

NARRATOR: Welcome to 'Intersections: The RIT Podcast.' The path to a doctorate degree is certain to be academically rigorous. But for many students, it also presents personal challenges. Shahana Althaf, a graduating Ph.D. student in RIT's Golisano Institute for Sustainability, talks with associate professor Callie Babbitt about how she overcame cultural pressures and the challenges of balancing home life with a young child to fulfill her dreams and earn her degree.

CALLIE: Shahana, you're just a few weeks away from getting your Ph.D. in Sustainability. When you were a kid growing up, did you ever imagine that this, one day, might be the case?

SHAHANA: I knew I wanted to be an engineer as early as when I was in my eighth grade because I loved mathematics and physics. I knew that I wanted to teach, too. But being born in a conservative Muslim family, a middle-class South Indian family, someone like me wouldn't even dare to dream about education in a foreign country like the U.S. But I had to take a break in my education due to personal reasons and by the time I was ready to go back to school, we had moved to the U.S. for my husband's work.

CALLIE: So, what were some of the formative experiences growing up that helped you know that you wanted to be an engineer or do something in science and engineering?

SHAHANA: My father, being an academic professor-turned-journalist, he raised both of his girls, both me and my sister, with our education as the top priority. But then there's this fixed mindset in our culture that girls should get married by around 20 or 22. This was the case 10 to 15 years back. Now things have changed a bit. But back then when I was doing my undergrad degree, I knew that my parents were going to get me married right after that. And my future plans, whether to further my education or follow the career path that I'd want to, would depend on how supportive my future husband is. Luckily for me, it worked out fine and my husband was super supportive of my plans.

CALLIE: It sounds like you've had a number of people in your life that have played an important role in supporting your development. You mentioned your husband and your father. Are there others?

SHAHANA: Yes. I was really good in academics when I was growing up, so my uncle gifted me this expensive watch when I finished my tenth grade and got into engineering. And I take it with me wherever I go. And when I took this long break in my studies due to my son's health and other reasons for eight years, this watch was with me. And it stopped telling time. But then it reminded me how good I was in academics and that I have to go back to school to finish my education where I want to finish it. Many of my relatives and everybody supported me, actually. They kept on reminding me that even though you are busy with life, you have to go back and finish it how you wanted to do it.

CALLIE: How has it been as a mom, both deciding to go back to grad school and then balancing the demands of a Ph.D. along with having a family?

SHAHANA: Things did not go as I planned. We had to move a lot right after marriage for my husband's work for the first couple of years. And then when I conceived my son, I had health issues. The doctors advised me to stay in bed. I could only get up to have food or use the bathroom. And then when he was born, he had a lot of health issues. The doctors didn't even give us assurance that he would survive the first six months. So, he needed me, and at that point, I forgot everything. I just wanted to be his mother and be by his side. He's perfectly fine now. And by the time my life opened up a little, we had moved to the U.S. for my husband's work. And when he started his preschool, that's when I decided to take my GRE. And, to be honest, I took the GRE exam just to show myself that I could do good on an exam again. By that time, eight years had passed and I was over 30. So, when I took the exam, I got a really good score. Again, it took some convincing from my husband that I'm ready to chase my dreams. And my son is going to preschool now and I can get back to my master's or whatever I wanted to do before. That's how I decided to apply to RIT, and I got admission for a master's in Telecommunications Engineering Technology. That's how I got back to school.

CALLIE: And how did you make your way into sustainability? Because we always have such interesting stories of students who might have started in one field, like engineering, electrical engineering, telecommunications, and now are in sustainability.

SHAHANA: So, my undergrad was in electronics and communication engineering and my master's was in telecommunications engineering technology. Those years I studied how to engineer new technology to make people's lives better. But then I always wondered about the environmental implications of these new technological innovations in terms of resource use or waste generation from these new technologies. I was super excited when I got to know that you are doing research in electronics. And here I am going to finish my Ph.D. in Sustainability.

CALLIE: You've been doing an excellent job for the last few years. And we've gotten a lot of great visibility and a lot of broad interest in the research that we've been doing. What has it been like balancing your role at home, your work at home as a mom, and then your work at RIT as a Ph.D. student?

SHAHANA: For me, since I returned to school after eight years, things were tough during my master's time because during my undergrad we used to have written assignments and we didn't use the internet that much. But by the time I joined RIT, it was such a rigorous program with lots of assignments, and everything was online. And all of my classmates were seven or eight years younger than me, and I lacked even basic computer skills. So, I had to catch up and catch up fast. I worked so hard trying to catch up that I did so great. I finished with a 4.0 GPA. My professors let me work with them as a research assistant and teaching assistant, and I got a lot of research experience and everything. And, at that time, my son had early intervention services. That means that every day we had a least two therapists visiting our home – occupational therapists and speech therapists. And I didn't have a driver's license, so I had to take the bus from home to school to attend lectures and go home to work with

the therapists because my son needed me to support them. Of course, my husband was there, but still, it was extremely hectic. So, after that, even the Ph.D. and working with the industry, even though it was stressful working for the industry-funded research, it wasn't as bad as during my master's time. I was able to balance both work and my family life. But then, as you know, a Ph.D. student's work never ends – you can always do better. So, there is this academic guilt when I am spending too much time with my family. And then there is this parenting guilt when I'm working extra hours. That said, I think every mom who works would have such a guilt. I think you surely can relate with that.

CALLIE: Definitely. I always struggle with the idea of work-life balance, especially my own health and well-being, that of my family, that of my students, who I think about almost as like an extended family. And then the quality and the productivity of the work overall.

SHAHANA: You've been such a great mentor. Not just academically but as a woman scientist – how to behave, how to be persistent, how to find the right balance when you're managing such stressful work and having a family with a toddler or a small kid. GIS (Golisano Institute for Sustainability) has such a great female faculty. Us female students, we cannot help but be inspired by how beautifully you manage the work-life balance. I see all this and think that every person has their own story. People suffer setbacks in life. But you need to, at least, hang in there and come back when the time is right. Don't just try to survive, but show people that I've converted that into a fuel for my success.

CALLIE: You're doing work that has the attention of a global audience. You have manufacturers of TVs and computers and all of these consumer electronics that we love, recyclers, policy makers all reading and being interested in the findings that you have published. What has that been like?

SHAHANA: It is so exciting to be involved in such impactful research. Usually, Ph.D. students do not have this chance to communicate their research findings to people who can really make the difference. For us, since this research is funded by the Consumer Technology Association, which involves recyclers, product manufacturers and NGOs (non-governmental organizations), we have this opportunity to translate our research to industry reports and communicate with them. I tell my husband that the vice president of Samsung or of Best Buy will be reading my report. And recently the state of Oregon used our research findings to set their e-waste collection targets. So, this is great. Over these years, I have learned how important it is to do this.

CALLIE: Do you have any plans or hopes to bring your research findings to the area that you're from?

SHAHANA: So, India being a developing country, there's a lot of opportunity to establish sustainability initiatives in different sectors, including the consumer electronics waste management sector. One thing I want to do is to communicate through news articles,

and I plan to go back and be involved in teaching and involved in non-profit organizations to convert these ideas into actions.

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