Utilizing Advanced Technology and Scientifically Based Research Strategies to Maximize Student Achievement

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Northern State University was selected to receive Preparing Tomorrow’s Teachers to Use Technology (PT3) grant funding to support the improvement of teacher education students’ technology skills, including the utilization of technology to analyze standardized assessment information and create differentiated instruction that will maximize PK-12 students’ learning and ensure that they make adequate yearly progress.

Grant activities include action research projects conducted by university faculty and teacher education students in collaboration with rural PK-12 teachers and school districts. Project teams are currently collaborating to review current research to identify scientifically based teaching strategies and will soon begin creating technology-enhanced lesson plans and learning activities that address content standards and meet the diverse needs of PK-12 students. Each team will conduct an action research project and share results via a project web site and an online journal.

Areas of need were identified by current program assessment measures and organized into five grant goals based on the ISTE National Educational Technology Standards (NETS) for Teachers and the fifteen program outcomes for teacher education graduates at Northern State University. Grant goals include assisting teacher education students and university faculty in 1) using technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning; 2) applying current research on teaching and learning with technology when planning learning environments and experiences; 3) facilitating technology-enhanced experiences that address content standards and student technology standards; 4) using technology to support learner-centered strategies that address the diverse needs of students; and, 5) using technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.

A recent wiring-of-the-schools project in South Dakota provided computer links in each school building in the state and linked all schools together with an electronic network known as the Digital Dakota Network (DDN). The DDN provides unlimited potential for distance education in a state with 176 school districts scattered across 76,000 square miles. Northern State University has nine DDN video conference studio classrooms; two of the student classrooms are used primarily to train undergraduate education majors and to deliver outreach activities to PK-12 schools.

NSU’s Rural Student Teacher Placement Initiative, now in its second year, offers assistance to those student teachers willing to relocate to relatively isolated communities in order to complete their ten-week student teaching experience in small, rural schools. Each rural school district has an interactive distance-learning studio; in addition, participating student teachers are issued laptops, web cams, wireless microphones, and headsets. To date, more than 20 student
teachers have been placed in rural locations; all are observed and supervised remotely using interactive IP videoconferencing technology.

Four rural PK-12 school districts volunteered to serve as partners in this grant effort. All have previously accepted student teachers as part of the Rural Student Teacher Placement Initiative, and all have greater than average numbers of students enrolled for free or reduced lunches and/or identified as special needs. In addition, all four school districts enroll a significant number of Native American students. All four school districts serve students in sparsely populated areas of the state, and three of the four school districts are more than 100 miles from Northern’s campus.

Grant efforts will support NSU’s teacher education program in its efforts to better prepare prospective teachers to use advanced technology to ensure that all students are able to meet challenging state and local academic content and student academic achievement standards. The collaborative action research projects generated by this grant will make a significant contribution to the existing body of research on the connection between teaching strategies and student achievement and will assist teacher education programs and PK-12 school districts across the nation to better meet the accountability requirements demanded by the No Child Left Behind legislation.