New Mexico Quality Mathematics and Science Education Model

The New Mexico Quality Mathematics and Science Education Model (QMSEM) was developed in response to recommendations at the New Mexico Town Hall on Mathematics and Science Education and as part of the *Strategic Action Plan for Advancing Math and Science Education in New Mexico, 2007-2010*. It supports improved student learning through curriculum alignment, continued teacher development and strong leadership at all levels. The following are guidelines for developing, implementing and sustaining a local QMSEM:

Curriculum

Adopt and implement a mathematics and science curriculum (a plan for what and how students learn) that is aligned to New Mexico Content and Process Standards, and Standards-Based Assessment.

The curriculum needs to be content rich, providing students with opportunities to learn important grade level concepts and procedures with a deep understanding. The Process Standards (problem-solving, representation, reasoning and proof, communication, connections) must be emphasized in the instruction and student learning of mathematics. Also, in every grade, inquiry-based laboratory components are at the core of the science program and should be woven into every lesson and concept strand. Therefore, districts must:

- Establish a K-12 district curriculum (what and how students learn) that is aligned to New Mexico Content and Process Standards in Mathematics and Science
- Adopt standards-based resources that are field-tested and support the New Mexico Math and Science Content and Process Standards and are aligned vertically K-12
- Provide Professional Development opportunities for teachers to support implementation of standards-based teaching and learning
- Use state, district, school, and classroom data as tools to guide implementation of adopted curriculum and insure that the adopted curriculum is the taught curriculum

Professional Development

Educators must be active life-long learners in the pursuit of improving the teaching and learning of mathematics and science.

The goal of professional development is to support teachers in their pursuit of excellence as educators, thereby improving student learning in mathematics and science. Professional development is not a one-time event; it must be embedded in the daily work of all teachers. It is ongoing and multi-faceted. Therefore all professional development programs must:

- Include high quality, meaningful content (content and pedagogy, learning theory, assessment) in summer institutes, professional conferences, and during the school year
- Establish school-based collaborative professional learning communities for all teachers whose meetings are scheduled as part of the work week
- Develop and use teacher leaders to help guide improvement of student learning and facilitate the collaborative learning communities
- Align with the *New Mexico Standards*, selected curriculum materials, and assessment
- Be evaluated in terms of its impact on teacher and student learning

Leadership

Leadership is the guidance and direction of instructional improvement.

Strong leaders who can act as change agents are essential for the implementation of a Quality Mathematics and Science Education Model (QMSEM). State and district leaders, including superintendents, principals & teacher leaders, need to:

- Establish structures for regular teacher collaboration during the school day
- Design and monitor a QMSEM implementation plan in which all teachers must participate
- Ensure that all teachers and leaders receive ongoing, quality mathematics and science professional development
- Use data management structures to monitor implementation of the QMSEM and ensure that data collection and analysis is part of the culture of the system
- Align financial and human resources to support implementation of the QMSEM.
- Ensure that the system provides all students access to all the Standards
- Promote ongoing communication with all stakeholders (community, employers, parents, staff, and students) about the vision and progress of the QMSEM