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Steven Pollock Named U.S. Professor of the Year [1]

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Steven Pollock?s class is not quiet.

Professor Pollock, a 20-year veteran of the University of Colorado Boulder, does not spend the hour standing at the chalkboard imparting his physics wisdom, and his students do not, in turn, spend their class time silently taking notes on what he has to say.

His view of education is messier than that, and his class reflects a belief that learning physics is not a spectator sport. Pollock?s lectures, if you can call them that, are punctuated with practice problems that students are encouraged to solve, often noisily, with their neighbors. As a matter of habit, Pollock is always asking questions.

?You can discuss with your friends and answer questions and then make sense of the physics while you?re sitting in class,? said Barbora Dolejsova, a senior physics major who is taking Principles of Electricity and Magnetism II from Pollock this semester. ?When he tosses out a problem, it?s always a nice way to check that we understand it, or if we don?t understand, an opportunity to rethink things to develop that understanding.?

Pollock?s teaching methods are being nationally lauded this month. At a ceremony in Washington, D.C., on Nov. 14, Pollock was named a 2013 U.S. Professor of the Year by the Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Education.

The awards recognize the most outstanding undergraduate educators in the country. Pollock is the second CU-Boulder professor to win a U.S. Professor of the Year Award. Nobel laureate Carl Wieman, also a physics professor, was honored with the designation in 2004.

?It?s a real honor for me, but more importantly, I believe it reflects very strongly on the unique culture of support for education at CU-Boulder,? Pollock said. ?It?s also remarkable to me that they are giving the award to another physicist in the same department. I think that really says something nice about the work we are all doing.?

A culture of teaching

From the beginning of his CU-Boulder career, Pollock was drawn to teaching, but at first he didn?t have the skills and confidence to match his enthusiasm. ?In my second year, I taught an upper-division course with three students in it,? he said. ?I had three students in the class and I lectured. I look back on it now and say, ?What was I thinking?? But I didn?t know any better.?

But Pollock is in a field that has taken the lead in transforming the way science classes are taught, particularly at the introductory level, and he works in a department at CU-Boulder with a particularly rich history of valuing teaching.

?The people who created the culture that teaching is important were the legends in this department?s history, like Al Bartlett, George Gamow, Jack Kraushaar and John Taylor,? said Professor Paul Beale, chair of the physics department. ?They conveyed to the young assistant professors that teaching is rewarding, valued and appreciated.?

The support he received from the national and local physics community helped him hone teaching techniques that have been shown to work?those that engage students by involving them in projects, inviting them to collaborate with their classmates and helping them arrive at an understanding of physics concepts by solving problems. The result, when paired with his still-obvious passion for teaching, is a professor beloved by his students.

?He comes into class every day and he has so much enthusiasm. It?s just like, ?Physics! Physics! Physics!? And it?s hard not to be enthusiastic with him,? said Julie Davis, who has taken multiple classes from Pollock.

Teaching science like a scientist

If you ask Pollock what his teaching secrets are, you?ll get at least two answers. The first, he says, is simple: He cares about his students.

?I care a lot about every student in my class, from introductory non-majors to advanced students,? Pollock said. ?Some of them start out dreading physics, and it?s a real pleasure watching them turn on to the topic. It?s wonderful to help people see that physics is about their life, that physics is relevant to their future, that it?s interesting, a powerful way of examining the world around them, and that they can do it.?

The second is that he relies on evidence-based teaching practices, those methods that have been proven effective. ?If we?re scientists, we should think about teaching like scientists,? Pollock said. ?We can?t just do it and assume we were successful. We need to assess that. We need to be able to reflect. We need to be able to test.?

While many of the techniques and methods Pollock uses have been borrowed from other people?s research, his own area of research is also physics education. In particular, Pollock studies teaching methods for upper-division physics courses, where less research has been focused in the past.

The results of Pollock?s research make their way back into CU-Boulder?s physics classrooms, and they do so through some of the robust channels that helped nurture Pollock?s own teaching skills over the past 20 years. The physics department faculty frequently comes together for brown-bag lunches to share what?s working and what isn?t. Senior professors also team-teach with new faculty members to share evidence-based practices and to lend support.

Physics professors at CU-Boulder are also frequently asked to teach courses they?ve never taught before?it?s rare to teach the same class more than a handful of times?which often leads to faculty members searching out the best, most effective ways those classes have been taught in the past.

?Just keep thinking?

Pollock?s evidence-based techniques seem to have won over his students, at least as judged by the evaluations they fill out about his class each semester. In the spring, the students in an upper-division class taught by Pollock gave him a perfect rating, a 6.0, for ?instructor overall.? And the praise isn?t limited to students who like physics enough to take an upper-level course. Students in an introductory course taught by Pollock the year before gave him an average rating of 5.9.

For Davis, now a senior in Pollock?s Principles of Electricity and Magnetism II class, Pollock?s ability to teach well has been crucial to her continuing in physics. Davis has wanted to be an astrophysicist since she was 14. But the sheer difficulty of physics?the almost physical will it takes to do battle with the problem sets assigned each week?almost turned her away from her dream once she got to CU-Boulder. Taking a class from Pollock persuaded her to stay in the field.

?He doesn?t look down on us for not understanding something, even when you?re being incredibly dense. In a help session, he says, ?No. You can get this. Just keep thinking. Keep digesting,? she said. ?My sophomore year I thought of dropping the major because I was so demoralized, and then I took a class with him and I was like, ?Oh. I actually can understand physics and it?s entirely due to him.? ?

Read more about the U.S. Professor of the Year award.[2]

Explore physics at CU-Boulder[3]

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