

Michele Cooke's SWS Transcript

Stephanie Hakulin [00.09]:

Hi, I'm Stephanie Hakulin. On today's episode of STEM Workforce Stories, we'll learn, firsthand, what a geologist does – in the lab and out in the field...

Dr. Michele Cooke [00.26]:

Most of my research early on was looking at rocks in the field and I'd go on field trips. The research that I do is really trying to understand how fault systems change over time. In my lab, what we do is we use a clay to basically copy the same kind of processes that happen in the earth, we copy in the experiment, only smaller and faster. Rather than a 100 kilometer long fault that takes millions of years to evolve, in our lab it's maybe three hours and just on a tabletop. So, we can watch, measure and see how these small faults link up to make a larger fault.

Stephanie Hakulin [01.17]:

Meet Michele Cooke, a fun-loving scientist who unearthed her natural grit and determination to become a Professor of Geosciences - right now, on STEM Workforce Stories.

Dr. Michele Cooke [01.41]:

My sign name is Michele. I am a Professor of Geology at The University of Massachusetts Amherst. And I started out as a student studying engineering and then later switched to geology and have enjoyed working in that field.

So I identify as "part deaf". I use this term rather than hard of hearing or deaf because I feel like it captures sort of in between identity that I have. I grew up with a hearing family, I grew up in a mainstream school. I didn't learn sign language until I was in my 20s, so I was very much hard of hearing, right? And really when I started to learn sign language, I started to interact with the deaf community, especially I was involved in the Late-Deafened Adults. I'm not late deafened but I felt their experiences were similar to mine.

And that's when I started to realize that my identity and my sense of how I navigate the world is in many ways, more like that of a deaf person than necessarily like a hard of hearing person who loses hearing later in life. And so, that's when I started to call myself "part deaf."

Lily [03.02]:

What does your day look like when it comes to working? I'm just curious as to what your experience is like and go from there.

Dr. Michele Cooke [03.10]

So a typical day, I might be teaching classes. And then I have a lot of meetings with my research group. I have a research group of about three to four research assistants, those are graduate students who are being trained in earthquake science. And I have meetings with them to talk about their research, and we work on papers, and we analyze the data. And then, some days we'll be running experiments. So, a typical day would have meetings with my research group and maybe an experiment. Another day might have more meetings and maybe teaching so it sort of alternates like that.

Lily [03.45]:

What are the challenges that you face in your profession and how do you deal with those challenges?

Dr. Michele Cooke [03.52]:

One challenge is definitely... meetings, are a challenge for me with my deafness, because I teach at a hearing institution and I'm the only deaf professor in my department and the students are all hearing. So a lot of the classroom environments and meetings are all set up for hearing people. So that's definitely been a challenge, to try and figure out how to work in that environment and using tools like my FM system. But, I would say professional challenges are definitely interacting with hearing people in these meetings where you have to keep up with the conversation, and then offer your suggestions and make sure that you're heard and listened to so that your ideas get incorporated into the conversation.

Lily [04.44]:

Is there anything from your job that you find, maybe a fun story, or something that has happened that you find interesting in the classroom or just within your profession?

Dr. Michele Cooke [04.54]:

I have a funny story. We have a dog, he is a white lab and when he was a puppy he had to go outside to pee pretty often. I needed to go to work to do some experiments, so I brought him with me. Of course, everyone loved having the puppy in the lab. When he was small, I put him on top

of the experimental rig and took a picture of it. We have this on the door of our lab, we got this picture and it says Bunyip, that's his name. The "lab Lab." So he's the Lab of the lab.

Yeah. And the hallway of the lab is really busy, so between classes there will be people just all going through this lab, so people see the sign. Now when I go out downtown and I'm taking him for a walk, I'll have people recognize him from the picture and be like, "It's Bunyip, the lab Lab!" So, they recognize my dog from seeing the picture on my door.

Lily [06.11]:

Can you tell us a little bit about the types of equipment you use for your research?

Michele Cooke [06:16]:

So this is what we call the fall cone. It's called a fall cone because it's a cone and it's going to fall into the clay. What we measure when it falls into the clay is we measure how deep it penetrates the clay and that gives us a real fast measurement of the strength. We measure how far this cone falls into the clay, it's a 10-gram cone, and that gives us a quick estimate of shear strength. Every day that we run an experiment, we do a fall cone test before we put the clay into the experiment. We want to make sure that we know the strength of our clay and we have target strength of about 100 pascals.

So this device is our experimental table. This is where we simulate 100 kilometers of the Earth's crust into just 50 centimeters on our table. Within a few hours we simulate millions of years of deformation. And so what we do is this far side remains fixed, it's positioned on the table. Then

this side is connected to a motor, you can see a part of it right there. This motor will move this part of the experiment down the table so that when we fill this with clay, that clay will get deformed. Then, what you can see is that there's duct tape on here, the bottom of the device is set up to be straight and then a little bend and then straight.

What that does is all the small movement, the camera takes a picture. Then we use computer tools to help us analyze how the pixels of red and black sand are changing. We can see some changes as small as .15 millimeters in the displacement field with our technique.

Lily [08.22]:

What made you come into this profession or this field of geology, the movement of earth? What made you interested in it?

Dr. Michele Cooke [08.32]:

Growing up in New Jersey I lived in a little rural area of New Jersey, and would often be playing outside. There was a creek behind my house, and my sister, and I used to love playing in the creek. We'd pile up rocks, the creek would get blocked and we would watch the creek overflow. I was always sort of interested in building things and sort of the natural world. So my undergraduate in college, I studied engineering.

Then the Loma Prieta earthquake happened, that was way back in 1989. I grew up in New Jersey, I didn't know earthquakes. All of a sudden, everything started moving, I'm like, "What do I do?" So I looked around and I saw the people I worked with were running into the doorway.

