Fawn Nguyen (00:00):

People would just abruptly say to me, "How does my student be able to engage in this problem if they don't know their facts?" And I think out of all the things that I hear, that one breaks my heart. Because somehow we're equating computational and memorization with being able to think, being able to enjoy mathematics.

Bethany Lockhart Johnson (00:19):

Hi, and welcome back to another episode of Math Teacher Lounge. I'm Bethany Lockhart Johnson.

Dan Meyer (00:24):

And I'm Dan Meyer. Great to see you folks here. Hi, Bethany.

Bethany Lockhart Johnson (00:27):

Hi. We are on episode 10 of this season, all about fluency. And you know, I gotta say, we started out this whole season talking about how you felt about fluency. I'm not ready to yet, Dan, to hear how far you've come, but I just wanna say that the guest we have today ... if no one else can convince you about the power of fluency, it's this guest.

Dan Meyer (00:55):

Yeah. I feel like me and this guest ... and I will not be mysterious about it. It's Fawn Nguyen! Fan favorite, second-time appearance. I feel like Fawn and I come from a bit of a similar tradition, in that we both appreciate problem-solving, mathematical modeling, thinking that isn't often easily captured in, let's just say, a math drill worksheet. So I feel like we've recruited onto the show today someone with whom I'll be on the same frequency. And I hope to learn a little about how Fawn sees fluency and problem-solving, and how they relate.

Bethany Lockhart Johnson (01:33):

Well, that's exactly what I mean. Like, I feel like there's something about the way you both talk about math and problem-solving that will just like finally be like, "Oh, I'll listen to you, Fawn. Not Bethany."

Dan Meyer (01:47):

<laugh> Right, right.

Bethany Lockhart Johnson (01:48):

Not our other fantastic expert and thinker. Fawn? Got you.

Dan Meyer (01:52):

Fawn, though? Yeah, Fawn has that.

Bethany Lockhart Johnson (01:54):

Fawn, though. Yeah. We're both fans. And, hey, so before we dive in though, how are you doing? How is the world of fluency in your first graders' lives?

Dan Meyer (02:04):

Right, right. Thank you for asking. We are coming up on end of the first semester, and I would say my approach to fluency from Day One to Day Whatever We're At ... Day 100 or so, has changed a lot over the course of this season. You know, through learning with experts here on the show, through learning with you, I find myself much more excited to inject elements into fluency work with my kids that are gamey, that involve choice, that involve thinking about structures that try to help properties of math emerge that aren't just like the numerical answers on the paper. And so I would say I'm ... you know, people are generally pretty math-positive around here, still in kinder and first. So we'll take that for a win. People aren't freaked out by seeing numbers. And we still have some conversations here and there that are kind of creative and fun. So I'm loving it. Thank you for your help with that.

Bethany Lockhart Johnson (02:55):

Hey, I gotta say, I was hoping I'd get far more texts from you featuring, like, images of you all mid-gameplay. But, I understand you're so in it that you're not even thinking about, "You know what, I should share this magic fluency moment with Bethany." But yeah, I'm happy to hear it's going well.

Dan Meyer (03:14):

Yeah, it has been. Careful with what you wish for there, 'cause I might just FaceTime you in and have you teach my kids every afternoon. Or try to, anyway. <Laugh> So watch out with that.

Bethany Lockhart Johnson (03:24):

Having met your children, I would be delighted to. So, we're bringing back Fawn now. Fawn joined us Season 2 of the show. Season 2, Dan! Season 2! That's when we were on video!

Dan Meyer (03:37):

Yes. We had characters in our drama that were still alive. Like there's some major plot points that hadn't yet been revealed in our drama that is Math Teacher Lounge. Back in season two, we were talking to Fawn about ... was it problem-solving, then? I wanna say it was problem-solving.

Bethany Lockhart Johnson (03:52):

Yeah, yeah, yeah, for sure. And we got such good feedback about it.

