

Faculty Spotlight

UWO
UNIVERSITY OF WISCONSIN
OSHKOSH



Dr. Jennifer Wenner, Professor, Geology

Could you tell us about your research interests?

I have research interests in two very different aspects of the geosciences – igneous petrology/geochemistry and geoscience education. On the igneous side of things, I study volcanoes (and their innards) that form above subduction zones (think Ring of Fire around the Pacific). These volcanoes are fascinating to me because their characteristics – a range of lava types that can be explosive or effusive – tell us a lot about the way the Earth works. I have mentored more than 40 undergraduate students in studying a range of volcanoes, volcanic rocks, and what they can tell us about the Earth.

I also study how students learn. I am particularly interested in how geoscience students learn and engage with quantitative material. Several of my externally funded projects have dealt with studying the effects of instructional interventions that teach students quantitative skills that they will need to be successful in their geoscience classes. I have also worked on interventions that teach students about math anxiety, their self-efficacy, metacognition and interest (or what education researchers call the affective domain).

What research projects are you currently working on? What would you like your next project to be?

I am currently working on several projects. There are two geoscience education projects that occupy my time at the moment. The first is an NSF-funded collaboration with Julie Sexton, a geoscience education specialist who thinks about how gender identity affects learning in the geosciences, at the University of Colorado Boulder and Molly Jameson, an educational psychologist who specializes in math anxiety, at University of Northern Colorado. Our work involves developing and testing interventions to help students think about how feelings, emotions and interactions with others can affect the way they learn. We are particularly interested in how students interact with the math in their introductory geoscience classes and how gender plays a role in their interactions. We just had a blog post published in AAAS's blog – The Disruptor – called "[Want More Women in Geoscience? Consider Their Math Attitudes](#)", which provides more information on our findings.

Continued on next page...

Faculty Spotlight

Dr. Jennifer Wenner, Professor, Geology

Continued from previous page...

I am also involved in another geoscience education collaboration with folks at Earthscope, Highline College, and Carleton College. The work involves expanding the modules that a colleague and I built and tested (with a lot of other folks) called [The Math You Need, When You Need It](#). The original work was to build modules for students in introductory geoscience to learn (or re-learn) basic mathematical tools needed to succeed in their course. The new work involves building similar modules for upper-level geoscience courses.

Finally, I am wrapping up a project that focused on a series of 39 small volcanoes in the southern Cascade Range. Those volcanoes have characteristics that can tell us about chemical processes and important information about how the continental crust formed. This project involved many, many UW Oshkosh undergraduates and was funded by the National Science Foundation.

I am not sure what my next project will be. I would love to work on expanding my geoscience education work to discover more about how the supports we've built in these quantitative skills lessons could be applied to improving belonging, accessibility, justice, equity, diversity and inclusion in the geosciences.

What challenges have you faced in your career to date? What have you learned from those those experiences?

Early in my career, I felt like I hadn't built a good network of collaborators and needed to figure out how to find my place in the research world. One way I did that was to start attending many workshops (both scientific and about teaching). The people I met at these workshops grew into good friends and collaborators and I learned that the most joy comes from working with folks who you like, get along with, and enjoy spending time with. I think that there is this perception that we have to find "high-powered" collaborators, but my best collaborators are those with whom I have both a personal and professional connection!

I also faced the challenge of not always having access to the types of analytical equipment I need for my research. I love being at a small primarily undergraduate institution, but that also makes it difficult to have a lab with equipment that needs a technician and lots of extra care. But, once I found my community, I also found collaborators who were willing to provide access to their equipment (and often at a discounted rate). The Faculty Development program (and student funding) has also been instrumental in allowing me to develop my research program at Oshkosh. This experience taught me that you won't get what you don't ask for, and that sometimes you have to be very creative in how you do things.

Continued on next page...

Dr. Jennifer Wenner, Professor, Geology

Continued from previous page...

Can you share your experiences applying for and receiving extramural funding?

I have been involved in applying for more than a dozen proposals to the National Science Foundation – not all of them were funded. I’ve served as Principal Investigator (PI) on four funded proposals (one I had to decline because I started working at NSF), senior personnel on two, and consultant or advisory board member on five. It took several tries for most of the proposals on which I was PI. Rejection is always hard but look for the constructive criticisms and listen to what the reviewers have to say. When you do that, you can find the places for improvement and resubmit. Remember, the only proposals that for sure won’t get funded are the ones you don’t submit.

For three years (2020-2023), I served as a program officer at NSF, working in the Division of Earth Sciences (Directorate for Geosciences). I also worked on programs that were across the agency and worked with folks in almost all the directorates at one time or another. I have learned so much about the grants and funding process from the other side and am happy to talk to folks about that experience and how my experience might help them to find and get external funding!

What advice would you give other UW Oshkosh faculty applying for grants?

First and foremost, read, digest, and pay attention to the RFP *(request for proposals or in NSF-parlance, the solicitation). Most requests for proposals lay out a good outline for what you need to include in your proposal for it to be competitive. Make sure you include all the items requested.

Second, remember that writing a proposal is not the same as writing a paper. A proposal should be aimed at the sponsor’s goals, future-oriented, project-centered, and written in accessible language. Proposals should “sell” the project to the reader/reviewer, convey excitement, and be brief (pay attention to the length constraints). Many proposals (particularly to the National Science Foundation) also want you to convey how your work will benefit society (called broader impacts). Institutions like UWO have built-in broader impacts – we’re educating and training the next generation of scientists (or social scientists, or artists). We’re also preparing them for the workforce and to go out and contribute to greater society.

Finally, remember, you cannot get funding if you don’t apply for it. Everybody gets proposals declined sooner or later (usually sooner). When that happens, take a deep breath, read the review and pay attention to the high-level and common critiques, (maybe put it away for a little while), talk to the program manager, and then figure out how to make it better and resubmit! It can take several tries, so do not get discouraged.