EDUCATION · ACCESS & PURPOSE

Access Isn't Enough

A conversation with ed-tech founder Amrutha Vasan on why widening access to learning depends far less on the technology than on giving students real problems—and real purpose.

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Amrutha Vasan has spent her career trying to lower the cost of access. Born in Cleveland, schooled in Chennai, and trained as an industrial engineer at Georgia Tech, she left a job at Procter & Gamble at 23 to build virtual-reality learning in Mumbai. Over the next seven years her team built a platform that brought more than 800 interactive simulations—flight training, nursing, welding, semiconductor manufacturing—into K–12 classrooms on whatever devices students already had. The company was recently acquired by Macmillan Learning. But the lesson she keeps returning to is that access, by itself, changes nothing. The tools are not the point.

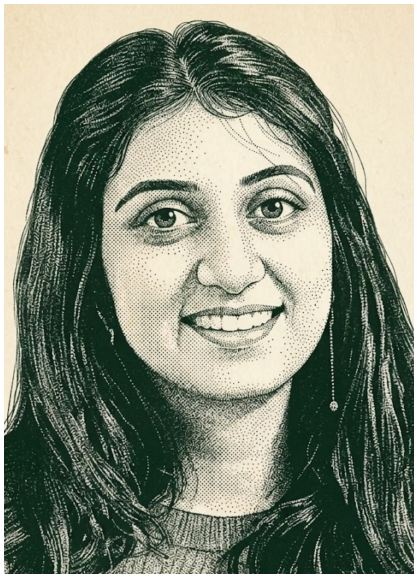


Illustration: OJSM

> *"You just can't replace a bad teacher. There's nothing that replaces the human element of a teacher."*

You grew up between the U.S. and India, started out pre-med, and became an engineer almost by accident. How did that path lead you to education?

I grew up in the U.S. until I was 10, then my parents moved back to India to expose us to our culture and to give back to the community they came from. I did 5th through 12th grade in Chennai. The Indian school system is intense—a lot of rote memorization—but everyone takes the exact same subjects and is tested on the exact same thing, so there's this shared camaraderie as you go through something difficult together. That was actually very helpful.

Then I came back for college at Georgia Tech. I started out pre-med, doing biomedical engineering, but I had really bad chemistry teachers in school, so I made a B in my first class and realized I wasn't going to do as well as I wanted on the MCATs. So I chose my major by process of elimination—I picked the one that didn't have chemistry. I was good at math, so that's how I ended up in industrial and systems engineering.

I did everything right. I did internships in data analytics, at Procter & Gamble, at a big consulting firm in New York. But I didn't really enjoy any of it, and nothing I was doing felt like I was actually creating an impact. Then my senior year I ran into a friend at the gym who was doing research in immersive education—using Google Expeditions, the virtual field trips. The idea was to increase access: when

you go on a field trip, you may not learn much in the moment, but you have such a powerful experience that you come back interested in learning. He was asking whether we could use the technology to replace a bad teacher in places that didn't have great ones.

We did research in inner-city schools in Atlanta and in slums in India, and we realized very quickly that you just can't replace a bad teacher. There's nothing that replaces the human element. But there are ways to use the technology to *augment* a teacher and give students access to different ways of learning. So we built about 50 minutes of virtual biology experiences—DNA replication, RNA translation, inherently 3D topics you need to visualize. They're still free on YouTube today, at InSpiritVR. We ran a study with about 300 students across five districts in Atlanta and saw it increased confidence, engagement, and knowledge retention. But the hardware wasn't there yet, and neither was the access—everyone needed their own phone, and many students didn't have one.

At 23 you gave away your furniture and moved to Mumbai to build VR for classrooms. That's a big risk for someone who once changed majors over a B.

Honestly, that decision was a lot easier than it may have looked. I had nothing to lose at that point. The money I was leaving on the table at 23 was not that high—it's someone in their mid-career who's really leaving a lot behind. And there's very much a fail-upwards culture in the U.S., especially in the venture-capital world. You meet a lot of founders who failed, or didn't get the huge exit, and they've done fine—a lot of doors open for them afterward.

So even though it seems risky, it was a hundred percent something I thought through. I told myself, worst case, if this fails, I'll go into a master's program, and I'll have an interesting story. If there's a way to get funding—and there are a lot of educational grants out there—I'd actually argue the earlier you get it, the better, because you have more time and energy and fewer commitments. Even if it fails, America rewards experience, whether you succeeded or not.