Dan Meyer (03:56):

Yeah. So if you were not around in Season 2, or for some reason, don't know about Fawn, lemme just tell you a bit about Fawn. Fawn is currently a specialist on the math teaching and learning team here at Amplify. But in Fawn's career, Fawn's better known as a math teacher. And certainly like a Capital M, Capital T Math Teacher. A math teacher's teacher. Fawn loves the work as much or more than anyone I've ever met. Teachers will attend Fawn's sessions around the world and will just vibe with her immediately, for lots of reasons. But I think a lot of it is just that she really gets the work and presents as someone who has done the work for a very long time. Knows what kids are like. Knows what math teaching is like. And is just very ... I guess "authentic" is an overused word. But think Fawn is one of the most authentic math teacher types I know. And Fawn has also done work as a math-teacher coach, in case that wasn't super-obvious from the intro there. So, yeah, just really excited to have Fawn back on the show and to help you folks — and all of us — learn about how fluency and problem-solving, which I have had in my head as somewhat antagonistic, as somewhat unfriendly to one another, to help us — and especially me — learn how they relate. So, please welcome Fawn back on the show. Hey, Fawn, good to see you again.

Fawn Nguyen (05:10):

Hey, Dan. Hi, Bethany. My God, I finally get to talk. <Laugh> Oh, my goodness. Twenty minutes in.

Dan Meyer (05:21):

<laugh>. That's a great intro to Fawn. Yeah, Fawn vibe, right there. Thank you, Fawn. All right, we'll go shorter next time. Good to see you.

Fawn Nguyen (05:27):

Great to see you guys.

Bethany Lockhart Johnson (05:28):

Welcome to the show, Fawn.

Fawn Nguyen (05:30):

Thank you for having me. Yeah, it's always a pleasure.

Bethany Lockhart Johnson (05:33):

So we have been asking all of our guests if there is an area of your life beyond mathematics where you're currently building fluency.

Fawn Nguyen (05:44):

I know, I heard some others — I've been listening. And it's baking. A baguette, not just any baking. I love to cook. And so, on the stovetop, I'm pretty good. But baking is another beast. And baguette ... someone told me that that actually is the measure —the quantitative measure — of the chef. Right? The one who really knows. And well, no wonder. It's tough. It's tough. It's too many moving parts, too many variables. And, I don't think I have the right water, because I've tried everything. So it's baking a baguette.

Dan Meyer (06:24):

We've had some chats about making roast chicken with Jason Zimba and now a French baguette with Fawn Nguyen. We can pivot to a different kind of podcast here, Bethany, pretty easily, I think. Yeah.

Fawn Nguyen (06:37):

We have a channel for cooking.

Bethany Lockhart Johnson (06:39):

I love hearing about what folks are working on. I think it just helps us broaden our definition of fluency. And I also think it helps us remember that we're all learning. It's all about learning. Maybe we are fluent in our math facts, so it could be hard to relate to the topic, but then when you remember there's things that you're brand-new at too, it can help kind of ground your work and your thinking, and remind you what it's like to be a beginner. So we have so much we wanna talk to you about. But I have one more baguette question. What would you say, thinking about one of the first baguettes that you made, compared to what you are putting on the table now? How has that process changed? Or how has your thinking about the process changed?

Fawn Nguyen (07:31):

Right. I definitely have improved. For example, I've got the proofing down. You know, I wish I did the "before" picture, because I'm definitely getting better. So now, like I mentioned, maybe it's just the water, that one part that's not quite perfect. But otherwise, yeah, I made leaps and bounds. So we get better at something we spend a lot of time on.

Dan Meyer (07:57):

We are so excited to talk to you, because one, you're fantastic, and two, you're an expert on problem-solving. Before we delve into the nitty-gritty, I'm just curious — at a high level, how does an enthusiast on problem-solving think about fluency?

