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Interview with Kyndall Brown on Equity and the California Mathematics Framework

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Abstract. On July 12, 2023, the California State Board of Education approved the 2023 Mathematics Framework for California Public Schools. Kyndall Brown, Director of the California Mathematics Project, played a role in the development of the framework, and has long been an advocate for greater equity in school mathematics. This interview was conducted in August, 2023.

MJ: I thought maybe a good place to start is around equity, because, you know, everyone talks about equity, but then they're not always talking about the same thing. So I thought maybe something in the way of a definition or some examples of what equity looks like in the classroom.

KB: The definition that I like the most is the one that talks about not being able to predict academic outcomes based upon race. So that if I were to walk into the most advanced math class at any school, it should reflect the demographics of the school.

I also think about, you know, equity of opportunity, making sure that all students have access to qualified teachers who are strong in their content and pedagogy, and having access to all of the resources that they need to be successful. So, just removing all barriers so everyone has an equal opportunity to be successful.

What that might look like in a classroom is, students working collaboratively in heterogeneous groups, engaging in low-floor, high-ceiling tasks, engaging in discourse and dialogue using whatever instructional tools, whether it's technology, manipulatives, just having the access to whatever it is they need to be successful.

MJ: Okay, so pivoting off of that, what do you see as the role of the California framework in promoting equity?

KB: So, I think the framework really took a stand around equity, unlike what I think has been done in previous frameworks. They have specific chapters dedicated to equity. Chapter 2 is focused on teaching for equity and engagement, and then chapter 9 is about structuring school experiences for equity and engagement. The framework has really taken a very bold and unequivocal stance that equity is important for the teaching and learning and mathematics.

MJ: Yeah, and then kind of pivoting off that, what influence do you think the framework ends up having in classroom instruction? I don't know, there's a lot of history of wrangling over the

framework and then sometimes it feels like you go into classrooms and what the class looks like before and after the framework doesn't seem all that different.

KB: Yeah, and you know that's a challenge right because I question whether or not most teachers really take the time to go in depth with the framework. Most teachers tend to simply use whatever curriculum that they have to deliver instruction. So I think that it depends on what kind of investment schools and districts are making in professional learning, whether or not teachers are then reaching out to, say, the offerings of an organization like the math project or going to conferences like the California Mathematics Council (CMC) or National Council of Teachers of Mathematics (NCTM) where they're going to learn more about the framework. I think it's really dependent on those kinds of things. I think I think the more enthusiastic teachers are gonna seek it out for themselves and find ways.

I think, again, there are going to be the other ones who just receive whatever professional learning that their district or school offers and then I think for other people there, they may not change at all. They may just stick to what they've been doing in their textbook. Unless they really follow their textbook closely and it's whether their textbooks have really made changes to align with the framework.

MJ: Right, and then it's a question of whether they have the tools to make that happen the way the textbook has in mind.

So, with the journal readership being primarily teacher educators and people in leadership positions, how do you see teacher educators and professional learning providers supporting teachers, either around the framework and equity or just around equity in general?

KB: One of the things that I like about the framework are those chapters I was referring to. In chapter 2, they talk about those 5 components of equitable and engaging teaching for students. They talk about teaching around big ideas, using open-ended tasks, teaching towards social justice, inviting student questions and conjectures, and then prioritizing reasoning and justification. And so to me, those are very concrete and practical things that teachers can learn how to do. It is going to really depend on what kind of professional support that teachers have to engage in those different practices that the framework presented. I think that's gonna be a huge piece of it that's going to really make or break whether or not the framework is implemented is the kind of professional learning teachers have.

MJ: Yeah. And do you think there's a robust enough network out there in terms of the support? Do you think there's the capacity to do that kind of training just to make that happen?

KB: I think if there is the proper investment now it's interesting because the folks at the California Department of Education have indicated that there really is no money for a framework and there really was none for the 2013 framework. And so those of us in the math education community have been really talking about how we then support something like this. One of the examples that we have to look towards is what the science folks did in terms of rolling out the Next Generation Science Standards. The California Science Project partnered with the county offices of education and the statewide science organization and designed rollouts for the standards, and these were 2-day rollouts that were held at county offices and they did them across the state. They've rolled it out in phases. They realize that once was not enough, that there was so much complexity to the standards that they needed to do continual rollouts and phases and then things that I think they're still engaging in.

I think that's the kind of approach that we're gonna have to take as well. I think we probably need to target district leadership so that we can make sure that they're well versed. Then they can go back and support teachers within their districts. We need to offer it to anybody who wants to come, teachers, administrators, or coaches, to the training, to get a more in-depth understanding of what the framework is asking for.

And to me, to be honest, we have to kind of backtrack and really do a good rollout of the 2013 framework that never happened. There are still lots of teachers across the state who aren't really well versed in the Standards of Mathematical Practice. We're gonna have to catch up with that and then add on with what this new framework is asking teachers to do.

