

Science and the Crooked Path

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Story Key Points

It is okay to be happy.

The skills you develop in a PhD program are broadly transferrable.

Don't be afraid to be different.

Emily Schoerning is a benchtop researcher turned education specialist. Raised in a working-class family on a diet of Isaac Asimov, she decided she would become a scientist when she was nine years old. She stuck to her plan, defending her PhD thesis on her twenty-sixth birthday. However, it turns out that what you want as a child is not always what you want as an adult. Her career took her further and further from the lab, and closer and closer to people. Now, she serves as the Director of Educational Innovation at Anshe Emet, a large, progressive synagogue.

When I was fourteen years old, I went away to school and started spending many hours a week doing bench work. In class, out of class, it didn't matter so much. The lab was where I wanted to be. It was peaceful, orderly, and I especially liked the way you could lay out an experiment that was replicable and clearly documented. With some discussion, it was possible for reasonable people to agree on what the results of these experiments signified. Reality could be nice and clean. By utilizing a wide variety of scales and measures, it was possible to verify that other people's experiences of the world were the same as your own.

I found that very soothing. The lab was my safe place for many years. Throughout my undergraduate studies, I spent at least twenty hours a week in the lab outside of class, and I went directly to graduate school afterwards. My dream was to help people by curing diseases. I had a knack for microbiology, and I knew how many people were still harmed and killed by infectious diseases every year. And so it seemed that this was a way in which I would be able to do some good.

But this is where I began to go off script. The more I learned in graduate school, the more I began to question my preconceived notions of how I could be a good and useful person. I began to understand what an astonishing proportion of current infectious disease deaths were not due to illnesses that needed better cures, but were due to illnesses which we lacked the collective will to prevent.

The research I was involved in was so tremendously expensive. The lab work I completed – involving the care and feeding of tissue cultures, infection studies, and imaging – cost hundreds of thousands of dollars. Every three-hundred-dollar bottle of fetal bovine serum I fed my cells could have fully vaccinated ten children. It could have put a child in a developing country through a year of school. The math didn't work out for me. I couldn't do it anymore. But I knew there was something I could do. Something that might produce more good for less money.

I could help people learn. When I stepped out of the lab and into the classroom during my graduate studies, it turned out that I was a good teacher. I started graduate school when I was twenty-one, which meant that I was younger than quite a few of my undergraduate students. I liked to talk with them. I admired the journeys that had brought them to college. And I found that I was failing quite a lot of them. I failed the same students who tend to fail out of college science courses all across America. Students from working-class backgrounds, like mine, and students who did not grow up speaking English, and students of color. I felt that I was in a privileged position to understand why these students were struggling, because of how much they would talk with me.

That was what led me into education research. I began to develop inclusive language techniques that helped students learn. My studies looked at how teacher speech changes student speech, and how teachers can best talk to help their students learn. My techniques helped more of my students at Arizona State University pass their introductory classes, get good grades, and excel in their upper-level coursework. I went on to refine my techniques and my understanding of teacher-student speech interactions at the University of Iowa.

At that point, I had left the bench pretty far behind, but I still thought of myself as an academic. I hoped to find a tenure-track job in science education research, but that wasn't how my life worked out. With my family situation, I couldn't do the kind of national search a tenure-track job requires. I needed to support my children. So I ended up taking a job at a non-profit: The National Center for Science Education.

Many people find it hard to leave academia. They worked so long and hard to be in academia! What would it mean to their identity if they left? Would they still be a scientist? Could they still be a scientist? I wondered about these things. But it turned out that I used all my skills from graduate school in the context of my non-profit work. I had to design experiments, gather data, and perform analyses. I did academic writing and reviewed for journals. And I had the chance to apply the teaching and learning techniques I'd been developing to a huge new audience. In less than three years, I built a national network for informal, community-based science education. Working with my team, which included volunteers from all over the country, I was able to help to teach tens of thousands of people about topics like climate change. I worked to give people knowledge that was applicable to their lives, that was respectful, that was useful, and that would help them feel in control of their learning.

I felt like I did a great deal of good through that work. That work helped me to understand things in a new way, too. Which makes sense. Over the past ten years I had gone from spending most of my waking hours alone in a quiet lab to spending almost all of my time talking with people, learning from people, and teaching people. This made me think more and more about how our society makes decisions. How do we decide what is good? How often do we think about what is good? Too many of us have never had anyone help us ask these questions, let alone find answers to them.

Throughout my career I have been on a journey that has been full of unexpected turns and rich in meaning. In my work now, I help people to ask questions and find answers about what is good. What are good ways to live? What are good ways to contribute to the world? What kinds of things should we value? This is quite different from benchtop research! It certainly does not include the absolute clarity, replicability, or unity of experience that I found in my early years in the lab!

Yet, even in this very different context, I find that I am still using all the skills I have honed over the course of my career. I still think methodically, planning out new instructional techniques and approaches as experiments. I gather data, assess a variety of metrics, and study outcomes through several different lenses. I work to communicate my findings to many audiences. And I am always trying to learn something new.

My life today is very different from how I imagined it would be when I was a child. In part, this is because I have learned so many things I did not know when I was a child! The essence of science is not certainty, but the ability to learn from the evidence we encounter; to let our ideas change and grow. Even if you don't end up following a conventional path, a good scientific education teaches you so many valuable skills. These skills can help you to determine what will make your life good. When we experiment at the bench, we often find that things don't work out as we hoped. This is not always because we have made a mistake. More often than not, it is because we need to change what we are doing in some way. The gutsy flexibility required in successful lab work is a great skill to bring into daily living. Although I walked a different path than I thought I would, my work in and love for science gave me the tools that helped me find the right path for me.