



A Brief History of SciMath^{MN}

Late 1980's

SciMathMN is Minnesota's statewide coalition for standards-based systemic improvements in K-12 science and mathematics education. The coalition came into official existence in 1993 with its incorporation as an IRS-approved nonprofit educational entity and with significant annual funding from the state of Minnesota. As a coalition, SciMathMN represents a variety of organizations and individuals, and it has functioned much like the statewide systemic initiatives that flourished in other states under National Science Foundation support in the early to mid-1990's. SciMathMN is led by a board of directors whose composition reflects the basis of the coalition—education, business, and policy representatives. In 2002 SciMathMN moved into a new phase, having lost its state funding and resulting staff support but newly energized by volunteer involvement and emerging strategic partnerships.

SciMathMN's origins trace back to the larger, nationwide education reform movement that began in the 1980's and transformed into the "standards" movement of the 1990's. Calls for reform of public K-12 education arose most obviously in the years immediately following the publication (in 1983) of *A Nation at Risk*, which drew public attention to the status of school performance in the U.S., particularly in light of economic and workforce issues. By the late 1980's, the reform movement had been thoroughly adopted by the education system itself, and theories of action regarding education reform were focused primarily on curriculum, instruction, and assessment. SciMathMN clearly sprang from this general movement.

Early 1990's

The evolution of the standards movement was apparent by the early 1990s under names such as "outcomes based education," "systemic reform," "performance based education," and so forth. These system-oriented developments in K-12 public education emulated the advent of systems theory and quality management in business management and practices in the mid- to late-1980s.

During this time period the focus of attention began to shift from local to state-level K-12 concerns. Correspondingly, issues and organizations in math and science education began to orient to the "system" as a statewide entity. Reflecting this reality, the Minnesota Mathematics Mobilization, an Exxon-supported state coalition for mathematics education, came into being and served as the model for replication of state mathematics education coalitions across the country. In science, an earlier state science coalition—the Minnesota Alliance for Science—had been created in the mid 1980's but had since disbanded.

This state-level activity was both aided and directed by the evolution of a national consensus about the aims of K-12 education. Math led the way.

Early 1990's continued National content standards in mathematics had been published in 1989 by the National Council of Teachers of Mathematics (NCTM), following publication of the seminal report, *Everybody Counts: A report to the nation on the future of mathematics education* (Mathematical Sciences Education Board, National Research Council, 1989). Standards for science education were developed separately by two national organizations—the American Association for the Advancement of Science (AAAS) published its *Benchmarks for Science Literacy* in 1993; the National Research Council (NRC), operating arm of the National Academy of Science, released its *National Science Education Standards* in 1996.

The NCTM and NRC standards documents became keystone documents guiding the vision of the founders of SciMathMN and are directly referenced in SciMathMN's strategic plan for 2000-2005.

1991 Early discussions of the possibility of forming a state coalition for math and science education in Minnesota occurred in the fall of 1991, as part of assembling a proposal for a “statewide systemic initiative” (SSI) in response to a request for proposals from the National Science Foundation. Discussions included representatives of the state department of education, teacher professional organizations, and the local business community—a model that formed the basis of the SciMathMN coalition and one that is still reflected in the composition of the board of directors of the nonprofit. Although the Minnesota proposal was eventually denied, participation in the proposal creation process helped orient Minnesota math and science education leaders toward the general goals of systemic reform.

Also in 1991 the Minnesota State Board of Education gave preliminary approval to the idea of an outcome-based graduation rule, thus beginning the process that eventually produced statewide graduation standards and related assessments under the name, “Profile of Learning.” SciMathMN's success during the 1990's in advancing the notion of standards as a vision for reforming curriculum, instruction, and assessment owes much to the serendipitous evolution of statewide standards that provided a friendly home for the vision of standards-based mathematics and science education.

After the NSF denial of Minnesota's 1991 statewide systemic proposal, MN K-12 math and science stakeholders continued to talk about the possibilities for a systemic initiative and eventually (in 1993) produced a second SSI proposal to the NSF, thereby moving further toward creation of a strong statewide coalition.

1992 Working with cash resources provided by Minnesota-based corporations Cray Research and Honeywell, the fledgling coalition began in the fall of 1992 to hold regular meetings of potential stakeholder groups and individuals in order to build ownership in the idea of a statewide effort and a consensus for action. Direction for the project was provided by an informal “management council,” and the unincorporated project was housed at the Minnesota High Tech Council. Bob Vanasek, then president of the MHTC, served as the management council’s first chair.

During the fall of 1992, the second Minnesota SSI proposal was submitted to the National Science Foundation. The focus of this proposal was on the development of systemic policy reforms and the deployment of regional teacher development centers. The coalition’s management council continued to meet and to plan for early implementation of the intended SSI activities.

