

Panel:2018.02.22.0900.

Notetaker Name: Brandy Wiegers Email/Phone:brandy.wiegers@cwu.edu / 530-220-0324

**Speaker's Name:**

Welcome! Julia Aguirre (University of Washington - Tacoma), jaguirre@uw.edu

Panel Moderator: Kate Belin, Fannie Lou Hamer Freedom High School

**Student Voice:**

- Lisa Saelee, MetWest High School Senior
- Amari Jackson, MetWest High School Senior
- Selinda Medrano, June Jordan School for Equity Sophomore

**Teacher Voice:**

- Derek Boyd, MetWest High School
- Heidi Swartzendruber, June Jordan School for Equity
- Nasriah Morrison, West Brooklyn Community High School

**University Voice:**

- Mark Hoover, University of Michigan School of Education
- Robin Wilson, Cal Poly Pomona Dept of Mathematics

**Talk Title:**

Panel on perspectives on mathematics as gatekeeper/gateway

<b>Date:</b>	02/22/2018	<b>Time:</b>	09:00 - 10:15	am
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**Materials:**

- Detailed notes from Notetaker (pdf)
- Young People's Project, [http://www.typp.org/mission\\_vision](http://www.typp.org/mission_vision)
- Flagway, <http://www.typp.org/flagway>
- The Algebra Project, <http://www.algebra.org/>
- Mathematicians of the African Diaspora, <http://www.math.buffalo.edu/mad/00.INDEXmad.html>

**List 6-12 key words for the talk:**

Equity, Gatekeeper, Gateway, Young People's Project,

**Please summarize the lecture in 5 or fewer sentences:**

A panel of three high school students, three high school teachers, and two university representatives discussed their personal experiences with gateways and gatekeepers of mathematics education. The Algebra Project and Young People's Project were a large part of the discussion, as these are programs being run at the high schools the students attend.

Welcome - by Julia

Reminder of the theme for the workshop and introduction of the [organizing committee](#).  
*It is important to understand that this is hard work, joint work, and ongoing work.  
Prepare to be “de-settled” and pushed out of your comfort zone at times. These discussion guidelines can help support a community to be respectful of one another.*

**Discussion Guidelines:**

- Listen carefully and deeply
- Share time and space *be reflective of time you are giving to the group and if folks are quieter they get a chance to share.*
- Be mindful and INTENT and IMPACT
- Work hard to understand different views
- Challenges ideas not people
- Expect/accept discomfort and joy as part of the learning process - we are all here to learn from one another
- Engage from a place of compassion (open heart)
- Replace judgement with curiosity (open mind)

**Act 1: Critically examining and challenging the system of mathematics as gatekeeper:**

How is mathematics positioned as a gatekeeper/door in K-12, undergraduate, graduate STEM education?

1. Who gets through the door and who doesn't? Why? Who controls the flow? Do we unintentionally close doors on some students? How do we reflect and assess our actions within the current system?
2. What is at stake specifically for me and for the mathematics profession in general, if access to mathematics continues to be limited for select groups of people?
3. How do we interrogate and challenge current institutional systems, practices and underlying values (e.g., placement testing, mathematics content, curriculum tracking, and “weed out” courses) that determine what mathematics is studied and how mathematics is experienced, particularly for those historically marginalized because of race, class, gender, disability, and language?
4. What is our role as mathematicians, mathematics educators, and mathematics teachers in regulating the access to mathematical learning and teaching spaces (e.g., classrooms, office hours, tutoring centers, and informal interactions)? Is there consensus on the purposes of such mathematical spaces? What do those who feel excluded from these spaces want from them?

### Quick references for the panel:

#### **The Algebra Project,** <http://www.algebra.org/>

“The Algebra Project, Inc. is a 501 (c) (3) national, nonprofit organization that uses mathematics as an organizing tool to ensure quality public school education for every child in America. We believe that every child has a right to a quality education to succeed in this technology-based society and to exercise full citizenship. We achieve this by using best educational research and practices, and building coalitions to create systemic changes.

...

“The Algebra Project was founded in 1982 by a Harlem-born and Harvard-educated Civil Rights’ leader, **Dr. Robert P. Moses** through the use of his MacArthur Fellowship award. Over the past two decades, AP grew from teaching math in one school in Cambridge, MA, to more than 200 middle schools across the country by the late 1990s, developing successful models of whole-school and community change.”