MJ: So, I thought maybe we pivot slightly and talk about tracking as a piece that gets discussed a lot around equity. And I thought there's this idea of having an accelerated track that some people really latch onto. Do you see acceleration and equity as competing priorities or is there a way for those to work together or complement each other in some way?

KB: Well, it's thinking about, first of all, why are we accelerating, and when do we accelerate? I think those are two important things.

I don't know that there is as much need to accelerate in middle school, given the caveat that I really think that the middle school standards from the 2013 framework are really strong. They're very rigorous, very robust. And if they're taught well, they can really support a student's strong mathematical development. I think we always have to pay attention to students in their varying levels of development and you may have some students that are more advanced, but I think that there are ways to engage students in the standards in middle school without accelerating. I think that this whole idea of low-floor, high-ceiling tasks allows more advanced students to engage at a higher level. I think there's a lot of really rich curriculum.

I will tell you what else is a challenge with the 2013 framework: the content of the eighth grade course was changed so that the second semester is what has traditionally been the first semester of an algebra one course. So that ninth grade Algebra 1 course is a lot more robust but it doesn't really cover all of that stuff from the first semester, all the linear functions and all that. That's not covered anymore in the ninth grade algebra course. And so, to me, I don't really know what's being taught in algebra in middle school, whether they're teaching the old traditional algebra one course, right, which is the first semester with most of the linear stuff, the second semester all the quadratic and exponential stuff, or if they're teaching that ninth grade Common Core Algebra 1 course. If they are, then our students are missing some of those really important eighth grade standards that they should be getting. I think that usually the goal of acceleration for the most part is to get students to Calculus before they graduate high school. I just think there's a lot of ways to do that that don't require acceleration necessarily at the middle school. I think it can be delayed until high school. You just gotta be creative. I see that for some students there might be a need to give them more advanced content, but I don't think there's a need to try to rush them through that college preparatory math sequence before they're ready. And I really think there's only a small percentage of students who really need to be. I think that a lot of people are using this whole idea of acceleration as parents of privilege to make sure that their children are on that higher math track whether or not they are really advanced. I just think there are a lot of issues that are involved with this whole idea of acceleration.

I don't know if admissions counselors are gonna have to start looking at things differently or what, because there are a lot of people that are taking calculus only because it's gonna give them

a better chance of getting into their school of choice, not on majoring in any STEM field or anything like that. And so then to me then they're not actually getting what they need. They might be much better served by statistics or data science or discrete math or a lot of these other alternative courses, but you know, they're kind of forced into taking calculus, cause that's what colleges recognize as rigor.

MJ: Yeah, and then I guess the other thing is there's acceleration and then there's also theoretically, a separate thing, honors or an enriched class, which could be a class that does more instead of just goes faster, right? But I don't think that really exists most of the time. I think most of the time it's, let's just do it faster.

KB: Exactly, right. I agree. There's so much more that can be done. Think about how much of the curriculum doesn't get covered traditionally that you could do, and just different mathematical topics that you could expose students to besides just algebra and geometry. There are so many opportunities and statistics always gets short shrift. I just think we could turn on so many more students if we were able to get to those statistics and probability chapters that are at the back of the text. Move them up to the beginning of the semester or the beginning of the school year. I think we could get a lot more students.

MJ: Yeah, yeah. Certainly, there's a lot to be done with data that could be very engaging for students, and probably doesn't get–even with the increasing focus on some of these specific courses in data science–the attention that it could, or attention proportional to how much of it is in those standards at the earlier grade levels.

What do you see in terms of these, you know, at the high school level, the different pathways? What is their function or how do you think of it in some ideal sense if they were implemented? In your vision, what would be different pathways for students, or who would benefit from being in one pathway versus another?

KB: Well, you know, I think all the research shows that students benefit when they take 4 years of college preparatory mathematics and unfortunately, like I say, their options in many cases are just so limited. I think by offering alternative pathways you probably get more students taking that fourth year of math and they'd be able to learn different types of mathematics, and different ways in which they could use mathematics to further their own educational or career options.

I think it's just really exposure to different ways that math is relevant. I mean, if a student isn't gonna be a STEM major, it's hard for them. It's hard for teachers to convince them that using factoring in quadratic equations is going to be useful for them in some kind of way, whereas I think some of the things that happen in the statistics course or the discrete math course or even a modeling course, students will be able to see the relevance of it a lot more and it might be a motivator for them to continue on taking STEM courses in the future. Because what we do now is say you'll need to use this at some point in your life later and it's just not a convincing argument.

