

# Archived Information

Montana State University – Bozeman

Over 40 Montana State University – Bozeman (MSU) science, mathematics, engineering and education faculty are currently collaborating on a number of initiatives to improve the quality of K-12 teachers of mathematics and science. The campus's tradition of cross campus cooperation helps MSU to address all three goal areas established by the Mathematics and Science Initiative.

**Improving Teacher Quality** – Two innovative masters degree programs provide year-round access to high quality coursework via distance delivery - The campus offers two Masters of Science (MS) programs which each year graduate around 20 students with an *MS in Mathematics Education*, and 40 students with an *MS in Science Education*. Both degree programs offer coursework via distance delivery (year-round), building on MSU's decade of experience in providing science and mathematics coursework online, in addition to on-campus offerings (summers only). The MS in Science Education is highly interdisciplinary, with faculty from nine departments sharing instruction and advising. Both programs attract highly qualified students from the around the nation, with GPA and GRE scores equaling or exceeding those for students in traditional STEM programs. Results from a longitudinal evaluation (HORIZON, Inc.) and a dissertation study (Graves, 2002) indicate that (a) teachers completing at least four online courses model research-supported teaching practices more often than those in comparison groups, and (b) participation in the classroom-based research required in the masters programs increases the teachers' confidence in their ability to improve student learning. To meet growing student demand, both programs will be expanding their course offerings, as well as engaging faculty from other universities, during the next 12 months. And in response to demand from elementary teachers, the campus is currently piloting online courses for elementary teachers taught by science faculty.

Support for beginning mathematics and science teachers – In collaboration with the National Science Teachers Association and the New Teacher Center at UC Santa Cruz, MSU has just launched an NSF supported Math and Science Partnership project to link beginning teachers to experienced classroom teachers, as well as scientists and mathematicians, via online seminars and mentoring activities. The project will serve new teachers in high need rural, reservation and urban schools in MT and CA, and the model will eventually be transported to more than 30 states currently active in NSTA's Building a Presence for Science network. The project builds on MSU's six years of experience with a small-scale prototype for this project sponsored by the NSF Collaboratives for Excellence in Teacher Preparation program. A longitudinal evaluation of the prototype demonstrated that, in comparison to other early career teachers, project participants demonstrated (1) longevity in the teaching profession (with >90% of remaining in teaching for at least 4 years); (2) greater use of research-based teaching practices and technology; (3) higher confidence in subject area knowledge; and (4) greater participation in leadership activities. The new MSP project will focus on enhancing beginning teacher retention and performance, as well as improving the achievement of high need student populations in the partner schools.