You talk about access constantly. Where do you actually see the biggest barriers?

I'll caveat that the one area I haven't worked in is policy and government, so I'm missing what's probably the most important piece—budgets, policy, the government side. For me, the whole concept of VR was that we could put you in the shoes of someone you'd otherwise have no exposure to, in a much more cost-effective way. People hear "VR" and think expensive, but think about students in rural parts of the country. It's either bus those students into a city for a field trip, or give them access through a device—and the device is always going to be cheaper. Some of our biggest use cases were actually in rural districts. We even built offline modes, because even if you weren't capturing all the data, at least students with spotty internet had a chance to access the simulations.

One use case I keep coming back to is the semiconductor industry. Through the CHIPS Act, Micron is building a chip factory in upstate New York, and they want to inspire middle and high schoolers to dream about those careers. But one of the biggest jobs in a semiconductor plant is working in a clean room—and you're not allowed in a clean room until you turn 18. So how do you even talk to an 11-year-old about that career? We talk about nurses and doctors and police officers because those are tangible, the ones students can see. The more exposure you can give students early, the better.

And sometimes that exposure means discovering what you *don't* want to do.

Exactly. I actually think a student coming out of an experience saying "I'm not interested in this" is even more powerful than them going down a rabbit hole

at age 11. When you think about 6th through 12th grade, the whole point is giving students enough experiences to make smart decisions: Do I need to go to college? How much should I spend on it? Are there careers where I'd be better off with a certificate? There are many ways to access education today. You just don't want someone making a poor decision at that fork and then regretting it—especially in America, where higher education is so expensive.

You've said you have a controversial opinion about tests.

I do, because almost everyone in education thinks we shouldn't have grades or tests. I think tests can actually be a way for students to have opportunities. Look at the IITs, the famous engineering schools in India. Admission is a single test—no interview, nothing. Of course there are expensive coaching centers, so there's privilege involved. But there are also just textbooks you can read. My dad's family didn't come from any money, and all of his brothers studied for that test on their own, in the public library, and got in. It completely changed their life trajectories, because there was a way in that didn't depend on an interview or on polished soft skills they never had the environment to develop.

I read about a student here who took something like 30 college-credit exams on her own and ended up with a full ride to NYU, having basically finished two years of school—because her school didn't offer any APs, so self-directed learning was her only path. We don't talk enough about the ways you can learn, show up, and prove yourself even when you don't have all the resources someone else has.

"The fastest and most intense education I've ever had was actually building my own company. It was not in a classroom, and it was not in college."

Where does purpose come into this? You've said the best learning of your life didn't happen in school.

It comes from my family. My dad's a doctor; my mom's parents were doctors. The person I was closest to growing up was my grandfather, a general physician in India with a small practice at home. As an 11- or 12-year-old hanging around his clinic, a lot of it just looked like gossip to me—someone would come in for the equivalent of Tylenol and end up talking about how their son isn't married. But later I realized how much emotional support he gave, how he kept the fabric of the community together. And it really wasn't about money.

The way I was brought up, you get to a threshold where your needs are met, and after that it's not about maximizing what you make—it's about maximizing what you can give back. That's why I did what I did: if I couldn't do medicine, let me make an impact a different way. But I really struggle to do things I'm not inherently interested in. I have to find meaning and purpose. Going into education gave me that—I was excited to wake up almost every day because I felt part of a bigger purpose. The fastest and most intense education I've ever had wasn't in a classroom or in college; it was building my own company. When I think about my own speed of learning, it was always when I was actively building.

So how do we light that fire for other students? How do we make learning that real?

I don't have a great answer—I think that's the billion-dollar question. But let me tell you a story. There's a dad in San Jose who had to do something for his school's PTA, so he decided to teach kids problem-solving. He didn't want to hand them a random problem, because then they wouldn't care, so he connected it to the XPRIZE—these open competitions to solve humanity's unsolved problems. His team took on the challenge of stopping a wildfire within ten minutes using autonomous drones. The kids got

completely into it, because it's *real*. It's not a worksheet or a case study. It's an actual problem.

He's been doing this for twelve years. The students keep rotating—they hand off the project to the next group—and they've made the semifinals seven times. Right now his high school team is competing in the XPRIZE finals in Alaska against Anduril, the largest drone company in the world, with a product they built themselves. And he's now running the same program in Malaysia, the Philippines, and China, including two refugee schools, because he wants to prove you can get any group of students together and, with the right motivation and access, have them solve world problems.