Basically, stand in the doorway. And I'm like, "Oh, yeah! That's a good idea!" So I went into the doorway and I held on and everything was moving. I could see through the window and I could see the parking lot and the cars were moving up and down, it was really wild. That day sort of changed my idea of what I wanted to do.

Lily [09.47]:

How has work changed for you with the pandemic? How do you keep doing your research?

Dr. Michele Cooke [09.56]:

There hasn't been a lot of activity in the lab today. That's mostly due to there was a spike of COVID on campus. I told my students to take a pause on experiments and stay away from campus since there was COVID exposure here.

This room can only have two people at any one time. So that's really changed how we do things. The experiment might run four hours, we wouldn't be here the whole time but the start and at the end. One person's here at the experiment then the other person can be back at this table but they can't be next to one another. That makes setting up and cleaning up experiments a lot more challenging. In our lab, because the clay when its dry can be really dangerous to inhale, so we always run HEPA filters. I have a HEPA filter in this room and a HEPA filter in the storage room and those run all the time, 24 hours a day, 7 days a week. That's to keep the air clean of the clay that can get brushed up. Now with COVID, its an extra safety measure that is also going to get out some small particulates. But if people are working in the lab, they have to wear a mask. They have to.

Lily [11.20]:

If you were to go back and talk to your younger self, what advice would you give to yourself?

Dr. Michele Cooke [11.29]:

I think one of the things I would tell myself is to—I would encourage myself to find my people. I would say reaching out, finding that community so that you can feel that sense of belonging is really important and something to do at any stage of career. Whether you're a deaf or hard of hearing academic, it can be important to find your people. Also, if you're a student in high school and you're isolated in a mainstream environment, figure out ways to connect with other deaf and hard of hearing students. Online communities and social media provide really great mechanisms for doing that.

I think that it's really important to recognize that everybody fails and in school you're measured by how much you achieve and making mistakes is bad. But in true life, we make mistakes. In my own life I found that I often learned the most when I do make mistakes, so that would be my advice.

And my story about that is when I was in college, my first semester of college, so it was a big change. I was in a chemistry class and I failed the first exam. I think the second lowest grade in the class, I failed it. The professor wrote three scores on the board and said if you scored one of these three, come talk to me. That was me. So, I talked to him and he told me that I didn't belong in his class. He wanted to let me know early so that I could drop it before the deadline. I was so

ashamed and of course, I felt terrible, but I also discovered I wanted to prove him wrong. And I discovered in myself this kind of grit and perseverance like, "I'm going to stay in this course, I'm going to prove him wrong, I'm going to pass this course."

At the end, my grade was a C. I was so proud of that C, I'm like more proud of that C than any of the As. No, the C, that's the one I'm proud of. But what it taught me was when I'm faced with a challenge and I'm doing something I feel like is difficult, I know I have it in myself, that ability to really work for it.

Lily [13.58]:

Going back to your identity, how does it help with interacting with your co-workers, with other students... how does your identity help?

Dr. Michele Cooke [14.09]:

I think it really helps give me confidence for that self-advocacy that you really need. As a deaf, or hard of hearing or part deaf person in science, most scientists are hearing. Everything is set up for hearing people, so you walk into a room and things need to change. If you just sit back and wait for other people to change the situation for you, for example: If I go to a meeting and there's no captions or they turn the lights off and I can't speech read, no one is going to change that situation. The hearing people, I guess they like it that way. But I need to have that confidence to self-advocate and say, "Hey, keep the lights on" or "Put captions on to your presentation." I need to remind them, I need to have the confidence that I belong in science and that I can ask for that. I'm entitled to ask for that.

I'm not asking for a favor. Getting accommodations is never a favor, it's your right. I think having that identity as part deaf gives me that confidence of "Yeah, I need to ask for this, so that the next person that comes along won't have to ask as much." I might have to remind them again and again and then finally they understand. You know, maybe the next person only has to ask once and then everyone understands, so that's good. I have to say by speaking up and asking for accommodations, I have noticed I start to have allies among my colleagues. There are times when someone will start a presentation and my colleague will say, "Hey, you forgot the captions!" And I'm so thankful that it doesn't have to be me reminding them to put the captions on and my colleagues will do that for me. But you still need to have that self-advocacy to get that allyship with people around you.

Lily [16.07]:

That leads perfectly into deaf culture. Has this helped with your career?

Dr. Michele Cooke [16.14]:

So, I'm a very visual person and for example, when I learned ASL, I just fell in love with ASL. I'm not fluent but I do love ASL because it's a spatial language. I found it pretty easy to learn. And I feel like the same skills that I used to learn ASL, those same skills I use for my science because it's visual, it's 3D. I have to think about place, and change, and time, so it's really like 4D, right? Because there's place and movement and that's what my science is. It's the same, ASL and my science. So I feel like the way that my brain works is kind of very well suited for both.

Lily [17.05]:

Yeah. ASL is very visual and that's how you can understand your environment. With science, the Earth, movement, the crust, the layers and the fault lines. Wow! Wow! Thank you. Thank you for chatting with me today and understanding who you are and where you come from and your fascination with science and geology and the movement of Earth. Thank you so much.

Dr. Michele Cooke [17.30]:

It was really, really fun to talk with you and I enjoyed this chance to just share a little bit about myself and my perspective.

Stephanie Hakulin [17.43]:

Hello, it's Stephanie again. I really enjoyed getting to know Dr. Cooke and learning her ideas about the importance of self-confidence and self-advocacy. From Geneticists to Pharmacologist, there are as many science journeys as there are scientists. Check more of them out on STEM Workforce Stories.