Fawn Nguyen (08:13):

Well, first, any time I hear the word fluency, it always takes me to the context of what it means to be fluent in a language, because I'm an English learner, right? So to have flow, not stumbling, not being stuck. And I finally can make a claim — like, two days ago — that I can speak English fluently. I mean, I'll always be an English learner. I feel like that. And now, sadly, however, I have to say I'm no longer ... I was just in Vietnam last month, and I am no longer fluent in Vietnamese. 'Cause I spent so much time ... I left when I was so early and I spent so much time, trying to learn English.

Bethany Lockhart Johnson (08:51):

Oh, wow.

Fawn Nguyen (08:51):

And now that I have it, I can't say I'm fluent in Vietnamese anymore. You know what's weird, though, Bethany and Dan, is I woke up one morning and I wish I'd written down the date. I woke up one morning and realized my thoughts were in English. It's a language I'm trying to learn; I wanna get this right. And then all of a sudden it's like, "Wow, my thoughts are in English."

Bethany Lockhart Johnson (09:17):

Oh, wow.

Fawn Nguyen (09:19):

So that's when I knew I'd switched over. It's weird. Right now, you know what remains completely intact, however? Completely intact is my times table in Vietnamese, because I had learned that in Vietnamese, right? Even though ... well, maybe this had everything to do with it: It was literally beaten into me. And I've shared this story hundreds of times. And you can ask any Vietnamese who went to Catholic school. So we would stand; so we'd all stand up with our palm face-up — like this — one palm face-up, as we all stand. And the teacher would walk around with a stick to hit us. And just point at us and say, you know, "Seven times eight." And if the answer does not come promptly, automatically ... then we get hit. The problem is, well, it hurts a lot. But the problem is, what normally happens is one of us in the room — and it's like, "Who is it gonna be?" — is, you know, we're humans. We naturally just kind of pull back. We flinch and pull back. If you pull your hand back and the teacher misses your hand, then you're gonna get hit twice. Then you get two. So that happened a few times. So what we do, what a lot of us do, is we take the other hand and we grab our wrist just to hold it in place, and then look away. But then if we look away, we don't know if the teacher's pointing at us. That's traumatic, right?

That's how I learned the times table. By just ... it was literally beat into to us. Yeah, I don't joke about that. It is terrifying. I remember missing it a few times or, you know, I'm just taking my time just trying to figure out what it is, and it didn't come out fast enough for the teacher ... and then, yep. Got hit.

Bethany Lockhart Johnson (11:06):

What an interesting connection to fluency. What an interesting connection to thinking about how you learn something, and to thinking about how your relationship with math developed. Right?

Fawn Nguyen (11:21):

Right, yeah. And I don't know if that's why I'm so ... I'm literally scared; I mean, I freeze up any time when something is timed. Even games like Kahoot, which is very popular among teachers, right? Kahoot games ... when I'm playing a game, I don't know, in all those apps, if there's a time factor, I just lose it. I give up. I don't even try anymore. I don't know if that ties back to being hit, but something, right? It's pretty good evidence.

Bethany Lockhart Johnson (11:51):

I would say there's probably a link. <Laughs>

Fawn Nguyen (11:53):

