2) on board.]
20	Class:	The answer is 13.

While the foregoing whole-group activity had a high level of student involvement as the teacher-researcher asked many questions, explored students' conjectures, and allowed them to explain their answers, this method of discovery teaching was limiting for Malik and other students. He raised his hand on many occasions. However, only one student was usually called on at a time. Although there were some opportunities for students to give choral responses and show signals, which they seemed to enjoy, many students including Malik showed signs of frustration because they were called upon too infrequently or not at all. Thus, the level of participation, which was high at the beginning, began to drop off as students tired of raising their hands and waiting to be called on. This analysis reveals the importance of learning in small groups.

The Quantitative Analysis

Malik's score on the MFMT-I rose from 293 on the pretest to a passing score of 353 on the posttest. These data are consistent with his grades in mathematics, which showed a steady improvement over the course of the school year. Coupled with the fact that Malik's verbal interactions were very high, the results concur with the findings of other researchers who link high student interactions with high achievement (Hiebert and Wearne; Mulryan 1995; Webb). However, most African American students did not perform as well as Malik.

The Oneway ANOVA was used to compare the students' scores, which were disaggregated by race. The results of the two Asian students, while reported, will not be discussed because of the small sample size. As shown in Table 1, African American students' scores in general (M =

323.56) were significantly lower ($F = 3.330$, $p < .05$) than the scores of Caucasian students ($M = 342.12$). In addition, the achievement gap grew from 13.88 on the pretest to 18.56 on the posttest.

	M Posttest	SD	M Pretest	SD
Caucasians (n=64)	307.60	23.67	342.12	30.49
African Americans (n=25)	293.48	17.53	323.56	31.37
Asians (n=2)	307.50	24.75	337.03	21.92
Total (n=91)	303.55	22.80	342.12	31.44

Discussion

Why did the African American students in this study have lower achievement than their Caucasian peers, when the teacher set out to improve all students' achievement? What was different about Malik? What happened to cause his MFMT-I scores to increase 60 points? According to Boykin and Toms, the socialization of Black children involves their ability to deal with the triple quandary: mainstream, minority, and Black cultural experiences. As evidenced by Malik's interactions in all of the groups above, he knew how to negotiate his place within the social milieu of an integrated classroom. He worked very well with African American students, white students, and females. Black children's ability to negotiate their position in social groups is dependent upon the cultural conditioning they bring from home and develop at school as they learn the modes, sequences, and styles of behavior through day-to-day encounters with others (Boykins and Toms). While other African American students were withdrawn or silent when Caucasian students took control of the materials, Malik asserted himself. Often the assertiveness of minority students is mistaken for aggressiveness, and the response of mainstream students is to put minority students in "their place." Malik refused to be defined by others' terms. Instead he asserted himself by participating in small groups, asking critical questions, and taking personal responsibility for his learning.

Malik's interview sheds some light on his success in mathematics. First, Malik realized the importance of asking questions: "If I don't ask questions, then I can't get the understanding, so I ask questions. Then I can get the right answer on the math test." The foregoing comment reveals that Malik understood the importance of doing well on standardized tests. Second, Malik had a positive attitude about the subject of mathematics and its importance in life. "Math is all around you. It teaches us how to work. If you cannot do math, you can't do anything. I feel that I'm learning something that will help me in the future."

What can teachers do to ensure that all students of color achieve to the same degree as Malik? First, teachers must realize that how they group students has a tremendous impact on their learning (Linchevski and Kutscher). It is not uncommon for a teacher to have a classroom of students with a wide range of mathematical abilities. The students in this study were placed into homogeneous groups of low-middle, middle, or high-middle ability because research suggested that this type of group composition would yield high student interactions (Webb). Ross believes that high-ability students dominate group discussions, while low-ability students or silent pupils struggle to offer explanations or serve as group leaders. However, the stronger the group interdependence is, the more likely all students, regardless of ability, are given the opportunity to serve as group facilitators.

Malik refused to be defined by others' terms.

