



Now on Teacher Voice

Changing Careers: Part Two

In this episode of *Teacher Voice: The Podcast*, we talk with teachers who have come to teaching after having a different career. What was it that drew these career changers to the teaching profession?

(00:00) **Kirstin:** In high school math and science teaching, content is often seen as king, right? Think of a typical American high school math class, and you'll probably think about the quadratic formula or graphing function, or solving geometry problems. And what would an AP Biology class be without the challenge of learning the chemistry behind photosynthesis? But in this episode of Teacher Voice, we'll hear from teachers whose experiences in careers before teaching have led them to think outside the box when it comes to math and science education. Our career changers are back and they're questioning the idea that content is king. Stay tuned. So I'm Kirstin Milks and I am one of the editors-in-chief of *Kaleidoscope*. I also am a science teacher in Bloomington, Indiana.

Rick: I'm Rick Barlow. I'm an Associate Editor for *Kaleidoscope*, and I'm a math educator in California.

Kirstin: We've had this incredible opportunity to get to talk with people who change[d] careers to become teachers. And what we found has surprised us.

Rick: Yeah, we laughed. We cried.

Kirstin: Multiple times, multiple times.

(01:12) **Laura:** The classroom, the world is my oyster.

Kirstin: This is Laura Darnall . . .

Laura: I've been within an hour of Nashville my entire life.

Kirstin: . . . whose career path has taken her from a chemistry degree to research and development to the high school physics classroom, and then to a stint with an engineering firm. Even before her engineering days, though, it's clear from talking to Laura that she brought an engineering mindset to her teaching, by always looking for new ways to teach old ideas.

Laura: I tried project-based learning. I tried this menu style where I let kids pick what they wanted to learn every day. Side note: that was a disaster. I just changed it every year, and it was incredibly fun and rewarding. As it turns out, I think there are only 11 ways to teach physics.

Laura: I don't think there are 12.

Kirstin: And you, you, you try, you built them all to try, right?

Laura: So I tried all 11 of them. And when I, when I ran out of things to try, I thought, "What else could I try?"

(02:11) **Kirstin:** But why was Laura so open to trying new ideas and new things? Well, it's because she believed in the value of getting it right. And the joy of that process, not just the end result. And because she knew that to support her students' development into successful adults, she would need to teach them more than science.

Laura: You know, there were a number of times where I would go to the lab and I'd get lab data to write the report.

Kirstin: This is at the engineering firm.

Laura: And it wouldn't make sense. And I would question

the lab technician and just say, "This seems a little bit off. Do you know any reason why this data may be off?" And he would just kind of look at me like, "What do you mean, it's off?"

Laura: I would take them and translate them into "okay, based on these numbers, it's this." And then the engineer would take it and say, "well, based on that, here's my recommendations." And when you're talking about—I'm about to put an eight-story hotel on this plot of ground and I'm basing the load bearing capacity on how fat or lean this clay is—it's a little bit important.

Kirstin: In math and in science, we asked kids to stop and pause after they have arrived at "the answer" and do this thing where we ask ourselves, does this make sense? Right, "is the number in a reasonable numeric range? Are these the data, as you suggested, that would really help us support an answer to a question the scientific way?"—and that's often, that's often a place where kids push back and say, "Why are we ever going to use this?" And here you are saying, "It's the thing I wish people knew how to use."

Laura: Right. And I think you may have made an assumption here when you said "we ask students to stop and think"—I don't know that that's universal.

Rick: Or if it's valued. In all education.

Laura: There are a number of textbooks that add that question there. But there are also a number of teachers who don't want to grade that and don't make their students respond to that. And I think that's pervasive. I think when you give this idea of, you don't have to answer the "How did you get that?" or "Does it make sense?" because we're not going to look at it. I mean, I think there are a number of people, maybe myself included, who take that into a professional role. And just get so busy being fast, fast, fast. Go, go, go, what's next, what's next.

(04:34) **Kirstin:** Now you might remember the Wall Street story of Diarra Gueye, high school math teacher and critically acclaimed fashion designer, from our last episode. Well, it turns out Diarra also has a story about the joy of process. Listen in, as she explains to Rick and me why failure is such an important part of her math curriculum.

Rick: So Diarra you have this like, theme of failure, right? Like Wall Street was a failure. The art platform was a failure. I think it's so powerful that you see the value in that. And you, now in the classroom, those are stories you tell your students and something you help with your students.

Diarra: Yeah. And I—this year I was teaching algebra and geometry, and I'm teaching ninth grade geometry.

So the students who generally do better and are kind of on an accelerated track. And I noticed very early on that they were very different from my algebra students. And the connection we have is very different and they are very serious. They get all the work done. One day this girl was crying so hard, and I was terrified and asked her and she said she forgot her homework at home. That's why she was crying. And I was like, that is fine. It's like .001 percent of your grade and actually we will waive it like, don't worry about it. And I think one thing I've emphasized a lot in my classroom, especially with that cohort, is that your grades actually don't, I mean, they do matter, but they don't. And I was like, you know, I understand the why of what we're doing, as opposed to just doing it to get a check and get the points.