#### **Young People’s Project (YPP),** [http://www.typp.org/mission\\_vision](http://www.typp.org/mission_vision)

“YPP uses Math Literacy Work to develop the abilities of elementary through high school students to succeed in school and in life, and in doing so involves them in efforts to eliminate institutional obstacles to their success.”

#### **Flagway,** <http://www.typp.org/flagway>

“The goal of The Flagway™ Game is to create environments where students can practice and celebrate learning math. There are many different ways to create a cultural context in which mathematics emerges naturally from students’ experience. One method used by the YPP and the Algebra Project is to create mathematically rich games and experiences. The Flagway Game was developed by Bob Moses in 1995 and patented in 1996 (Moses, U.S. Pat #5520542 & 5704790). “

#### **Math for America,** <https://www.mathforamerica.org/>

“Our fellowship program—developed in New York City over the last decade—serves as a national model to inspire the development of new programs in cities and states across the country.

Our model is simple. We don’t fix teachers. We don’t reform their practice. Instead, we focus on excellence and trust. We find the best teachers across New York City and build a professional community for them to collaborate and learn from one another. Ultimately, we inspire them to stay in the classroom and amplify their impact across the city and beyond.”

#### **The panel has representatives from several schools:**

- June Jordan School for Equity. San Francisco, CA. <http://jjse.org/>
- Metwest High School. Oakland, CA. <https://www.ousd.org/domain/1996>
- West Brooklyn Community High School. Brooklyn, NY. <http://westbrooklyn.org/>

Panel - Mathematics as a gatekeeper from multiple perspectives.

The panel was introduced by Kate Belin who also introduced the work of Bob Moses and the questions that the panelists were asked to address:

**Panel has been looking at these questions:**

- Who gets through the door and who doesn't? Why?
- Who controls the flow?
- Do we unintentionally close doors on some students?
- How do we reflect and assess our actions within the current system?

Student Voice: Lisa Saelee, MetWest High School Senior

- Respond negatively to mistakes in math and students feel mistakes are stupid and they're going to make more mistakes.
- Gateway: Math prepares students for pathway to college study. Math is part of every field, a lot of jobs now will involve math. Math is a gateway if they understand the basics.
- If students don't know the basics they'll have a hard time in the future.
- In Elementary really enjoyed math, understood basics. In middle school didn't enjoy it as much it was textbook based and not connected to real world. At MetWest the teachers made it more engaging, connect myself and how its connected to work. Working with other students (in my community and younger students) has really helped this.
- **Young People's Project** -helping students in other classes. Giving back to the community to those who are struggling more. Stress can lead to students feeling they can't focus in classroom. Direct service - HS helping elem students understand the basics.

Student Voice: Amari Jackson, MetWest High School Senior

- Math used to be very hard for me. My experience was similar to the kids I work with in my internship - lack of confidence, a whole bunch of crying. I'm there to give different options and advice on what they should do in math.
- YPP - High School kids tutoring litting kids (8th grade and elementary school) and
- Math used to be hard - stuck in classroom. At MetWest we have projects and more activities with no textbooks. Super engaging. That's why I like math now.
- Derek keeps math class pretty lit - teacher is more positive then kids will be more positive.

Student Voice: Selinda Medrano, June Jordan School for Equity Sophomore

- Been in YPP for a whole year, joined 2nd semester freshman year. Joined because of friends and felt excited to join. It was fun. Worked with fellow classmates, worked together on creating lesson plans and putting ourselves in their shoes to teach them how to do factors and mental math. Thought deeply on how to help ourselves and help them (4th-5th graders) to get them do quickly in mind. They'll be excited to learn more. They'll have a connection with high school students, themselves, other classmates. We use icebreakers so they feel comfortable with us. When they feel confident then they can play Flagway

- **Flagway** - competitive math game. Hula hoop and sticks to make it visual. Give cards to break down in correct spot. I did this, I did well. When they get into it then
- Really into community and leadership. YPP helped me get into it. I never thought I'd be into it, like right here with this math conference talking about June Jordan and what I'm doing. Helps that we see kids once a week. They get excited to see us and get used to us.
- YPP - helped me get out of my shell, feel better about myself. The kids are the future. It's a good piece for them to feel happy and well about themselves.
- My experience - in elementary I hated math. The kids above were doing better. Felt insecure asking teachers, always had a problem with math. Blaming myself. In middle school didn't do great. 8th grade did better and was really proud of myself. Freshman year got a C and didn't feel great. Now in Prob and Stats class, doing really well and feeling more comfortable in there, know what they do. It's not about math in general, it's about certain math that you do get. Math is for everyone. It's in health, everything. Even in the smallest thing math. Helps kids in the future - we need math, it's a fact. Us teaching YPP to kids is just the beginning.

