EXPLORING THE VOICES OF MARGINALIZED STUDENTS IN A HIGH SCHOOL MATH CLASSROOM
Rachel Restani, University of California, Davis

For Discussion to be Effective
Students Need to:
1) Interact with taken-as-shared mathematical meanings to reason and make sense (Yackel & Cobb, 1996)
2) Feel comfortable making mistakes
3) Be open to multiple solution strategies
4) Publically collaborate, argue and critique

For Discussion to be Effective

Evidence from Field Notes
Outcomes

- "I need to go back to third grade. I don't know how to multiply. That's why it doesn't make sense when you're talking about writing equations." Students shared that they did not perceive themselves to be fluent in mathematics.
- "I just don't apply myself in this class." Students' racial identities contributed to the ways they chose to participate in the learning community.
- "How do you respect yourself?" "Student #7 asked, "I don't! Because I'm black. Nobody respects me so why should I?" "She sent me out because I'm black." Students who did not usually participate used math to argue their point, who has the best deal? They made sense of the situation using linear models. Students' questions and opinions were focused mostly on the context of the problem.

Students' Positionality

Similarly, I provide a first-hand narrative of how I perceived student-voice opportunities based on my instructional choices.

Differently, I was critically conscious when interacting with students and facilitating discussions, but I did not prioritize a critical curriculum.

Data Collected

- Daily teacher observation journal, whole-class audio recordings, and lesson plans
- Monthly student free-write in journals, small-group audio recordings, and digital photos of student work
- Three times Likert scale questionnaire
- When convenient informal interviews

Context

- Two 9-12 Integrated Math 1 classrooms in a racially and economically diverse community. 42% Latino, 29% Black, 16% Asian & 13% White
- District’s second year implementing an integrated curriculum (Carnegie Learning)

Small Victories

S6: [While standing up front] Someone got 8 inches. How many other people got 8? [Counts classmates hands] So, one, two. Who else got 8? Just two people?
S: I got __
S6: Who got 8 though? Two people got 8. So put it right here [shows class how to draw a bar graph on the white board]. Draw this graph one unit smaller 'cause there's two people, not three, this time it's two. Okay, somebody else said they got six and a half... (audio, 3/15/2016).

S25 came up front to share how he counted horizontally and vertically: 1 came up and talked about how he would run down one block then the other. He pointed to the map saying he'd go over there then over there. S25 shared his idea to count horizontally and vertically. He had written x+y on the board with a written explanation. S77 raised his hand and said it's the Pythagorean theorem. He asked if he could come up. He wrote a^2+b^2 = c^2, then substituted 2 and 3 for a and b, then solved for c by taking the square root of the sum of the squares (field notes, 4/22/2016).

S42: Bernadette is not gonna have as much customers as Mark because with their 5 dollars they can get 5 candy bars from Mark. So Mark has a better deal.
S5: That's what we just said!
S42: You said Bernadette.
S5: I said Bernadette makes more money.
S4: But we're not talking about who makes more money, we're talking about who has the better deal (audio, 1/8/2016).

Earlier, S1 shared that he didn't write anything because he "doesn't like math."

He rarely engaged in "on task" behaviors. Here, he started the conversation by sharing his knowledge about local streets. Then, students built off of that knowledge by discussing how to use the Pythagorean theorem to compare distances.

Partial Reference List


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- "I just don’t apply myself in this class."
- "How do you respect yourself?" "Student #7 asked, "I don’t! Because I’m black. Nobody respects me so why should I?"
- "She sent me out because I’m black."

Students shared that they did not perceive themselves to be fluent in mathematics.

Students’ racial identities contributed to the ways they chose to participate in the learning community.

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