

Peter Wilf, Department of Geosciences
Philosophy of Teaching

My teaching career began one week prior to the start of classes in 1985, as the new 7th and 8th grade math and science teacher at Westfield Friends School in Cinnaminson, NJ. I had no credentials, was given no curriculum, and was told I had the most difficult 8th grade in the school's history. The rest was up to me, and I figured it out. Good teaching is simply trying everything you can possibly think of to excite students about learning and tirelessly building upon what works best (repeat). It is never enough just to prepare the content for delivery. A class is not ready to go if you have not left time to ask yourself, "how can I make this more exciting, fun, and challenging?" Sometimes a hand specimen or video is all that is needed, and sometimes much more. Humor helps quite a lot too, and nothing breaks the ice better than learning the students' names as quickly as possible.

I am extremely fortunate to have been the student of many superior teachers and to come from a family of teachers. At Friends' Central School in Philadelphia, I took every class I could with Clinton Ely, a former Marine who landed at Okinawa, who taught Russian and English, language and literature. Clint loaded every class with explosive humor and constantly lit fires under us to reach the very highest performance. He gave everyone Russian animal nicknames (I was *Volk*, the Wolf) and kept us overcharged and laughing with endless Ely-isms, like "200 pages a day keeps the flunker away" and "PUSU!" (Put Up or Shut Up!). Clint always graded his entire stack and returned it by the next day, something I have aspired to do ever since, while trying to channel his over-the-top style and core philosophy that only high expectations yield high returns.

My father, Herbert S. Wilf, was a renowned mathematician who won major teaching awards both nationally and from the University of Pennsylvania. He believed strongly, as I do in turn, that doing good research is what fuels the best teaching at the university level. When I was young, student review guides were still printed as books, and these consistently said of him "best teacher I ever had." To reach that level of impact on students myself, that is my philosophy in one sentence. My father was sometimes asked to give lectures about his teaching, and he found this quite amusing, telling me once: "teaching is like kissing. It shouldn't be explained. You either know how to do it, or you don't."

At Penn State, teaching geology and paleontology provides the perfect venue for true experiential learning by doing, with outsized educational impact. I draw heavily on my field experience all over the world, and I try my very best to bring the raw excitement of primary scientific discovery directly to my students at every level, in every single class and field trip.

For *Geobiology*, I introduced the capstone annual field trip to the Denver area, where our majors see and touch the layer of airborne death rock that marks the end of the Age of Dinosaurs. They experience directly the entire history of Earth and Life in the area, including how the geology limits water resources for the large human population, and they compile in-depth group presentations and field-trip reports from their primary observations. *Dinosaur Extinctions and Other Controversies* is a general education offering that I give every fall for 200+ students, allowing me to broadcast geology, paleontology, evolution, and good science in general to a significant cross-section of Penn State undergraduates. For *Paleobotany*, I take students behind the scenes at the Smithsonian National Museum of Natural History, where they meet the scientists and staff and see how the fossils are prepared, curated, and illustrated.

I strongly emphasize understanding how science works and recent discoveries, and I expect our majors to read and understand primary, peer-reviewed literature as much as possible. For a small group of our most interested majors, I started *Geoscience Scholarship*, where students learn how to function in a research environment, prepare for graduate school, and find, annotate, database, and discuss peer-reviewed papers. Each student writes an article in the style of a major review journal, wherein they present the state of knowledge in a chosen research area citing at least 40 papers. The students begin to take charge of their learning and to connect directly with, and join, the live stream of knowledge: where the excitement is.