1993 Watershed events for the coalition occurred this year. In February 1993, the National Science Foundation moved Minnesota’s SSI proposal into the finalists’ category and made a site visit. Although the NSF eventually denied Minnesota’s second request for an SSI grant, the Minnesota coalition was strong and, as it turns out, about to be well funded.

**SciMathMN
created**

At about the same time that the NSF news came through, the Minnesota state legislature allocated \$1.5 million to the coalition (still unnamed) as the required state “match” for the NSF SSI grant. Upon hearing of the NSF denial of the Minnesota SSI proposal, the MN legislative sponsors of the coalition announced that the legislature would honor its funding offer despite the NSF’s rejection. SciMathMN was not named in the legislation of 1993 and never did gain statutory language, but the annual allocation of funding, at or about the \$1.5 million level, persisted from 1993 through 2001. This generous funding by the State of Minnesota provided extraordinary resources for the coalition, which quickly began to grow.

In October of 1993, the leadership of the coalition officially established its mission as “a statewide initiative aimed at standards-based systemic reform of Minnesota’s K-12 mathematics and science education.” This remains the essence of SciMathMN’s mission.

1993-1994 This period of six months or so saw rapid and visible development of the coalition's operations. The coalition began statewide communications activity and established its identity as SciMath^{MN} (meant to signify, "raising science and mathematics education to the power of Minnesota," a phrase actually used on its early stationery).

With the aid of the newly won state funding, SciMathMN hired its first paid staffer, executive director Lisa Clemens, in the fall of 1993, and in the spring of 1994 moved into offices at the Minnesota Department of Education (later renamed Department of Children, Families & Learning) at its Capitol Square location in downtown St. Paul. Additional staff hires soon followed, including the organization's first math staff (Anne Bartel) and science staff (Laurie Peterman) along with a technologist (Mike Damyanovich). Also during the spring of 1994 the leadership of SciMathMN changed with transition of the management council into a board of directors.

Establishment of a board of directors for the coalition was prompted by the group's incorporation (in late 1993) as a 501c3, a charitable organization in IRS terms, and its registration (in January 1994) with the Minnesota Attorney General's office as a Minnesota-based nonprofit corporation.

1994-1995 Equipped with money and staffing, SciMathMN began proactive programming to carry out its mission in both policy and practice. To influence local practice, SciMathMN initiated a summer "Teacher Academy" which ran successfully for three successive summers and helped train a cadre of classroom teachers and curriculum leaders committed to standards-based practice. On the policy side, SciMathMN worked with the state department of education and other stakeholders to influence the development of the emerging state content standards.

One of SciMathMN's key early accomplishments is the role that it played in winning public support for aligning the Minnesota graduation standards with the national math and science standards documents by NCTM and NRC. When the Profile of Learning was finally adopted by the state legislature in 1998, it included math and science standards deliberately aligned with the key ideas in the NCTM and NRC documents. Meanwhile, SciMathMN was also providing training sessions for the state Best Practice Networks in the national standards documents and related local implementation strategies.

Also in 1995 SciMathMN won a \$700,000 U.S. Department of Education grant for applying computer technology in middle school math and science classrooms. SciMathMN's "Access to Applications" project provided a

springboard for teachers across the state to investigate the use of computers and the Internet in their classrooms.

SciMathMN's higher education networks came into being during 1995 as well, initiated by the manifesto, "Transforming Teacher Education: A Minnesota Framework for Mathematics and Science" [1995] co-authored by professors Patricia Simpson (St. Cloud State) and Martha Wallace (St. Olaf College). A statewide network for faculty members involved in training new K-12 teachers of math or science emerged as the "Transforming Teacher Education" (TTE) network. The network continues to meet annually to share information about programs and practices.

1995-1996 Working in tandem with the state department, SciMathMN began work in 1995 on the multi-year effort to create state curriculum framework documents for mathematics (published in 1997) and for science (1998). These large-scale writing and professional development projects provided valuable experience for teachers and faculty across the state and are still in use as of the 2002-2003 school year.

In 1995 SciMathMN hosted its first annual "Assembly" designed as an annual meeting for the coalition and its stakeholders. Nobel physicist Arno Penzias was keynoter. Speakers at later annual Assemblies included Rodger Bybee of the NRC (in 1996, on the NRC science standards), Bill Schmidt (in 1997, on TIMSS), Patricia Campbell (in 1998, on equity initiatives), George (Pinky) Nelson (in 1999, on Project 2061's many new science and math education initiatives), Glenda Lappan (in 2000, on NCTM's revised national standards), and Maria Alicia Lopez-Freeman (in 2001, on the National Commission on Mathematics and Science Teaching in the 21st Century report, *Before its Too Late*).

In the middle of 1995, SciMathMN's initial executive director left the organization, and the then-board chair (Bill Linder-Scholer) resigned from the board in order to take the job of executive director. He served until 2002.

