

Evelyn Lamb: [00:14](#) Hello and welcome to the Lathisms Podcast. I'm your host, Evelyn Lamb. In each episode, we invite a Hispanic or Latinx mathematician to share their journey in mathematics. Today I'm very happy to be talking with Rosaura Uscanga.

Evelyn Lamb: [00:27](#) Thanks so much for joining me today. Can you tell us a little bit about yourself?

Rosaura Uscanga: [00:32](#) Yeah. I was born in Veracruz, Mexico. My family moved to the US when I was 11 years old. And I actually didn't speak English when we first moved here, so as you can imagine, the first few years in the US were very hard for me. I come from a family who believes that school and education is really important. My parents were my biggest supporters when it came time for me to go to college and then when I decided to pursue higher education.

Rosaura Uscanga: [01:04](#) I attended the University of Texas at Arlington for my undergraduate degree, and then I moved to Oklahoma and got my master's at Oklahoma State University. And that's where I'm currently at as a grad student working on my PhD. At my time at the University of Texas at Arlington, I actually met my husband, and then we've been together ever since.

Evelyn Lamb: [01:28](#) And so, did you move to the Dallas area from Mexico?

Rosaura Uscanga: [01:33](#) Yes. Yes. So we moved directly from Veracruz to Dallas, and then lived there ... I lived there my whole life until I moved to Oklahoma to go to Oklahoma State University.

Evelyn Lamb: [01:44](#) Oh, okay. I grew up in Dallas. So when I saw UT Arlington on your CV, I was wondering if you had a Dallas connection.

Rosaura Uscanga: [01:52](#) Oh yeah, definitely.

Evelyn Lamb: [01:54](#) Yeah. So what were some of your early experiences with math? How did you end up discovering that you liked math?

Rosaura Uscanga: [02:04](#) Well, so I've always liked math since I was very little. It was always one of my mom's favorite subjects, and she would always help me with my math homework. So already from a very young age, I learned to like math. And my dad also really liked math. So I sort of got that from both of them in a way.

Rosaura Uscanga: [02:23](#) However, I started to really, really like it when I moved to the US. I didn't understand what was really happening in my classes when I came here, I was in middle school at the time, because I

didn't speak English. And then in some of my classes, I was even bullied for not knowing English. So school was just hard overall. But math almost felt like that one class, it was the safe space for me where I could just go and focus on school and not have to worry about anything else. I didn't need to know English to understand what was going on, so it automatically became one of my favorite subjects.

Rosaura Uscanga: [02:58](#) And then I guess I worked so hard in it that it was also one of my best subjects. So even throughout high school, I tried to take as much math as I was allowed to take, which sadly just ended up being up to Calc 1. But math was always the class that I looked forward to the most throughout the day.

Evelyn Lamb: [03:18](#) And were your teachers encouraging of your interest in math?

Rosaura Uscanga: [03:21](#) Not really in the middle school or high school levels. I felt like I was a lot more encouraged once I got to UT Arlington by my professors in math.

Evelyn Lamb: [03:35](#) And who were some of the professors who mentored you in college and then in graduate school?

Rosaura Uscanga: [03:41](#) In an official mentor role, I did my honors thesis for my undergraduate under Dr. Dimitar Grancharov, and he was one of my biggest mentors. I think that was the first time that I actually had done real math research, and I just became so interested, and he just made it seem so awesome. And then of course there were other professors that encouraged me to pursue math. There was Dr. Shipman, she was my Analysis 1 teacher, and she also made math so much fun that I thought this is certainly something I want to do for the rest of my life. There was Dr. Cordero, who also really encouraged me to pursue math.

Evelyn Lamb: [04:27](#) Oh, Minerva Cordero?

Rosaura Uscanga: [04:29](#) Yes, yes.

Evelyn Lamb: [04:30](#) Oh, she was on this podcast last season. It was really nice to talk with her too.

Rosaura Uscanga: [04:35](#) Yeah, she's awesome. She was never one of my formal teachers, so I never took a class from her, but she was always really supportive.