Yeah, right? So ... back to the math fluency. It's quite similar to language fluency. It's doing mathematics with a flow. Not fast — I didn't say fast — but flow. It's fluid. It's having confidence in knowing efficient and accurate ways to compute. It's being flexible in one's thinking and applying strategies. And school math, I wanna say, seems to tie fluency more to basic facts and computation. And this is evidenced, by the explicit language that I see in the grade-level standards. I mean, correct me if I'm wrong, but I don't recall seeing fluency standards in high school. Which further sends a message that, "Hey, you're in high school now, you should have these procedures down." Right? So it puts a stop to fluency to me, that this seems — when it's not mentioned as often — you should be fluent in high school and in upper grades. And I think that's just something ... I don't want it to be that way. I don't want that to be the case. I think you can always learn new strategies and learn more efficient ones. So the intersection for problem-solving that you brought up ... you know the three words that we always use to describe fluency, right? It's EFFICIENT — we want to be efficient with problem-solving so we don't get bogged down in too many steps and lose track of our reasoning. And we certainly wanna be FLEXIBLE in problem-solving. Just like fluency is knowing more than one strategy, knowing more than one approach — that way you can choose in order to pick the right one — we have to have more than one to choose from. And also we might use one strategy to problem-solve and a different strategy to check the result. And then the third word we use to describe fluency, that you can also describe problem-solving, is to be ACCURATE. Right? So of course we wanna be accurate during problem-solving. We wanna be careful. That means careful recording, mindfully systematic in our recording, and always double-checking our work. I mean, all those habits of mind, those quantitative qualitative measures, apply if I take all the problem-solving strategies — or the common problem-solving strategies — and put them side-by-side with fluency strategies. If, side-by-side, they are quite similar. For example, a very powerful problem-solving strategy is to do a simpler problem. And with fluency, that's what we are doing when we are decomposing and breaking up numbers, right? To do a simpler problem. Another one is working backwards. In problem-solving, it's helpful to sometimes think about applicable to use working backwards ... and that's inverse operations. You know, in a subtraction problem, I'm adding, I'm moving forward. All these inverse operations make a table in problem-solving. That's literally the organization of the times table, right? And then — this one

I love, this is from Joshua Zucker — I love this strategy for problem-solving. It's called wishful thinking. The problem's difficult. We're not quite sure. So we wish it were this part, or we wish this constraint wasn't there. We wish this; we wish that. So that we can control some stuff, make it easier. And that's just what we do in fluency, right? I, for example, don't multiply by seven, ever. I don't. Honestly, if you ask me to multiply a three-digit or more, I stop at two. I stop at two. If I take a three digit number, if I have to multiply by three, I will multiply by two, and then add that whole. You want me multiply by four? I do double-double. Right? I tell my students this. I don't multiply by five; I multiply by 10 and I divide by two. 'Cause there's just easier operations. So that's what I mean by wishful thinking. We do a lot of rounding. If I had to multiply by eight and nine-tenths ... eight and nine-tenths, OK, that's a little taxing on my brain. I'm gonna try multiplying by nine instead. Or by 10 and take away. That kind of thing. So, just a ton of strategies. And for me, it's more fun because it's fun to play. Why not? Why not play with the numbers in that way?

Bethany Lockhart Johnson (16:19):

The language that you're using to describe problem-solving ... you talk about those elements of fun. You said Josh Zucker's wishful thinking. I hadn't heard that idea of ... well, imagine it in another way. And I'm imagining the strategies that students are using to solve problems and using derived facts, using known facts, to figure out facts that they don't know. And when I'm thinking about students in my class or when I'm thinking about games that they're playing, I want them actively playing around with the numbers, and trying out, "Well, let's see, let's see if that works." Or "How did you think about that?" in sharing their strategy. And those conversations that are happening in fluency practice, I so see that connection to problem-solving. Because in problem-solving, I want my students to think about, "Well, what did you use to solve that?" Or, "What do you understand about the problem?And how did you get that part?" Or, "Where did your thinking come from?" And those conversations and that meaning-making ... the playfulness with which you talk about problem-solving, I think a hundred percent, it's so often missing from fluency practice. And so I love those links that you're building.

Fawn Nguyen (17:37):

Aw!

Dan Meyer (17:38):

I think it often feels that fluency is there to support problem-solving. It's how it's often positioned, where kids need to be drilled on their basic facts and have to have to have everything down to automaticity and then they can engage in some problem-solving experiences. But like Bethany said, it's really nice to see the bi-directionality here, where you can inject elements of problem-solving into fluency, how they can support one another. If you had other ideas to inject that energy of problem-solving into fluency work, I'm sure we'd love to hear it.

