

Archived Information

U.S. Department of Education

Mathematics and Science Partnership-Title II, Part B

The *Mathematics and Science Partnership (MSP)* projects are intended to enhance the capacity local teachers to enact curricula reforms that produce higher student achievement in mathematics and science. A partnership between local school districts and institutions of higher education's science, technology, engineering, and mathematics (STEM) faculty is the conduit used to reach these goals and is required in these projects.

A key component of the No Child Left Behind legislation focuses on highly qualified teachers. Numerous large-scale studies have identified teacher quality, more than other factors, as a key determinant of student success. Studies have consistently documented the important connection between a teacher's verbal ability and content knowledge with student achievement. William Sanders, in Tennessee, created a value-added method of analysis that confirms the positive, cumulative effects of high-quality teachers on student performance over several years. Congress made it clear that it considers content knowledge to be of paramount importance. Current state certification systems and teacher preparation programs may not be doing enough to ensure preparation in solid content knowledge.

A call for immediate attention to these issues is both urgent and insistent. Congress has provided resources to improve capabilities and content knowledge of teachers. The law requires 100% of teachers in Title I schools be highly qualified by 2005. Additional funds were allocated in Title II, Part B, to support initiatives of Mathematics and Science Partnerships (MSP).

Research suggests that in order to have a positive and lasting impact on classroom instruction and student learning, professional development should be sustained, intensive, and classroom-focused. The U.S. Department of Education is committed to assisting partnerships provide high quality professional development in the support of teachers' efforts to raise student achievement. Long-term plans that include multi-week institutes coupled with support over a sustained period are critical. A promising model for this would be the establishment and operation of summer workshops or institutes with follow-up training to support classroom implementation. Distance learning programs using curricula that are innovative, content-based, and based on scientifically based research that is current can address problems in rural areas. Ongoing opportunities for enhanced professional development of mathematics and science teachers that improves the subject matter knowledge and promotes strong teaching skills is a necessity.

The design of professional development will center on content knowledge, the principles of effective instruction and student learning, a commitment of time and resources for implementing development over an extended period of time, and the employment of professional development styles that engage teachers collaboratively rather than focusing on them as individuals. The goals for the program consist of the following:

- To provide activities that are supported by scientifically based research and designed to deepen mathematics and science teachers' content knowledge and knowledge of how student learn particular content;
- To improve the quality and coherence of the learning experiences for SMT teachers through high-quality professional development;
- To link SMET teachers' opportunity to learn with opportunity to implement classroom instruction;
- To promote sustainable relationships between institutions of higher education and K-12 schools that strengthen reform efforts in K-12 education.
- To focus on the education of mathematics and science teachers as a process that continuously stimulates teachers' intellectual growth and upgrades teachers' knowledge and skills;
- To bring mathematics and science teachers in schools together with scientists, mathematicians, and engineers to increase the subject matter knowledge of those teachers and improve such teachers' teaching skills through the use of sophisticated tools and work space, computing facilities, libraries, and other resources that institutions of higher education are better able to provide than the K-12 schools;