Rick: And that's important by your, your experience.

Diarra: Yes. Because I think a lot of things that happened could have been avoided in terms of the perks that I've experienced or the pain, if I had failed earlier, but I went to school with a teacher that just told me I was amazing all the time. I also didn't challenge myself in college, for example, I only took classes that I knew even on day one, I was gonna get an A. If I took a class and the first day was challenging, I'll drop it, because I didn't want to look bad. And I was like, well, I'm this talented, gifted person, I can't have A minuses or like lower grades. So anything that was difficult, I wouldn't take it. And I want my students to do the opposite. Because some of those students, they just want to do this stuff that works that they are good at already, and . . . you're not learning anything. If you're good at it already, then what's the point? So that's something I really want to try to push. And I give them so many stories. We have story time, like every week, where I just give them a random story, whether it's about me or about somebody [else], but it's about failure. And about it's always like something where you dropped, where you wouldn't expect going any lower and a new grace, and you learn something along the way. And I think it's super important that they get that early on.

(6:59) **Kirstin:** So in our last episode of Teacher Voice, Rick talked about this powerful idea that he brought into his identity as a teacher from his background working for Starbucks.

Rick: Starbucks is not in the coffee business serving people. They're in the people business serving coffee.

Kirstin: When Rick started teaching, you'll remember, he realized he was in the student business teaching math, rather than the math business teaching students. And from both Diarra and Laura, we hear the same idea. It's the humanity of teaching, the people side of science and math, that matters. But practically speaking, what does that look like and sound like and feel like? What's it like

to center humanity in a math or science classroom? Well, first off, what are the things people would really need to learn? Here's Laura and me thinking about that together.

Laura: I think the ability to manage time to take initiative to ask for resources that you need, and know what you want, confidence in talking to superiors, but still being respectful.

Kirstin: And all of those things are things that are missing from the NGSS.

Kirstin: A quick aside: the NGSS are the Next Generation Science Standards, a national framework for thinking about science teaching.

Kirstin: Right? All those things we package as like soft skills,

Laura: We prefer professional skills.

Kirstin: Right? And that's, that right. This is the thing, right is that it's not even that they are professional skills. They are the important skills, of applying whatever the science or engineering or math or technology is that you are doing, developing, implementing, whatever, right. Like you can't, you can't do the work without those skills.

(8:46) **Kirstin:** Now Rick and I both changed careers and what we were hearing about valuing failure, about building professional skills, it resonated really strongly with us. And it resonated with chemist-turned-teacher Valentina Bumbu, as well. In her classroom, a chemistry classroom in St. Louis, centering humanity is all about students collaborating in authentic environments.

Valentina: I had two options, go traditional, or go with what I think would be helpful for my students. So some of the skills that actually transpired were some of the things that I saw valuable in a working space. I started partnering up with some companies in the area, including Sigma Aldrich . . . another was Boeing, [the] third one was Schnucks Pharmacy. So we created four projects. And they came and they were part of the labs and they were there supporting my students through it and at the end, they were panelists at the presentation to present the end product finished/unfinished, whatever it is.

Kirstin: Getting scientists and pharmacists to serve in your classroom as mentors is a massive undertaking. But for Valentina, the effort to help kids work in more true to life situations was well worth it. Her career as a scientist had shown her its value.

Valentina: We use a lot of the structures that are how teams work in actually in the workforce. So a lot of

those kind of expectations and contracts and norms and it took strides.

Rick: So you saw value in teaching students how to work together,

Valentina: Right

Rick: As much as you saw value in teaching them chemistry.

Rick: Because of your experiences as a professional?

Valentina: Absolutely.

(10:12) **Kirstin:** Okay, but here's the thing: doing full scale PBL like Valentina's is a big undertaking. Really big. But Rick and I know that teachers across the country are helping students develop professional skills and overcome their fears of failure in lots of ways.

Kirstin: And that's where you come in. Are you a teacher with a story about the people business of science and math teaching to share? We'd love to hear from you and maybe feature you on an upcoming episode of Teacher Voice. Drop us an email: Kaleidoscope@knowlesteachers.org. Many, many thanks to our panelists for sharing their experiences. And a special thank you to Rick, lead producer for this episode. He is an absolute wizard at hearing others' stories and finding common ground. *Kaleidoscope* and Teacher Voice are supported by the Knowles Teacher Initiative. You can find the current issue of *Kaleidoscope* as well as the complete archives, at knowlesteachers.org/kaleidoscope, and you can also find us on [Twitter](#) and [Facebook](#) @EducatorVoices.

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