Fawn Nguyen (18:14):

Well, first I wanna mention what you said earlier — that you have to be fluent in order to problem-solve. And unfortunately, I hear that a lot. And actually, people would just abruptly say to me, "How does my student be able to engage in this problem if they don't know their facts?" And I think out of all the things that I hear, that one breaks my heart. It really breaks my heart. Because somehow, we're equating computational and memorization with "be able to think, be able to enjoy mathematics." Right? And then the intersection between problem-solving and fluency is symbiotic, if I can think of it that way. One helps the other. It's not a prerequisite. And if anything, when you have a kid engaged in a problem,

problem-based, that engagement ... we want kids to be interested in the problem. Then that would just bring out: Now they're interested. Now they wanna spend time working on something. And so one should be playing off the other. And I remember, in Dr. Staley's podcast — I really appreciate hearing you say, Dan, about the binary, that when we say that the kids can do this or are not able to do something, and I think, you know, where's the progression, when we say they can't do something? That just makes me just wanna die. Because it's such a heavy label: that you can't do something. I mean, I know we say that as adults, often. But when we're labeling children, that they can't do something, and something such as fluency, which supposedly takes this lifespan, right? K through 12, at least. And again, I keep mentioning Dr. Staley, just because that's the last episode I listened to, and I so much appreciate everything he said. He mentioned the story. That math is a story. And how this is vertical, how mathematics is more vertical. And we owe it to the children, we owe it to the kids, that they get the time to process. And it just seems ... it's like "What?" They can't be exposed to this interesting problem just because they don't have their number facts,

Dan Meyer (20:30):

Yeah. My feeling is that when, when people say that students can't do a particular problem-solving experience, it's often because of poor design of that experience. Not because of any kind of limitation on the kids themselves. Students, kids, people, are all sense-making mammals. They look at things and make sense of them, without even having to, in lots of ways. And you know, I've worked on some of the problems that you've produced for people. They're visual. They propose a question without even really needing to state it out loud. For instance, they invite me to experiment, and to push things around and see what happens next. To talk to people. These are all just basic, fundamental attributes of being alive and as a human. These are very natural competencies. We're not talking about knowing, you know, the long division algorithm here. Which is different of course. So I'm just wondering, I guess, when we think about the kinds of drill sheets that people often produce, and other kinds of fluency experiences that students could be having, that involve everything I just mentioned, that's in your problem-solving work. You know, experimentation, visuals, et cetera, communication. What are ways that those attributes can be transferred onto fluency exercises? Have you seen any? Have you produced any that you think capture elements of problem-solving better than the fluency-exercise worksheets do?

Fawn Nguyen (21:55):

I mean, there are really smart worksheets, really smart worksheets. And I don't get to see them often. But they're smart because they, they have the kids focused on ... it's called variation. You might be familiar with the term.

Dan Meyer (22:10):

Right.

Fawn Nguyen (22:10):

Right. It's variation. Where it's not just a variety of problems, but it's smart practice, because it's having kids honing onto one thing that's different. So those are wonderful. I mean, worksheets are not bad. Tests are not bad. It's what's on there, <laugh>, I always say. It depends on the content and the context of it. But, I mean, you can turn a numerical test into problem-solving. So, you know, those non-routine ... I used to really love those non-routine tasks. But I think you can take anything from the textbook, from text, and turn that into problem-solving, simply by when and how you introduce it. If you just do it earlier, prior to teaching it, there you go. Right? So if I gave you a multiplication problem to solve, it's an

exercise for us. But if we gave a multiplication problem to a child who has not learned it, that's problem-solving. So there's that. Problem-solving simply means, "I don't quite know how to do this, but I understand multiplication." Or, "I understand addition." I understand something about it. And, yeah, you can put it in context, but it's just all around us. You don't have to search for it. I think the degree to which something becomes problem-solving is simply how familiar we are with it, whether we have a prescribed set of steps.