Teacher Voice: Heidi Swartzendruber, June Jordan School for Equity

- Critically examining and challenging- think of the students who came to JJSE for
- Find what it means to be a mathematician within the field of other learners. It's the students' voice in the classroom that matters. Interpersonal experiences -- students have ownership of their learning.
- Think about the individual in the community. Think about their own math identity and their own math belief. Also think about that in the community - through teaching and learning together. Teach something to someone else so they can understand and they can learn deeply from someone else. If they can do that with mathematics then they can do it anywhere.
- Group Work model - 9th through 12th model.
  - At beginning- breaking down preconceptions and expectations and teaching mechanics of working in group (active learners, playing a role in learning). Justify thinking, taking risks. See failure as a way to help them in their learning (vs seeing failure as holding them back).
  - Holding themselves and each other accountable for learning. Working independently by Junior/Senior year. Gives them access. Seniors are taking CCSF classes - and they are going into lecture classrooms, the real thinking isn't happening in university classes it's when they get back to JJSE.
  - How to provide access for students to think and learn together
- YPP- youth development and community building tool - learning how to be organizers. They're not tutoring they'd doing a different type of math with the elementary students
  - Allows access to STEM field in a new way - Seniors have seen themselves in STEM field with YPP
- Want to build a Bay Area alliance, continue teacher development and university partnership. Can't just be one teacher in one school - need to work with everyone (teachers, students, university professors and outside resources) to create system.

Teacher Voice: Derek Boyd, MetWest High School

- When think of math as gateway/gatekeeper think of parents - they went to segregated schools where they were being taught by teachers in their community. When the schools were integrated it went to what they have (shiny books, etc). This has become a model for education.
- **High School Internship** - Lawrence Hall of Science, YPP, Hospital, pet store, dentist office. Through their experience they are going to learn what they want to do and get the focus of what they need to do for doing that.
  - Experience going to Laney Community College - see that College is going to be different and students can learn this themselves. You may not have a chance to talk about this teacher when you're trying to cover so many other things.
  - Gateway - I can do this.
  - The students are able to understand this themselves.
  - You hear from the jobs that math is important - a values/ narrative issue
- How are we teaching the curriculum we are teaching? How does it look at the various levels?
- What I work towards is making the space that students feel comfortable (cheerleading), making students feel as a mathematician - feel good about that. Moving education forward.

Teacher Voice: Nasriah Morrison, West Brooklyn Community High School

- My own experience - I was a legal studies major at Berkeley. I had enjoyed taking math in high school but didn't think it was a worthwhile career to pursue unless you were a genius. After my first year of college I then taught a summer middle school program, taught math and loved it. This experience led me to decide to take more math classes in college with the eventual goal of becoming a math teacher. However, I was consistently one of the only women in classes and one of the only women of color. On more than one occasion classmates expressed surprise of my presence in a certain class. Led to constantly needing to disprove stereotypes. I would eventually find classmates that led to a sense of community and support completing all the math classes to be a math major. I then got my MA in math education at Teachers College Columbia. Leading me to where I am now.
- West Brooklyn Community High School is a **Transfer School** - for overaged and under credited students, mostly due to truancy. All transferring from different high schools across the city.
  - I teach algebra, almost exclusively, because biggest focus is trying to get students ready to graduate and be ready for the algebra state test.
  - Many students enter the school having already attempted the test with extreme math phobia and testing anxiety.
  - However, the students have strong mathematical intuitions, especially when couched in real world problem.
  - They lack computational fluency and struggle to formalize the math they need to take.
  - They see mathematics as a body of unrelated vocab and processes without seeing it as a process of sense making.

- It makes it difficult when they want to pursue STEM careers. A lot of them want to do STEM careers, like nursing, and when they see all the math involved they change their minds.
- **Promising practices** - Really lucky to be at school that I am at.
  - **No set curriculum:** no required textbooks, let teachers design their own classes. Inquiry based. allowing students to build off their own existing intuition, with the goal of changing their relationship with math.
  - Comparatively high number of people of color and women in staff. **Hugely important to have the representation** so that students see themselves reflected in field.
  - **Field Trips.** Also doing career days working with scientists of color
- **Supports that teachers need** - most of us work in schools with administrators that aren't mathematics specialists.
  - Like we expect for students, it's important for teachers to be drivers in their own learning and professional development. **Math for America model** - teachers design their own workshops around their own interests and their own school needs. This is invaluable.
  - **Drive your own mathematical education research.** My dept - 3 person dept - developing our own lesson study model.