- Evelyn Lamb: [04:44](#) And can you tell me a little bit about the graduate program that you're in now?
- Rosaura Uscanga: [04:50](#) Yes, so I am currently a PhD student at Oklahoma State. My PhD, when I graduate, will be a PhD in mathematics. But it's a little bit different than other PhDs. So all of my courses are in math, and the only thing that's different from a regular math PhD is that my dissertation will be in math education. So as I said, everything is ... All the classes are the same as any other math PhD, and then just my dissertation will be a little different.
- Evelyn Lamb: [05:24](#) Yeah. So you're doing research in education, but with the very focused math subject background.
- Rosaura Uscanga: [05:32](#) Yes, exactly.
- Evelyn Lamb: [05:34](#) And what in particular are you studying in math education?
- Rosaura Uscanga: [05:38](#) So I'm really interested in the teaching and learning of undergrad mathematics, but specifically for me, in abstract algebra. It was always one of my favorite subjects in school. And that's actually a class that I took from, well, Algebra 1 I took from Dr. Grancherav, and then algebra two I took from Dr. Van Cliff, and I just loved it so much that it became so interesting to me.
- Rosaura Uscanga: [06:02](#) And then when I got into education, I thought that's the perfect combination, looking at how students think about concepts in abstract algebra, and then also how they might be able to discover the concepts on their own. So my dissertation specifically will actually investigate how students understand the concept of function in the context of abstract algebra. So I'm going to focus on aspects that are particularly important in abstract algebra, like well-definedness, injectivity, and things like that.
- Evelyn Lamb: [06:32](#) Interesting. I mean, I guess from my very naive point of view, as someone who has never done any research in math education, I think of that as like studying how seven-year-olds develop math concepts, not necessarily how adults who are learning them develop it. It must be really interesting to be looking at the way adults learn.
- Rosaura Uscanga: [06:54](#) So it is to me. A lot of math ed research has specifically focused on younger kids in the past, but I think a lot of people now are trying to look at how we can make our undergraduate

curriculum better, and how we can help these students succeed in classes and understand the concepts in a better way.

Evelyn Lamb: [07:14](#) And as part of that, have you taught any abstract algebra classes?

Rosaura Uscanga: [07:19](#) I have not taught. My advisor currently has taught abstract algebra in the past, and I have sort of shown up to the classes and helped out. The way he teaches the class is sort of different. There's no lecture, it's more activity-based, and so I'm able to come in and help the students, and we work through problems. And it's just really, really fun.

Evelyn Lamb: [07:44](#) Yeah, it must be. I loved my abstract algebra class when I was in college. And yeah, just such a mind opening part of math.

Rosaura Uscanga: [07:54](#) Yeah, it's the first time you really see things that you haven't seen before. And to me, it's so cool.

Evelyn Lamb: [08:00](#) Backing up a little bit, do you remember when you decided you were going to be a mathematician, or a math education researcher, but when you decided for real this is what you were going to do with your career?

Rosaura Uscanga: [08:14](#) So I was already in college, I was in my analysis one class with Dr. Shipman, and she sort of was doing some research in math education as well in that class. And one of the PhD students at the university at the time in the math department, he was getting his PhD in math education, and he came into this analysis one class to sort of interview students and get some data for his dissertation. And when I talked to him about what he was doing and what this was for, that's when I really found out about math education. And I just thought that was so interesting, and that's really what I wanted to do. So that's really the experience that got me into finding out more about method and really wanting to go into this area.

Evelyn Lamb: [09:04](#) Several people I've talked to for this podcast talked about that they didn't know when they were in high school or college that you could even continue to do research in math. And I guess perhaps math education would be a little different situation, but were you really aware of a PhD as a career option for you before you got to college?

Rosaura Uscanga: [09:27](#) Oh, no. I got into ... I became a math major because my parents were sort of like, "You've always liked math. You're good at math. Why don't you try it out?" And I was like, "Well, I don't

know what I want to do, so sure, I'm going to get a degree in math and then see what happens." And then it was just these experiences, and talking to some of these professors at UT Arlington, and seeing the research that they did, and finding out about the things they were interested in, when I really decided that this was something I wanted to pursue as a career. And so that's when I decided that I was going to continue after my undergrad and get a master's, and then follow up with a PhD. My master's was here at Oklahoma State in pure math, and it was under Dr. Mantini. She was my advisor for my master's.

Evelyn Lamb: [10:18](#)

How did you pick that program to go to?

Rosaura Uscanga: [10:21](#)

Originally I was interested, as I said, in my undergrad, I found out about math education, and then I became really interested in that, decided that that's what I wanted to do. So I looked for programs that had a math education degree, but I wanted something that was really math-focused because I knew that I wanted to go into a higher level of math at the undergraduate level. So I wanted to go into abstract algebra, maybe linear algebra. So I wanted something where I was, first of all, going to be really prepared in math and then, second of all, where I could still do my education ... the math education part of it.

Rosaura Uscanga: [11:03](#)

And so I looked at schools everywhere, and then I came and visited Oklahoma State when I got accepted, and I just loved the department. I loved how friendly everyone was, how supportive everyone was, and I just thought that this would be the place where I would thrive the most.

Evelyn Lamb: [11:21](#)

And you've talked a little bit about some of the college professors who helped you find your path. Are there other people that you look up to now in math, kind of as role models, as you're finishing your PhD?

Rosaura Uscanga: [11:36](#)

Oh my God, so many people. The people that I mentioned from UT Arlington, and I'm sure that I left some people out, but really a lot of the people that I admire the most are a lot of the women in mathematics, because I think I just never thought that it was something I could do as a career. And seeing these successful women follow their path in math and be able to be amazing researchers just let me really know that I could also be one of them, and I could also do this.