Dan Meyer (23:40):

I'd love to push a little bit more on this right here. If I gave a calculus question to a third grader, that would be earlier than they'd been taught it. Obviously. And, so, it wouldn't feel like a problem-solving experience, I would imagine, so much as an experience of frustration and futility. So I think there's maybe something extra I'd love to hear from you about what makes the problem-solving experience—

Fawn Nguyen (24:04):

I'm gonna steal what Terence Tao, I heard him say once. And I love that he said "just out of reach." So, it's right there. Just right there. So, for example, I've been in elementary classrooms where the teacher says they haven't learned multiplication yet. So I thought, OK, that's perfect. That's what I'll do. Or, they'll learn about area in the spring. Perfect. Then I'll do that in the fall. They're gonna get to it soon enough. But I just know they have enough so that it becomes problem-solving.

Bethany Lockhart Johnson (24:40):

You know, particularly thinking about work with Megan Franke and Cognitively Guided Instruction ... I've seen so many examples of students who, for instance, in conversation — not in a specific rote assessment, but in conversation — saying to a student, even my kindergarten students, saying, "You have three packs of gum and in each pack is four pieces. How many pieces of gum do I have?" And I'm not expecting the student to use multiplication. But thinking about, "How does the student solve it and what are they using to solve that problem?" And sometimes students are saying, "Well, I know four and four is eight." Or, you know, we have tools on the table, and so students are sometimes pulling out the tools. Or, another example that I do in my fluency work, a problem ... we had Dr. Guarino on the podcast, and we had worked with my students on this problem where Dr. Guarino has five bunnies in the hutch. Sometimes the bunnies are inside the hutch and sometimes the bunnies are outside of the hutch. What are all the different ways the bunnies can be ... she could come out and see the bunnies, right? And there are ways that students could solve it that. I mean, they could make up equations, all sorts of things. I'm sure there are very advanced mathematical ... you know, you could extend from five bunnies to a million bunnies.

Fawn Nguyen (26:09):

Bethany, that's the kind of lesson that I lose sleep. I mean, I am so excited! I lose sleep.

Bethany Lockhart Johnson (26:15):

Yes!

Fawn Nguyen (26:15):

I can't wait. Because — what you're saying: I can't wait to see their strategies. I mean, yes. In my blog — if anybody reads my blog <laughs> — it's just those types of lessons that I can't wait to share, because it goes in a direction ... I'm super proud; "I don't want class to end" kind of thing. You know, Dan's taco

cart brings to mind, the penny pyramid, just those things where there's some calculus problems, but no, we can do what we can do, right? And they can take it as far as they can. But right there, it's problem-solving when it's just a little out of reach.

Bethany Lockhart Johnson (26:54):

But I give those examples too, because as you're talking about the link between problem-solving and fluency, I'm feeling like ... let's say I'm doing that problem in my class. What I think I hear you saying is then you're attending to the strategies that students are using, or the meaning-making that students are using. And are you saying that then that can be transferred to the way that they're building fluency? Or are you saying fluency is happening as they're—

Fawn Nguyen (27:23):

Both. I want to say both.

Bethany Lockhart Johnson (27:25):

Yeah. I'm imagining the teacher that's listening to this and thinking their fluency work is solved, right? They're hoping to develop fluency in a way that will support problem-solving. And I'm wondering, you know, I love hearing the way you think about those links.

Fawn Nguyen (27:42):