I'm actually working with a Gates funded project where they're trying to come up with narratives to help students see the utility of math. They've been doing these focus groups and they've been interviewing students, teachers, and parents. For the most part, students only see the utility of basic arithmetic. They don't see the utility of anything beyond. They don't see the use for algebra, geometry, anything like that. This is true even when talking with their parents. The parents express the same beliefs that they're really not gonna be using algebra and geometry, they only use basic math in everyday life. What the Gates Foundation is trying to do is to craft

arguments that would help convince students. What doesn't convince them is you're gonna use it later in life. That means nothing to them. All these things that we as teachers always use, it's like that carries no weight with them at all. What are gonna be some examples or things that we can do? Because even if you tell them, we're doing some particular function today and this is how you're gonna use it in your life, students react like, whatever. So, what are gonna be these arguments that we're going to use to convince students that they're gonna use and need math later in their lives? This is an interesting project.

MJ: Yeah. Or it makes me think of the studies, that they must be 30 or 40 years old at this point, but the ones where kids that work with their parents as street vendors were doing all kinds of math and then they would go to the classroom and use none of that when it came to doing the same arithmetic.

KB: Right, the Brazilian candy. Yeah, that's a good example. And yeah, how many times are people doing that in their regular daily life?

MJ: Right, right.

KB: Well, we even talk about students' perseverance, but if it's something that they're interested in, like, how many times will they fail at a video game that they're interested in, and they fail and start over because it's something that they're motivated to do right. So, it's not like they're not capable of persevering. I don't know if it's possible to make math have that kind of interest, and I've seen teachers motivate students to want to engage, but it's not easily done.

MJ: Right, right, yeah. I kinda wonder, what are some of the levers that we could be pulling that would make it easier? There are always a select few teachers that are able to pull it off, but en masse, what does it really take to make that kind of thing happen? Whenever you find these studies of a whole school that's transformed, like think of the ones that Jo Boaler's worked with, whatever they get in place lasts for a few years and then somehow the wheels come off and it's back to the same old thing 6 years later or whatever.

KB: Yeah, yeah, and I think about the Railside school that was kind of undermined by the California standards and all that madness. It almost takes somebody who's willing to buck the system and not follow procedures and do things out of the box. That's how you're gonna see the kind of changes when you're not about pacing plans and periodic assessments and all that kind of stuff, and not feeling pressured by those kinds of things if you're really gonna do what we're talking about. It takes a certain kind of agency on a teacher's part if you really want to implement whatever it is with fidelity, whether it's You Cubed or Illustrative Math or whatever. If you're really gonna stick to the way that they want you to do it then you have to say, "Well, okay, I'm not gonna pay attention to this pacing plan, I'm gonna veer here when I need to."

MJ: Yeah. Well, that needs an ongoing effort towards what we sometimes call buy-in. There may be better terms for it, but making sure that all the stakeholders are willing to cut you the slack to try something that doesn't look like what they thought math instruction was supposed to look like.

KB: Right, and you know, you brought up a whole other issue that I hadn't thought about. There was this article that came out back in the 1990s about how elite parents undermine reform. It's in the Phi Delta Kappan, but I even think about it just like you say even though people have really bad experiences with mathematics, it's almost like they want their children to have that same bad experience.

I can remember being a parent and going to my child's school parent meeting, and this one parent is saying, "The teachers don't teach math, they just put the students in groups and they tell them to figure out the problems on their own, and when the students ask for help, they tell them to go ask their group members. I want these teachers to teach, right?" Now luckily I was there to kind of break it down, and I said, "Well, no, this is what they're trying to do." But that's the pushback. We're really trying to do it differently. We don't want your children to have the same bad experience you have, but then it's like you want them to have that same [experience].

I don't know if you're familiar with Liljedahl's work on building thinking classrooms.

There is a Facebook group that I've been paying attention to and teachers who said I'm getting all this push back from parents because of what I'm trying to do, and pushback is coming from parents and students. So, how do you navigate all that while you're trying to do things differently? If we want things to change, then we're gonna have to do something different. How do you manage all that complexity?

There just has to be a parental educational component to this, where we inform the parents of what we're doing and why, and what they can expect to see, so it's not such a shock to them.

You know, the common core is the butt of all these jokes all the time on social media or you hear, "Must be that common core math because I don't get it." We definitely need to do a better job in terms of PR, what it is that we're trying to do and why.

I don't know if you've read Heather McGee's book, *The Sum of Us*, but she talks about the zero sum thinking that permeates the US, whether it's economics, education, politics. She starts by giving the example of how in Arkansas during the civil rights movement, after the passage of Brown versus Board of Education, they desegregated everything. Rather than allow African-Americans to swim at the city pool, they cemented it in, so now nobody gets to swim, and so who benefited from that, right? .

So much of what happens is the zero sum thinking, and it's really pervasive in math ed especially. Why can't we have all students take calculus? [Instead of] one class that we filter everybody out, why can't we offer multiple sections of calculus so everybody could take it?

MJ: Yeah. Alright. This has been great.

KB: Take care.

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