"It's always the students. I'm one of the few people that actually works with students to build my products—which is crazy, if you think about it."

Who tends to get left out of the conversation about educational innovation?

The students. It's always the students. I'm one of the few people who actually works with students to build my products, which is crazy if you think about it. Students today have far more information than students of the past, and they're actively thinking about whether they'll be employable, whether their education is even useful. Some refuse to use AI because they think that's what will help them get into college; some embrace it; a lot have no idea what they'll do next, and a lot don't believe in the education system at all. When you have students who did everything right and are graduating without a job, they feel cheated. We keep saying we'll fix the system for them, but we need to be talking to the people who'll actually be affected by the decisions we make—and they're not in enough of the conversations.

How does the teacher's role change as AI takes on more of the work?

Think back to why you do what you do today. Nine times out of ten it's because a teacher inspired you or made you believe something was possible—a teacher who managed coursework and lesson planning and still took the time to make you feel special. If AI can take some of the grunt work, maybe we free up teacher time for exactly that: building community in the classroom, social learning, human interaction.

I learned a simple physics concept on Khan Academy once, because my teacher didn't explain it in a way I understood. The first projectile-motion video I watched was about LeBron James shooting a free throw—and I'm from Cleveland, so I will never forget that video. My teacher in India would never have thought of that. Technology can give students new ways to make those connections. But the expectations have to change across the board. A lot of parents don't like teachers using AI because they believe a teacher should grade their child's work. A lot of students figure that if the teacher grades with AI, why can't they do the assignment with AI? And a lot of teachers were never trained to do the community-building part in the first place. So the narrative has to shift for it to work. The good news is the technology is here, so at least we're starting to have the conversation.

Some say AI could be the most democratizing tool ever created. Others worry it will deepen existing inequalities. Which is more likely?

Globally, I think it's going to start deepening inequalities, because the top AI labs are concentrated in just two countries, the U.S. and China, and that concentration gives them a lot of power over who gets access. But within the U.S., I think it's going to democratize a lot. So many people can now bring their ideas to life, and I think we're heading toward a much more entrepreneurial society. Access used to be the biggest reason people had to join a big company; with AI,

there's so much that can happen with just one person.

A lot of people may not easily find traditional work, and that may inspire them to start their own company, the same way I did at 23. So I'm expecting a wave of highly energetic, motivated people running their own companies instead of entering the golden handcuffs of a regular job. The incumbents should actually be a little more fearful. And the way we think about education is probably going to look very different, too—hopefully. Once people find a purpose, and now they actually have the tools to meet that purpose, that's when the greatest learning happens.

FOR THE CLASSROOM

What This Means for Teachers

Vasan has spent her career outside the traditional classroom, but her conclusions land squarely inside it: access to content is not the same as access to learning, and coverage is not the same as understanding. The work now being asked of K–12 classrooms makes the same case. The newest expectations for mathematics ask students to *behave* mathematically—to reason, to model, and to persist through problems that do not resolve in a single step. Vasan's wildfire-drone story is, in everything but name, a lesson in the standards for mathematical practice: a real problem, owned by students, that rewards productive struggle over recipe-following. Her insistence that a student who discovers what they *don't* want is as well served as one who finds a passion reflects the same patience these expectations demand—the patience that, she warns, almost everyone abandons the moment scores dip.

The practical implications for teachers are concrete. Technology is the augmentation, not the lesson; if AI or VR frees up time, the dividend belongs to the human work—community, discussion, productive struggle—that no tool can supply. The most durable motivation comes from problems students find real, not problems engineered to be easy. And the students we most often try to "protect" from challenging mathematics are usually the ones it shuts out; raising the floor of what we ask, rather than lowering it, is itself a form of access. None of this is framed as a standards argument—but teachers reading between the lines will hear one.

About This Interview Series

This conversation is part of a series highlighting diverse voices in mathematics education. We feature in-depth interviews with stakeholders across the educational landscape: teachers, students, parents, K–12 administrators, policymakers, and education leaders, each offering unique perspectives on the challenges and opportunities in mathematics teaching and learning.

About the Interviewers

Carlos A. López González is a data scientist and educator with a background in engineering and mathematics education. He designs innovative tools and learning experiences that personalize instruction. His recent research focuses on integrating AI into mathematics education.

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