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Creating Sustainable STEM Teacher Preparation Programs

Study finds key ingredients in successful, ongoing programs designed to increase numbers of STEM teachers

College Park, MD, July 24, 2014 -- A new study has identified two factors that characterize sustainable university and college programs designed to increase the production of highly qualified physics teachers. Specifically, one or more faculty members who choose to champion physics teacher education in combination with institutional motivation and commitment can ensure that such initiatives remain viable. Science, Technology, Engineering and Math (STEM) teacher shortages are especially acute in physics, and the study points the way for institutions seeking to increase the number of STEM graduates prepared to teach.

The Physics Teacher Education Coalition (PhysTEC) findings will be publicly released Tuesday, July 29 at the 2014 American Association of Physics Teachers summer meeting. The meeting takes place July 26-30 at the University of Minnesota in Minneapolis.

Dr. Rachel Scherr (Seattle Pacific University) conducted the study to measure the extent to which programs have been sustained after PhysTEC funding ended, and to identify features that ensure sustainable physics teacher education programs. “The programs have so much in common but also such diverse strengths,” said Scherr. “For example, every sustained program has a champion, but each champion has unique expertise and a strong personality that shapes his or her program.”

Scherr defines a champion as someone who secures funding and personnel benefiting physics teacher education and negotiates with the institution for changes beneficial to physics teacher education. All the sites Scherr studied have at least one champion who is a member of the physics faculty, and about half have a champion with a partial appointment in the College or School of Education. “In our experience with over 30 sites,” said PhysTEC project director Dr. Monica Plisch, “we have found that a champion in the physics department is essential to increasing the number of physics teachers.”

Institutional commitment to physics teacher education is evident through funding for physics teacher education programs and personnel, alignment of the institutional mission with physics teacher education, and establishment of infrastructure supporting physics teacher education. In addition, committed institutions demonstrate support for personnel involved in physics teacher education.
education through promotions, leadership opportunities, and a mandate to dedicate substantial effort to the program. Institutional recognition of and support for the champion(s) is crucial for sustaining the leadership of efforts supporting physics teacher education.

Nearly all of the studied sites sustained increases in the production of physics teachers as well as funding for physics teacher education after PhysTEC project funding ended. Scherr found about half of the programs to be thriving, in that they have sustained relatively large increases in physics teacher production and funding for physics teacher education.

PhysTEC is a project of the American Physical Society (APS) and American Association of Physics Teachers (AAPT), with major support from the National Science Foundation. The report can be downloaded at: http://www.phystec.org/sustainability.

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About APS

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