Yeah. So, for example, if by engaging in that task — and with classmates; they're always doing these in groups — when they're motivated when the group's strategy is, "Oh, we're building this table." and they can hear, I mean, especially when we randomly group kids, they will know who has what facts, right? And then it's helping each other out. And they say, "OK, you know, I'm doing this my way; I'm doing this my way." But somebody else next to them is like, "Oh, I'm doing it this way." So, hopefully they're seeing the efficiency. They're seeing, "Oh, that's more efficient." And that's where the number talks come in. Also so powerful, the number talks. I think the most powerful thing about the number talks, which is mental math for me, when I say number talks, is the shared strategies. The shared strategies is my favorite part. Not just because, "OK, I'm hearing different things," but the best part is they're saying, "I just learned a new way. Bethany did it this way. Oh my gosh, I just learned it." And then the next time they name it after you, Bethany. "So I started Bethany's way," or "I really like how Dan started the problem, and I started the same way." So mathematicians have names, and they're sitting right in front of us. All of them. And, it's empowering. We talk about wanting to empower the kids. How do they know that they have a place in mathematics? It's only because they have a voice. And so the number talks — not just in the fluency skills, but in building those skills — build confidence. But also just the fact of knowing that they have a voice, one feeds off the other. When you're this good, and then when you're told, "Yay!" you're applauded, you're respected for your thing, it just feeds on its own. And then now you wanna work more on that. So, there's that balance. Whereas a worksheet doesn't do the same thing for you. It doesn't give you that feedback that other classmates can give feedback to. In addition to number talks — which I do as warmups, every other day, by the way, we do number talks every other day — I always encourage teachers to always ask for estimates all the time, 'cause that builds number sense. And play games. And I know you had Jennifer on the live session. That's fun, right? And, so, play games strategic games like she did. And then I want to also mention numeracy routines, because numeracy is part of fluency. That's important. That's why fluency is such a bigger category for me. And, one of my favorite activities with fluency is different bases. Other than base 10. And James Tanton's Exploding Dots come to mind. When kids learn to work in base five, base three, all of a sudden they

really pay attention, especially in the decals unit. And now, we get to the decals, and it's like, "Yeah, it's, it's on our Base 10 system. What if an alien dropped in and they only function in base seven?" That kind of thing. And then, school-wide, nothing should happen in isolation. I don't want math to just happen within the math classroom. We want that to be far-reaching, as much as we can. So I was thinking, you know, I would love to have schools adopt where over the PA announcement that happens every morning: that they maybe just end with a mental math problem. Just toss it out there. And whatever class wants to pick it up, pick it up. That school-wide theme, that community sense. And newsletters home! Newsletters home encourage parents to play with mathematics with their kids. Yeah, just school-wide things. And, you know, I would love to start a staff meeting with a number talk. Really, just drop it everywhere. Everywhere you can. Because once you promote something so that it's natural, it becomes embedded. And it's not, "Oh, I'm going to math. I only do this in a math class." It really should be borderless.

Dan Meyer (31:56):

Fawn, I really appreciate you adding those agenda items for, you know, the Fawn Nguyen School of the Future, <laugh> the one at some point. <laugh>

Fawn Nguyen (32:04):

Just a little bit more.

Bethany Lockhart Johnson (32:05):

Well, I love that the way you're talking about those ideas, Fawn. You're not talking about something that requires a massive overhaul of school systems or massive budget reallocation <laugh>. These are things that you could start incorporating. And what I've heard you talk about, I've heard you talk about work not only in the school, but at district levels. And, here we're three math educators all based in California. And California has a brand-new math framework, which it's going beyond just fluency, but it places a greater emphasis on real-world application. And so I'm curious what stands out to you in the new framework, as you start to dive in there.

Fawn Nguyen (32:53):

There are several things. One of the key things — I really applaud the framework. It's the most equity-based, focused recommendations. And we have six million students in our state, so I'm glad equity is at the forefront. Also, the advocates for collaborative inquiry-based learning ... back to the binary, I'm hearing it around Twitter in terms of, it's direct instruction versus where it's a blend. And so I'm glad to hear that. No, we're not saying it's one or the other. It's problem-based, but that doesn't mean it's all just, "give a kid a problem and let 'em go at it." It has directed instruction, also. And, because of the push for collaborative inquiry-based learning along with the equity-based, it makes this very wonderful promise that we will support all students from diverse backgrounds, including English learners, like I am, and neurodivergent learners, to know that we all belong in a math class. Another thing that the framework does is the big ideas. The big ideas is a big thing. And we have data science along with the fluency. But the data science and math content itself supports the equity-based, in a way that when the students can examine the important issues and address the inequities that they may see in their own communities, that part is wonderful. I think what we need now — what we've always needed — is the teachers providing that support. Because it took a bunch of years, right? Three, four years for that to get finalized and get approved. And we need to focus on providing teachers with the support — not just in the pedagogy, but the math content — to bring that framework to life.

