

My Earth science educator story – Steven Anderson

What I did, why I did it and what happened

Earliest influences

How does a boy from America's dairy land become a scientist that studies active and older volcanoes on Earth, Venus and Mars? I blame several wonderful professors, mentors and teachers, including my Dad, and one stoned-out college student for my good fortune. These individuals modeled the strategies I've carried throughout my career as a geoscience educator, allowing me to pay forward their philosophies on teaching and learning.



Steve Anderson and lava flows at Kilauea volcano (USA) in 2013.

My path to becoming a geoscience educator started in a Green Bay, Wisconsin High School music class taught by my father. He was one of those amazing educators who didn't just teach, he created an environment that was special and where learning happened. He was well-known for writing students out of study hall and detention so that they could hang out in the music room and work on pieces for upcoming concerts and shows. He fostered an environment where students interacted, learned from him and each other, experimented, improved, failed, tried again, and formed a community.

It was one of the most vibrant educational spaces I've ever been a part of, and it had an enormous effect on me as I built my own geology program from scratch, as the sole geologist at Black Hills State University (Anderson et al, 2005). I learned much from him about creating a community, performing, confidence and hard work (music never came easy for me), and he is still a role model for my work as a geoscience educator.

College days – my geologic awakening

As a high schooler, I was more interested in science than music, so I went to Cornell College (Iowa) to pursue a path in medicine. I was set on going to medical school until one day when, as a trainer working for our football team, I watched the lower leg of our linebacker snap right before my eyes as he took a hit. Rather than eagerly doing my job and running out onto the field to render aid, I wanted to run the other direction. I realized at that moment that people who are in pain are not fun to be around, and perhaps I should seek out a new career path!

Over the next year, I changed majors frequently as I searched for an outlet for my science affinity. Sitting in the lobby of my dorm one night, I struck up a conversation with a student well-known for his love of smoking "alternative" agriculture. After hearing about my plight he said, "you should become a geologist. They find all the best fishing spots". At the time I didn't have a better reason for choosing a major, so the next term I enrolled in an introductory geology course.

Within the first ten minutes of my Physical Geology class, I knew I had found my science area, but something surprising happened over the rest of that class period. As I listened to my professor, Dr. Paul Garvin, I realized the effect he was having, at that moment, on the rest of my life. I wanted to do something that meaningful with my life too. To that point I had never considered, even for a moment, becoming an educator. I thought of my Dad, some special teachers I had along the way (including a high school science teacher, aptly named “Crazy Ray”), and how they were all responsible for where my life was heading. The desire to pay those lessons forward was strong, and I’ve never wavered from that career path.

Mentors and transformation

I had the great fortune to participate in an internship at the USGS Cascades Volcano Observatory during my senior year of college. I found myself working with some of the giants in the volcanology field, including Dr. Don Swanson and Dr. Dan Dzurisin. They eagerly tutored me on all things geologic, inspiring me to offer others valuable field learning opportunities. In graduate school, my advisor Dr. Jon Fink encouraged me to be creative and think big about my field research. We submitted my PhD research to Nature, and my very first publication was their October 1989 cover story. Since then, I’ve taught field courses for many universities, including the University of Virginia’s Semester at Sea program where we traveled around the world on a ship over the course of 4 months, visiting more than a dozen countries. I have witnessed the enormous power of transformative field experiences that were so instrumental in my own academic development, and encouraged my students to also think big about their futures.



Steve using a magnetometer on the lava dome at Mount St. Helens during his senior year internship in 1985.

Surprises

One thing that still surprises me is how much I learn from my students. I could cite many examples, but one I think about frequently focuses on my former student Dave. When Dave came to my office nearly 20 years ago after a week in my introductory geology class, he was by his own admission a poor student but fascinated with geoscience. He told me he wanted to tackle a geology major and wondered what was involved. Typically I ask students about their mathematics background as I advise them on geology programs that might be most suitable. Dave informed me that he failed our introductory math course. Twice! I was honest and told him that it would be nearly impossible for

someone who struggles with math to successfully finish our geology major (which required differential equations). Dave was adamant that he could do it because he felt motivated for the first time in his academic career.

Despite my doubts about his abilities he became one of my most successful students. Dave continued his education in graduate school, and became a highly respected LiDAR researcher. Dave taught me the importance of giving people a chance to prove themselves, especially if motivated by a transforming experience. Today, he is one of my closest colleagues.

I feel most fortunate to have a career where I am influenced by former teachers, colleagues, mentors and students. I am now in my 50s, and as I enter the last third of my career, the passion for educating future geoscientists burns stronger than ever. For that I am most grateful.

Reference:

Anderson, S.W., Flood, T.P., and Munk, L., 2006. Bucking the trend: Three new geoscience programs; Journal of Geoscience Education, v. 2, p. 41-49.

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Steve with two of his graduate students, Adam Lewinter and Amy Burzynski in 2014.