Rosaura Uscanga: [12:13](#)

But there are so many people that I admire. My advisor, John Paul, he's been an amazing advisor. And he is so good at helping me think through all of the stuff that I have to do with my

dissertation. His area is also in abstract algebra, so reading his papers is just so amazing. There's several of the people here who are in math education who I can only aspire to be like, Dr. Mike Ortman, Dr. Michael Tallman, Dr. Alison Dorko. There's just so many people that I've met throughout my life that are just amazing. And if I can ever get to a level where they're at, then I would say I've made it.

Evelyn Lamb: [12:59](#) I know you're still finishing your PhD. Do you have ideas of what you want to do with your career after you graduate?

Rosaura Uscanga: [13:09](#) Well, I would want to continue looking into student thinking in abstract algebra, but having been here for a while and seeing the different paths and careers that a lot of the mathematicians and math educators here have taken, and the different research areas that there are, has really sort of broadened my view of math education. And I think eventually I may want to open up a little more my focus and maybe look at some things related to student affect and things like that.

Evelyn Lamb: [13:47](#) What does student affect mean?

Rosaura Uscanga: [13:49](#) So it just really means thinking about the student emotions, things like ... I did a project writing a book chapter with my professors here on student anxiety in mathematics. And so, doing that book chapter has just opened my mind so much to other factors that are emotional.

Evelyn Lamb: [14:09](#) Oh yeah, that's a huge part of it, for sure. Well, and now I've learned a new vocabulary word for the day. So how have you overcome challenges in your academic career?

Rosaura Uscanga: [14:23](#) So I think the main thing is just perseverance. There are things that will show up that are hard, and there are times where things have just ... I've just been stuck, and I don't know what to do. But I think the most important part is just you have to persevere and you have to continue working. If it's something that is important to you and that you want to do academically and in research, you just have to try. You have to push yourself.

Evelyn Lamb: [14:49](#) Yeah. That could be so hard to do. I'm sure having the help of a supportive department and advisor really helps with that.

Rosaura Uscanga: [14:57](#) Oh, for sure. My advisor is one of my biggest supporters. But really everyone here in the department, I can go to anyone, anytime, that I'm stuck, or I feel frustrated, and they're always just willing to talk to me and to push me. My husband is also

one of my biggest support systems. Anytime that I just feel frustrated by my work or my research, I'm able to talk to him, and he is always willing to listen and to push me to continue to pursue my dream.

Evelyn Lamb: [15:31](#) And you've talked a little bit about the importance of seeing successful women mathematicians as a way to know that this is something that you can do. I'd imagine also, as a Hispanic woman, seeing Hispanic and Latinx mathematicians as role models could be important as well. Can you talk a little bit about that, and the importance of things like Hispanic Heritage Month to you?

Rosaura Uscanga: [16:01](#) Yeah, so definitely seeing Hispanic mathematicians is so important. I've sort of been a little lucky that I've gone to places where there are some. So as I mentioned, Dr. Minerva Cordero was just such an influence to me, to see a Hispanic female mathematician and know that I could do that too. Here, one of my first classes at Oklahoma State was the graduate algebra class, and then I took that with Dr. Bartini, who is also a Hispanic female mathematician. And it's just so encouraging to see Hispanics and to see myself represented.

Rosaura Uscanga: [16:46](#) And I think that's what's so important about Hispanic Heritage Month. It's a time where we can say ... we can focus on Hispanics and realize that they contribute a lot to this country, and that they are a huge important part of the culture in the whole country, and a huge important part for our communities.

Evelyn Lamb: [17:07](#) So do you have any final advice or anything that you'd like to close with?

Rosaura Uscanga: [17:15](#) So I just want to make sure that anyone who is listening and that wants to pursue a career in mathematics but doesn't feel like maybe they have what it takes, you need to try it. I guarantee that you probably do have what it takes. And try to surround yourself with people who will support you in continuing your dream and pursuing what it is that you're interested in, and who are willing to help you out whenever you get stuck, and push you forward.

Evelyn Lamb: [17:47](#) Very good message to leave with. Thank you so much for joining me today.

Rosaura Uscanga: [17:53](#) You're welcome. I'm so glad that you asked me to participate.

Evelyn Lamb:

[18:00](#)

Thank you for listening to the Lathisms Podcast. It's produced by me, Evelyn Lamb, and made possible by a Tensor-SUMMA grant from the Mathematical Association of America. Our music is Volvere by La Floresta. Lathisms is an initiative to celebrate the accomplishments of Hispanic and Latinx mathematicians. It was founded in 2016 by Alexander Diaz-Lopez, Pamela Harris, Alicia Prieto-Langarica, and Gabriel Sosa. You can find more information about the project at [Lathisms.org](http://Lathisms.org). That's L-A-T-H-I-S-M-S-O-R-G. Join us next time to hear from another inspiring mathematician.