



A Fantastic Ride

Joel Smith visits his ancestral home as part of his future in science education

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Joel Smith, as he's been told, looks right at home in Ireland—an observation that may have eluded him had he not decided to become a teacher.

Smith came to Knoxville in 2007 when his wife, Jessica Comer, got her dream job in the area. At the time he was working in television, doing a lot of travelling with the music industry, and the long hours on the road were starting to wear him thin.

"I wanted to do something that I felt fulfilled by at the end of the day," he said.

So Smith merged two of his passions—science and education—through the university's VolsTeach program, an offshoot of the UTeach program at the University of Texas. With the aim of inspiring more STEM (science, technology, engineering, and math) students to pursue teaching, VolsTeach offers a curriculum that supplements their major requirements with education courses and experience. When they finish, they have bachelor's degrees in their respective majors (which, for Smith, is physics) as well as their teacher certification.

"I bought in immediately," Smith said. "I love the idea of giving content majors the tools to teach what they're passionate about."

VolsTeach is funded by the UTeach Institute, the Tennessee Higher Education Commission, the Tennessee Department of Education, the University of Tennessee, and the UT Colleges of Arts and Sciences and Education, Health and Human Sciences. Smith was awarded a Robert Noyce Teacher Scholarship as sponsored by the Robert Noyce Foundation of the National Science Foundation. As a member of that elite group, he was eligible to participate in what he called "a once-in-a-lifetime opportunity."

Smith was one of four U.S. students (two from Tennessee) selected to take part in the Shodor Institute's Professional Development Program. Based in Durham, North Carolina, Shodor is a nonprofit organization that blends computational science and interactive computing with STEM education. The institute offers an international training program for future teachers who are part of the Noyce program. In February 2012, Smith headed across the mountains to North Carolina for two days of training before crossing the Atlantic to Ireland. In Durham, he and his Noyce colleagues (including Lisa Berry of UTeach Chattanooga) spent two days developing an assessment method to measure the workshop's effectiveness, including setting up blogs to recount their experience. Then it was off to Dublin City University, where they were immersed in intensive training using computational tools for inquiry-based education. They were joined by teachers from Ireland, Belgium, Germany, and Wales.

"The pedagogical techniques that everyone had were aligned with the STEM initiatives here in the U.S.," Smith explained, although "the policy that shaped education was really different."

He said that physics and math discussions sprang up in the workshop groups, and they easily transcended country lines as sort of a universal language. Whenever he gets to talk physics with anyone who's as passionate as he is, Smith said, "it's always very enriching."

Among the workshop highlights was a chance to work with Dr. Robert Panoff, founder and executive director of the Shodor Education Foundation, or, as Smith called him, "the Richard Feynman of science education." Panoff's vision, he explained, involves "enhancing education by giving students the tools to model and see these things they're told in lecture."



Joel Smith at Glendalough
Upper Lake in Ireland.

In one example, Panoff showed a Hubble image of colliding galaxies and applied a Java-based applet to simulate changes over time; in another he explained how to illustrate changes in a rabbit population by converting a sentence to an equation and then generating a graph that showed an exponential growth curve.

Although the workshop was the point of the trip, Smith also enjoyed some opportunities to enjoy Irish culture, including a self-guided tour through Dublin and a trip through Kilkenny. In the process, he discovered that the Emerald Isle is somewhat closer to home than he first realized.

While visiting a local pub, he said he noticed "there was a folk singer singing a song that my grandfather used to sing to me."

During his stay, natives told him he looked like an Irishman, and when he came home he learned that one of his great-grandparents was actually a first-generation American from Ireland. He never considered, he said, that he would end up in Ireland and learn some family history all because of his enthusiasm for teaching and science.

For Smith, teaching is a real passion: by his own admission he's been hooked since he first stepped into a classroom to teach fourth graders about electromagnetism. Last semester he taught AP Physics at West High School, and in future assignments he plans to incorporate tools he learned through the Shodor workshop: concepts like AgentSheets and free tutorials on functions and graphics from the institute's Interactivate Web site. Next spring he'll complete his apprentice teaching duties to earn his certification, and he'll be in the first class of VolsTeach graduates.

"Students appreciate a teacher who has credibility," he said. "I don't want to be just a science teacher; I want to be a physicist who teaches science."

He's had some good examples from the physics department, he said, naming faculty members Marianne Breinig, Bob Compton, Stuart Elston, and Norman Mannella. He took astronomy with Dr. Raph Hix and kept all the lecture notes to adapt the concepts for his own teaching.

"I've been fortunate to have a lot of good mentors since I came to UT," he said. "I've had great opportunities and amazing teachers. It's been a fantastic ride so far."