Dan Meyer (34:48):

Yeah. The framework ... it is just always so interesting when these documents come out. The Common Core math framework and others. Like, teaching is the single largest profession in the US. There's so many teachers of so many different capacities, from novice to veteran, from, people who have math degrees and who don't, who are generalists and specialists, and so on. And it's a very lovely marker to put out there — a flag on the ground, is my feeling about it. And now I'm left to wonder: How do we back those words up with deeds? With, like you said, Fawn, with the pedagogical support for teachers? And what good is pedagogical support when teachers don't have useful materials to work with that bring out from students, that invite from students.

Fawn Nguyen (35:30):

Exactly.

Dan Meyer (35:30):

So the work is just beginning here, is what it seems. But I love how you highlighted what's so good about this document.

Fawn Nguyen (35:38):

Thank you. And this is something I read, and it sticks with me, that I love. And, I don't know who said it, but I love it. It says, "It's not that students don't need math; it's that math needs students." Right? All of them. Math needs students. 'Cause we always say, you know, "You need math to do this and that." I say, no: Mathematics needs kids, needs humans. All of them.

Dan Meyer (36:05):

Shout out to, I think, Rochelle Gutierrez, has made that a part of her messaging about mathematics. I love that.

Fawn Nguyen (36:11):

I could've guessed that. <Laugh>

Dan Meyer (36:13):

Yeah. It matches, right? well thank you so much for coming on the show, and talking to us again about problem-solving, fan favorite. But also how to link that up with fluency and help the two of those nourish one another, rather than being these competing priorities in a class. It's been wonderful to chat, so thank you so much, Fawn.

Bethany Lockhart Johnson (36:28):

Thank you, Fawn!

Fawn Nguyen (36:30):

Thank you so much. Appreciate you guys, always. Thank you. Thank you. See you in real life, soon.

Dan Meyer (36:35):

Soon enough.

Bethany Lockhart Johnson (36:38):

Thanks so much for listening to our conversation with Fawn Nguyen, specialist on the math teaching and learning team at Amplify.

Dan Meyer (36:45):

If you folks are interested in delving deeper into the future of math in California, we're excited to announce that Bethany and I will both be a part of a brand-new webinar series exploring just that, beginning of February. You can catch the two of us hosting conversations as part of a free series all about math in California.

Bethany Lockhart Johnson (37:03):

That's right. We'll be breaking down the new California math framework in greater detail. We're talking about building equity and engagement in California's math classrooms. And we'll answer all the questions you've ever had <laugh> about authentic tasks and problem-based learning. Actually, Dan, we can't promise all of the questions will be answered. But we're gonna do our best. I think, together, we can at least tackle a few of 'em, right, Dan?

Dan Meyer (37:26):

Yeah, let's do it.

Bethany Lockhart Johnson (37:27):

For more information and to register for the webinars, go to Amplify.com/CAMathWebinars. That's Amplify.com/CAMathWebinars, all one word. And we're also gonna put a link into the show notes. And speaking of show notes, that's where you can find links to follow Fawn and watch her first appearance in the Math Teacher Lounge way back in Season 2. Next time on the show, we are wrapping up our fluency-focused season. We're gonna be talking about what we've learned, what questions do we still have, and try to synthesize some of all these amazing thought leaders and what we've learned together. Find that episode and everything else we've done this season in the Math Teacher Lounge feed, wherever you get podcasts. You could find more information on all of Amplify shows at our podcast hub. Go to Amplify.com/Hub.

Dan Meyer (38:24):

Thanks for listening.

Bethany Lockhart Johnson (38:25):

Bye!