University Voice: Mark Hoover, University of Michigan School of Education

I grew up in mathematics and was successful (white and male). Mathematics was good to me. From very early on I felt puzzled about dynamics around math (teaching learning in classroom and more broadly of how our society views the discipline and the dynamics around that). Spent time delving into these issues to work on the things that are important to me. Started with a PhD in math, when I applied it was clear I was not going to finish in that but I wasn't sure where I was going and how to do things that were important to me. I ended up changing to PhD program in social cultural anthropology and used it as a site to study the mathematics classroom. Continued to meander, trying to find way to work that was important to me. Grew up in Quaker culture and combined with sense of one's own sense of truth and valuing access to what is right in the world and combined with sense of regard for others, all have access to truth.

A rather circuitous route but found my way into education - took up regard of interactions in classroom - don't get change without changing those interactions. If we don't change those interactions then we don't have an impact. Whether it's policy or others then we have no change.

Turned my own intention to studying and researching teaching, particularly the mathematical work of teaching. Intersection of how does the understanding of mathematics play a role in shaping those interactions? Currently looking at how does mathematics and mathematical work play a role in teaching and social justice.

I have worked with Bob Moses and the Algebra Project. Videotaped two weeks of Bob's workshop and studied that to see how these play out in Bob's teaching. Throughout this work continued to be struck by how these play out at every level (institution and personal). Nature of mathematics and larger issues in our society, foundations of our history and how that impacts our mathematics classroom. Incredible need for diverse perspectives for any effort.

University Voice: Robin Wilson, Cal Poly Pomona Dept of Mathematic

I see a lot of my own experiences and own teaching in classroom reflected in these previous comments. I will now share some of my own stories, not necessarily happy stories but they fit in the context of today's conversation.

Grew up in Sacramento in the public school there. My mom was a highschool teacher and I was a 3rd generation college student (grandfather went to Berkeley). So college was always going to be something I was going to do. My mom kept pushing for the STEM pathway. In 8th grade I took pre algebra in fall I got an A and in spring I got a C.

Between 8th and 9th grade my mom put me in a self paced algebra class in summer between 8th and 9th grade at Sac State. Went into 9th grade and I was ready to do algebra. I went to see my counselor at the start of 9th grade and counselor put me into pre algebra. When I showed this to my mom she then went back to advocate to get me into algebra. Didn't see it then but now reflecting back she was advocating for me and he was a gatekeeper. Not just for me, but how many of my peers were set up in this way. For how many schools across the country is this true? Thinking about my peers, for some of us it was making it to college or not. For some of them, it was really life or death and if they had some of those experiences that I did then they may still be here.

Another experience was in high school when I went by a classroom where no one looked like me and I asked what it was. Found out it was a math competition and then I asked, why wasn't I invited. Next I said, good, I wouldn't have wanted to be there.

Next, in high school I was struggling with Calculus and my teacher had previous really good scores on the AP Exam. At that time you could get into Berkeley with a C in Calculus so my teacher offered with deal - She said if I don't take the AP exam and I'll pass you with a C-. I took the deal because you could get into Berkeley with that grade.

At Berkeley, I joined a professional development program. I found a community there and while this didn't happen to me I do have a story of a peer from that group that gave me permission to share this story: At Berkeley there was a tea time at Evan's Hall in Berkeley. This group of minority students (black and latino students) went and a professor saw them and said to another colleague, "we are going to have to get metal detectors in the classrooms because we have a bunch of thugs in linear algebra". The students took it to the department chair. The dept chair said, "Welcome to Berkeley." They wrote letter to newspaper, still nothing happened. They are still in the department today and still prominent members of the mathematical community today. What that experience said to me, you are not welcome here. For me to get in I really felt like I had to put on my armor and pick up my sword and fight to get into this community, knowing that I wasn't welcome.

