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Networking to Boost the Skills of Graduate Teaching Assistants

SUSAN MUSANTE

When Elisabeth Schussler arrived at the University of Tennessee, Knoxville, (UT) she used her knowledge of evidence-based teaching practices to revise the undergraduate biology laboratory curriculum. Unfortunately, she had little control over how the curriculum was delivered. Many graduate teaching assistants (GTAs) at UT have never taught before their appointment and are neither required nor have the time to attend professional development programs. "Ineffective teaching can derail good curriculum," says Schussler, who is an assistant professor and the director of biology teaching and learning. "If you don't have instructors delivering inquiry labs in the right way, you might as well have cookbook labs."

She decided to bring together those involved in GTA training at other institutions to discuss the challenges and share solutions. To catalyze such a network, Schussler created the Biology Teaching Assistant Project (BioTAP; *www.bio.utk.edu/biotap*) with funding support from the National Science Foundation (NSF) Research Coordination Network in Undergraduate Biology Education (RCN-UBE) program.

The RCN-UBE incubator track was a perfect fit for testing BioTAP's goals. "There are a lot of communities working in silos," says Jose Herrera, program director in the Division of Undergraduate Education (DUE) at the NSF. The RCN-UBE allows a community to build around a new idea, connecting existing communities so they can learn from each other. "It's a terrific way to increase the efficiency at which education can transform—and transform more systematically," says Herrera.

The NSF developed the RCN-UBE to fill a gap in funding opportunities, explains Charles Sullivan, program director in the Division of Biological Infrastructure (DBI) at the NSF. Faculty members will gather at national meetings to discuss education issues, but too often, people have to wait for the next national conference for the invaluable face-to-face time required to advance an initiative. The UBE grants now provide a mechanism to formally sustain and advance ongoing conversations and collaborations.

During the initial BioTAP meeting, steering committee members reviewed the literature about GTA professional development, discussed how programs are affected by different contexts, generated ideas for evaluating programs, and outlined key questions to be addressed through the network. "It was an effective way to bring educators with similar interests together to try to establish what the top current issues in GTA training appear to be and how to start addressing them." says BioTAP steering committee member Kristen Miller, introductory biology laboratory coordinator at the University of Georgia. Miller believes that the project has potential to pave the way for a larger-scale effort that can be useful across institutions.

Bill Wischusen, associate chair for introductory biology in the Department of Biological Sciences at Louisiana State University, also serves on the BioTAP steering committee and is confident that broadscale improvements to GTA training will directly translate into improving undergraduate students' learning experiences, both in the short and the long term. His 20 years as the introductory biology program coordinator have allowed him to see firsthand the impact that GTAs have on undergraduate student learning. GTAs interact in low student-to-teacher-ratio settings in the labs, and because they are closer in age to the undergraduates, they can relate to them in a way professors cannot. "We can have a big influence on GTA instructional practices for the rest of their careers, and in terms of the impact for the future, this is an important group to reach," adds Wischusen.

Kim Dill-McFarland agrees that a network focused on improving GTA professional development has great potential to shift the way biology is taught. The current graduate student and recent GTA at the University of Wisconsin–Madison speaks from firsthand experience when she says that it would be a hard sell to require GTAs to take teaching courses but suggests that it could have a snowball effect. "If graduate students are forced to be better teachers and are then more competitive when they go up for professor positions, it will push other institutions who don't have that kind of training to offer it [in order] to make their students more competitive," says Dill-McFarland.

The goal for BioTAP's first year is to spread the word and create an initial network that justifies submitting a full RCN-UBE proposal for five additional years of funding, says Schussler. During the remainder of 2013, members of the steering committee will be collecting feedback on the various contexts that affect GTA training, the key elements of effective programs, and the development of self-assessment rubrics and coordinated program evaluation. Schussler encourages those involved in GTA training to discuss the questions raised by BioTAP within their departments and to join the network. Schussler urges her faculty colleagues to "think about how hard it is to effectively teach a lab and how professional communities could support and enhance GTA training." Herrera and Sullivan agree that it seems wise for the NSF to invest in the professional development of future faculty members as part of the ongoing efforts of DUE and DBI to cofund projects designed to improve undergraduate biology education.

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