South Dakota Council of Teachers of Mathematics (SDCTM)

Position Statements

Mathematical Background of Teachers of Mathematics (1998)

The South Dakota Council of Teachers of Mathematics is committed to a strong mathematical background both in content and pedagogy for all teachers of mathematics. It is essential that all elementary teachers have completed a minimum of nine credit hours beyond general education requirements in mathematical content including number systems, geometry, mathematic logic, problem solving, probability, and statistics; that all middle, junior high, and high school teachers of mathematics have a major in mathematics.

Rationale:

The SDCTM believes that every student has the right to a mathematics education that ensures that he or she achieves mathematical literacy and develops the concepts, skills, and dispositions necessary for a meaningful and productive life. It is essential that mathematics teaching in all grades help students experience mathematics as a personally meaningful and worthwhile endeavor. Students should see mathematics as a powerful and useful tool in their lives, in their pursuit of knowledge in other subject areas, and in their careers. If we are to reach these student goals, teachers of mathematics should have high=quality preparation in mathematics and mathematical pedagogy as outline in the "Professional Development of Teachers" section of the Professional Standards for Teaching Mathematics. The results of the Third International Mathematics and Science Study reveal that the U.S. 4th graders scored above the international average in mathematics and science, while 8th graders scored below average in mathematics. Requiring middle school teachers of mathematics to have a mathematics background equivalent of a major in mathematics can be an impetus in providing meaningful mathematics learning for every middle school student. Understanding mathematics beyond the mathematics being taught is essential for all teachers of mathematics.

Mathematics Leadership in Elementary Schools (1998)

The South Dakota Council of Teachers of Mathematics issues a call for each elementary school to have a minimum of one teacher with a math emphasis for every ten teachers in school. Each elementary school will identify a math lead teacher, who has at least a minor in mathematics. Further, the SDCTM maintains that the state accredit only those school districts meeting these criteria.

Rationale:

School mathematics leaders can serve as an immediate resource to teachers by demonstrating knowledge, competence and leadership in mathematics education. The lead teacher can serve to network with professionals in other buildings and throughout the state and country. The leader should know and understand mathematics substantially beyond that which they teach. The leader should have the knowledge and competence in methods and techniques for effective mathematical teaching.

The National Council of Teachers of Mathematics advocates that every elementary/middle school identify a school mathematics leader to provide ongoing leadership and assistance in planning, implementing, assisting, and evaluating the school mathematics program. School mathematics leaders should be available as a resource to all

staff in the areas of curriculum design, professional development, teaching methodology, classroom management, selection of materials, diversity and student assessment. (NCTM Handbook, p.27)

Professional Development (1998)

The South Dakota Council of Teachers of Mathematics issues a call to all school districts to require and support teachers of mathematics to engage in professional development activities that support the vision of the NCTM standards. Further, the SDCTM maintains that the state accredit only those schools that include this support in their district's professional development plans.

Rationale:

The NCTM's Curriculum and Evaluation Standards for School Mathematics (1989), Professional Standards for Teaching Mathematics (1991), and Assessment Standards for School Mathematics (1995) are guidelines for excellence in mathematics education. They make recommendations about what mathematics students should learn, what classroom practice should be, and what guidelines can be used to judge student performance and evaluate effectiveness of mathematics programs. The NCTM Standards envision rich mathematics opportunities and high achievement for all children in mathematics classrooms. In order to achieve this goal in South Dakota mathematics classrooms, it is imperative that teachers of mathematics know and understand the NCTM Standards. Involvement in professional development activities centered on these standards is essential for teachers of mathematics in order that they may effectively incorporate the standards into their teaching strategies that will focus on students' learning and doing high-quality mathematics.

Use of Technology (1998)

The South Dakota Council of Teachers of Mathematics advocates the integration of technology into mathematics classrooms at all grade levels. Contemporary mathematics education requires the increased use of technology to enhance and expand student comprehension and application of mathematical concepts, making certain that the technology is used appropriately.

Rationale:

Calculators and computers are widely used at home and in the workplace. The NCTM, in its position statement on Calculators and the Education of Youth, recommends that all students use calculators. Also the NCTM, in The Use of Technology in the Learning and Teaching of Mathematics, maintains the position that "the use of technology is integral to the learning and teaching of mathematics: and further maintains that

> "Every student is to have access to a calculator appropriate to his or her level. Every classroom where mathematics is taught should have at least one computer for demonstrations, data acquisition, and other student use at all times…. As new technology develops, school systems must be ready to adapt to the changes and constantly upgrade the hardware, software, and curriculum to ensure that the mathematics program remains relevant and current."

Since this NCTM Position Statement was adopted in 1994, technology advances suggest that each classroom should have at least five computers for student use. Further, careful attention needs to be given to the appropriate use of technology to ensure that the technology, e.g. calculators, is not used to replace student learning of mathematical skills and concepts.

Educational Partnerships (1998)

The South Dakota Council of Teachers of Mathematics issues a call to all school districts to seek involvement from parent, students, educators, business and community leaders, and other stakeholders in the educational process to become active partners in the teaching and learning of mathematics.

Rationale:

Support received from parents and community is considered to be one of the most important factors in achieving academic excellence. Students' interests, confidence, and learning in mathematics are stimulated by the support and involvement of parents or guardians and extended family members. Parent-teacher associations and site-based management committees are examples of such involvement.

School districts should strive to develop cooperative programs with businesses, industries, and agencies. Internship and shadowing programs along with a school-to-work committee are examples of such cooperation. Smaller school districts are encouraged to tap the resources of businesses and agencies outside their community borders.

Mathematics Education Resources (1998)

The South Dakota Council of Teachers of Mathematics issues a call for school districts to provide resources and ongoing support to optimize for all students the learning and application of high-quality mathematics. Resources necessary for effective mathematics education include, but are not limited to, published educational materials, manipulatives, calculators, computers, and software. In addition, financial resources need to be made available for professional development and student activities.

Rationale:

Over the past decades, changes have occurred in mathematics and its uses. Changes have occurred in the role of technology and in the needs of society. Most importantly, changes have occurred in what we know about how students learn. We must, therefore, rethink the way we prepare our children to understand and use the power of mathematics. One prerequisite is a shift toward more active student involvement with mathematics, and the use of a variety of appropriate mathematical tools for solving problems. Mathematics clubs, contest, project, and field trips are examples of student activities, which may require supplemental funds necessary for a well-rounded education in mathematics.

In order to stay abreast of the changes in mathematics and in related teaching strategies, the teachers of our children must be afforded the opportunities to network with other teachers of mathematics and with state and national mathematics organizations. This can be accomplished by attending workshops and state, regional, or nation conferences. Internet access and e-mail availability will especially augment the process incumbent upon each teacher of mathematics to strive for information, discourse, and guidance in maintaining a classroom designed to offer all students the opportunity to reach their full mathematical potential.