Malik was able to work with other members in the two small groups described above. He used mathematical and scientific language, revealing that he knew what he was talking about. Having a command of the language needed to communicate mathematically, allows minority students to negotiate in the "culture of power." The culture of power has codes and rules that relate to ways of talking, writing, dressing, and interacting (Delpit). Discourse in mathematics among students in integrated classrooms is more likely to be middle-class white talk. Delpit argues that minority students should be taught the oral and written codes, the rules of power, and how to communicate within the culture of power (Delpit). Thus, the social dynamics of small groups can facilitate different power dynamics that the teacher and the students are unaware of. Teachers need to be deliberate about teaching all students to assert themselves like Malik has done. Language is a powerful tool, which enables teachers and students to develop common understandings of mathematical ideas. If mathematics is a universal language, then all students should be well versed in it. The teacher should provide African

American students with "discourse patterns, interactional styles, and spoken and written language codes that will allow them success in the larger society" (Delpit 285).

Students can build new words from a knowledgeable person, either from a teacher or a student. Small group interaction can serve as the zone of proximal development (ZPD), where students are exposed to a knowledge provider. For example, Malik increased students' understanding and knowledge of mathematics through communication and language usage (Steele; Vygotsky). His mathematical language should have convinced others that he could "do" mathematics. However, Malik is not perceived by his group as a knowledge provider due to conflicting social agendas and lack of group interdependence.

Noddings found that teachers and students must build caring relationships, which produce connectedness. Research has shown that caring relationships promote rich conversation with female students in science classes where the female's voice is gained through rapport and negotiation of relationships. Using the same model, Malik although male is treated similarly to the example of the voiceless female mentioned in Noddings' work. The conflicting social agendas between Malik and his peers suggest that his voice is not accepted and disregarded. Further, because Malik's peers do not fully acknowledgement of his abilities, they are also refusing him social membership in the group. Yet his level of mathematical and scientific language is superior to his peers. Clearly, additional research is needed on small group interactions and their effect on group social dynamics.

Implications

Although, traditionally males tend to be risk-takers, initiate teacher interactions, and maintain teacher prolonged attention (Kahle and Meece 1994), while female students attempt to establish caring and connected relationships to gain a voice, these social dynamics may not translate in groups where minority students are present and perceived as voiceless. In particular, the social group structure changed where the male (Black) was voiceless. Even though Malik was quite vocal, he was devalued.

Teachers must be aware that successful instructional conversations might only exist between the teacher and the student, especially where minority students are involved in group interactions. If African American students are not considered as knowledge providers and meaningful members of the group, then vital skills could be lost and voicelessness results. Teachers must find a way to promote effective zones of

proximal development where students like Malik can be valued and increase the instructional conversation among group members (Vygotsky 1978).

African American students... vital skills could be lost...

Katula (1991) believes that demonstrating how students can paraphrase other students' input could enhance the quality of group dialogue and respond and reflect on comments made by their peers. Occasionally this happened with Malik's group (i.e. applied task), yet the group's comments were indifferent and didn't show respect for the "right answers" generated by Malik. Teachers can help to facilitate student dialogue, show examples of paraphrasing, and respond to comments made by students, by deliberately calling on a variety of students and repeating and incorporating their comments during meaningful classroom activities.

The teacher-researcher in this study found that instructional strategies (whole-group, small group instruction, etc.), group composition, task set-up, and classroom communication patterns affect the amount and quality of minority students' interactions. These findings suggest that cohesive small groups, equal access to instructional materials and resources, and the ability to communicate mathematical ideas improve the level of minority students' participation. The school context and teacher actions have a profound impact on student learning and achievement. Teachers must develop a pedagogy of equity, first by honestly evaluating the teaching styles and discourse patterns in their own classrooms and then proactively monitoring and intervening to make the changes needed to provide opportunities for all students to be successful. Then all students, including African Americans, will have greater opportunities to "do" mathematics and the achievement gap will begin to narrow.

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