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COLLEGE OF EDUCATION & HUMAN DEVELOPMENT

Selected News Releases

Math/Science Teacher Collaborative Targets Campuswide Participation

The Maine Mathematics-Science Teacher Excellence Collaborative is actively working toward its goals of improving the recruitment, preparation and support of students with strong interests in math, science and technology to help address the national shortage of math and science teachers for grades 7-12.

Funded by a \$4 million Collaboratives for Excellence in Teacher Preparation grant from the National Science Foundation, the five-year project is a joint effort of the Maine Math and Science Alliance, the University of Maine, the University of Southern Maine and the University of Maine at Farmington. Specifically, the initiative aims to increase the number of teachers prepared for secondary math/science certification and to improve the quality of the Science, Math, Engineering and Technology (SMET) education provided to pre-service teachers at the three campuses.

Principal investigators spearheading efforts at UMaine are Robert Franzosa, professor of mathematics; Herman Weller, associate professor of science education; and Mary Ann McGarry, research scientist with the UMaine Water Research Institute and associate professor of science education. UMaine work merit student Beth Blake is assisting with the project.

A major component of the initiative at UMaine is establishing a networking system for math-science education majors and interdisciplinary faculty interested in advancing instruction in secondary schools and better preparing aspiring teachers in these fields. A variety of activities are being planned to bring mathematics and sciences faculty from the various colleges, education faculty and math/science students together to develop a sense of connection and common purpose as they pursue teaching and learning.

While the number of UMaine students pursuing majors or concentrations in the life sciences is strong, there are very few students graduating each year with majors in secondary mathematics, earth science, chemistry or physics. Coupled with the high number of teachers reaching retirement age, Maine secondary schools, like those nationwide, are struggling to find qualified career educators in these essential disciplines.

In order to muster more teachers from such a small pool and generate greater interest in teaching as a career, recruitment must be internal, as well as external and come from all areas of campus, according to the UMaine project leaders.

“We hope that professors working with talented math and science students in all the UMaine colleges will suggest teaching as a career option to explore,” says Weller. He notes that it is to the students' advantage to be informed of opportunities in teaching early in their academic programs.

Curriculum reflection and change, in light of research on teaching and new state and national learning standards, are also key to the initiative.

“Our faculty needs to exemplify, support and provide interactive models for teaching math and science,” says Franzosa. “We would like to see students get a bigger picture of what math is, how it works and impacts their lives.”

For instance, interested faculty could develop a new course that is based on the theory and techniques that NSF considers best practice, or on other new programs designed to meet national standards.

Aspiring teachers in particular must be exposed to instruction that reflects a variety of techniques to reach all students, as required in the Maine Learning Results and the instructional standards of many other states, the project leaders agree.

The Collaborative will work in conjunction with existing campus resources, such as the Center for Teaching Excellence, toward improving the quality of teaching at all levels, according to McGarry. “We want to create a broad-based climate of support for students and opportunities for faculty to be involved in a variety of ways,” she says.

Initiatives will be guided by Cross-Tier Teaching Teams of science, mathematics, engineering, technology and education faculty, and pre-service, beginning and exemplary grade 7-12 math/science teachers. The organizers hope to form four teams of 10 members each to help promote and advance the project goals.

Specifically, the teams will be conduits for greater collaboration, understanding of needs and sharing of information about effective teaching. In addition to the vital communication and support role, team members will each be asked to create an action plan to examine at least one aspect of their courses, based on recent research on the teaching and learning of mathematics and science, and assess how it might be done better. The plans would be shared with team members and more broadly through other project activities and outlets.

The project leaders encourage faculty involvement and support at any level of participation. Opportunities for involvement and a continuing stream of information will be available through the SMET Network, currently being developed. The interactive website will feature a calendar of coming events, team action plans, a database of faculty expertise and interests, descriptions of innovative teaching strategies and other relevant information.

A mid-year kick-off conference for team participants from all three campuses is being planned for January. An April conference for UMaine undergraduate science and math education majors will highlight model teaching in sessions presented by exemplary teachers. And summer academies for math-science educators at all levels, to be conducted by the Maine Mathematics and Science Alliance, will combine and feature the SMET initiatives and work of the three campuses.

Among other objectives, the MMSTEC project will work to:

- Hire a tenure-track faculty member serving jointly in the Department of Mathematics and Statistics and the College of Education and Human Development to help manage the grant. The position, which also calls for teaching innovative courses in mathematics education, will be funded by the University at the end of the grant period.
- Establish an internal recruitment program to inform math, science, engineering and technology students about teaching as a career alternative.
- Form a Future SMET Teachers of Maine group at UMaine.
- Encourage SMET instructors to incorporate the 10 performance standards defined by the Maine Advisory Committee for Results-Based Assessment for the Initial Certification of Teachers.

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