Adding onto that, I got news this week that they are naming a dorm on Berkeley campus after mathematician Dr. David Blackwell, first black faculty member at UC Berkeley. He really earned the right to have this recognition, he had over 70 PhD students, one of our greatest mathematicians. There is a story about him that I've never been able to verify. David Blackwell came to Berkeley from Howard. Math dept didn't want to hire Blackwell but statisticians did so they formed their own department. To this day Berkeley still hasn't hired a black faculty member. To me, the gatekeeper is down the hill, I've



been fighting against it my whole life. That's why I'm here. Students that want to get into STEM careers, the mathematics shouldn't stop them.

Thank you to the panelists - Do these stories bring up issues or comments/

**Q: Students -as students who are going to apply to college sono do you have any response to issues or problems that you would like to address?**

Lisa- These stories make me very motivated to pursue a career as an educator

Selinda - I have a sister in college and younger sister. College has already been a goal. As a kid I was always concerned about if there was any college would accept me. I felt down on myself, maybe I will or maybe I won't. Race is a really big thing. People make stereotypes judgements on who you are, how you look, your skintone, your height, your age. This is a big deal. These stories make a huge impact on us. It's not fair. A lot of change but there is still little comments that people say when you sign up for classes. We need to make it happen. We need to organize and do a lot ot make sure things change. I feel like everything happens for a certain reason, doubting myself because of who I am, how I look, and where I live. It's not for everyone but college is my dream goal and it makes me feel happy to

**Why is math the thing that trips people up?**

Lisa - personally think that math scares a lot of students. There are vocabularies like english but in a math way. When they have to memorize that that scares them. When they read word problems. For English and History there isn't much numbers. For math it's a bunch of numbers with important vocabularies. Students are used to this difference and that is what makes them scared

Selinda - when you are first introduced you get comfortable and then they add something and then you feel stuck, you don't really understand and you classmates get it down and I need an extra push to get there. I understand that basics and I didn't understand the whole view of the math subject. Felt confused and later on I got it down. We're all at different levels, "intermediate" so I was never were I'm supposed to be, I can't behind but I didn't do my best and didn't do well.

**Q: Thank you all for wonderful perspectives. Mark brought up subject of injustice to indigenous people. In late 1920's and 1930's the Bureau of Indian Affairs decided to remove all mathematics from curriculum because it wasn't "Indian stuff". The effects of that is still being ... Did anyone go out of their way to tell you that mathematics is a human endeavour - not to be inflicted on people.**

**Restate the question - At any point in your education were you shown mathematics done in Africa or other non-European history of math**

Robin - This happened for me when I first found Scott William's Mathematicians of the African Diaspora website, <http://www.math.buffalo.edu/mad/index.html>

**From my perspective mathematics is quite unforgiving. And there is also a**

**community around you that support you, that help you when you fall down. Can you talk about the sense in the classroom, the relative amount of confidence of in-class experiences.**

Selinda - Confidence plays a lot because you feel like you don't know and people will make fun of you. The confidence will bring you down if you don't know the answer. Support wise we work in groups because we can work with others on the answer. Don't know if it's officially the answer and don't feel comfortable. You don't know for sure so you're down on yourself and you don't want to answer the question

Lisa - has to do with classroom environment and teachers' enthusiasm to teach and help students. Have had teachers that I don't want to go to because the way they ask the questions make me feel uneducated. My peers don't feel like the lack confidence but they don't want to have the wrong answer. I have had to step out of my bubble, I now have grown into the person that will laugh it off if I have the wrong answer. It could be others can't grow out of the bubble could be family problems and people make them feel bad about their mistakes. Where students are coming from, their ethnic background, brings their own struggles and challenges.

**Comment: I'm a middle school math teacher now in Arizona, 100% hispanic student classroom. I used to cry in my high school classroom all the time and now I'm a board certified math teacher. You deserve to be here and you belong anywhere you want to be. So proud of all three of you for being here. You are the reason I go to school everyday, it's a privilege and thank you for letting me share that with you.**

**Sounds like YPP is an amazing program. Students, do you feel like the kids you work with have math anxiety and confidence issues in math. How do you prepare for that. Teachers, how do you prepare them for that?**

Selinda- Monday is a prep day and Weds we go into the classroom. We were in the class yesterday and we had a kid that felt he wasn't ready and he went and got a book. My teammate checked in with him, he felt uncomfortable and sad because he didn't understand it. I worked with him and then we had to leave. I have noticed that too. Sometimes you don't know how to get through to them in a better way. Someone giving you feedback can help you do it better with the kids to make sure they have the best experience, feeling like a team. We're backing them up.

If people are interested in more discussion then this will happen during the lightning slide round.