As a result of funding provided by SciMathMN, the State of Minnesota participated as a "mini-nation" in the (1995) international student testing known as TIMSS—the Third International Mathematics and Science Study. This project proved extraordinarily helpful to SciMathMN's developing policy advocacy, and data gathered and analyzed as a result of the project continues to provide the basis for district-level continuous improvement activity.

1996-1997 During this period SciMathMN launched a two-fold action plan—one thrust aimed at producing research-based district math/science program improvement tools and related professional development workshops, the other at broad public awareness campaigns based on printed materials, a SciMathMN web site, and special campaigns such as the radio Public Service Announcement project to motivate students to take more math and science.

Also during this period SciMathMN underwrote several equity initiatives, including key statewide studies of minority student achievement in math and science. SciMathMN thus served to keep equity issues on the policy “front burner” statewide. In 1997, SciMathMN hosted the “Achieving Equity in Science and Mathematics Education” conference to provide a state-level venue for model programs.

SciMathMN continued to solidify its partnerships and collaborations with key groups including the Minnesota Council of Teachers of Mathematics (MCTM) and the Minnesota Science Teachers Association (MnSTA), the Minnesota High Tech Council, and several influential informal science education organizations.

Key SciMathMN publications from this period include the public awareness piece, “Opening Conversations” (1996) and the parent video, “Navigating in a Changing World” (1997).

1997-1999 During the years 1997 through 1999, SciMathMN produced and released three major reports on Minnesota student achievement and related data from the TIMSS. Each report included data analysis and policy recommendations. SciMathMN also arranged for special legislative testimony on TIMSS.

In 1998 SciMathMN launched the Teacher Research Network to support a group of teacher education institutions in their collaborative effort to design and deploy common tools for evaluating the effectiveness of their teacher preparation programs. Since then SciMathMN has conducted four annual rounds of grants to TRN faculty to support their local research projects.

Also in 1998, SciMathMN, with strong support from the Medtronic Foundation, established the “Building a Presence for Science Program” in Minnesota in collaboration with the National Science Teachers Association and its state affiliate. In 2002, SciMathMN transferred responsibility for “Building a Presence” to the Minnesota Science Teachers Association. In the meantime the project had reached more than three-quarters of Minnesota’s public school districts with a local “point of contact” and regional professional development meetings.

1999-2000 Former astronaut George (Pinky) Nelson, then director of AAAS' Project 2061, keynoted SciMathMN's annual assembly in 1999 and began a multi-year partnership that included collaborative work on Project 2061's innovative curriculum tools including the Curriculum Materials Evaluation Process and the publications, *Atlas of Science Literacy* and *Designs for Science Literacy*.

SciMathMN also directed significant resources to the work of supporting districts implementing one or more of the standards-based (or "integrated") mathematics curriculum programs. Major publications in this vein included "Math that Makes Sense" and a follow-up series of materials eventually assembled under the title, "No Small Task." SciMathMN also launched a web site (http://scimathmn.org/math_title.htm) to support effective implementation of integrated math programs at the local level.

SciMathMN's higher ed networks played a major role during this period in the development of revised teacher licensure schemes for the state. In particular, SciMathMN staff directed the process that produced the revised science licensure rule. In the following years, SciMathMN developed a set of implementation frameworks to assist teacher preparation institutions with revision of their licensure programs. These licensure frameworks (for math and science) went on-line at SciMathMN in 2001.

2000-2001 During the spring of 2000, SciMathMN's board committed to its first formal strategic plan—a five year vision reaching to the year 2005. Meanwhile, the legislature in 2000 provided an outlet for districts wishing to delay implementation of the grad standards, and the "math wars" heated up in Minnesota.

The Profile of Learning (state content standards) came under critical legislative scrutiny. At legislative request, the national business group Achieve published (November 2000) its critique of the Profile, and the Minnesota Department of Children, Families & Learning (MDCFL) launched its own effort to produce proposed revisions to grad standards (spring 2001).

2002-2003 The year 2002 proved to be another watershed year for SciMathMN—a major state budget crisis led to cuts in SciMathMN staffing and the loss of SciMathMN's earmarked annual state funding allocation. SciMathMN ended the program year (June 30, 2002) with no paid staff and minimal cash reserves in its nonprofit account. The board launched a reorganization process. Ex-SciMathMN staff were folded into MDCFL's math and science unit and combined with its state specialists group.

Seeking to rebuild its policy thrust and its operational independence, SciMathMN made plans to move its office out of the MDCFL facility and formed several strategic partnerships aimed at providing the resources for SciMathMN to continue to pursue its advocacy and awareness agenda. Medtronic Foundation provided a transition grant. The National Association for State Science and Mathematics Coalitions (Washington, DC) awarded SciMathMN a three-year grant for “renewing the franchise” as a state coalition.

The advent of 2002 Elementary and Secondary Education Act (ESEA) reauthorization, under the title “No Child Left Behind,” promised major new opportunities and challenges for SciMathMN and the MN K-12 mathematics and science community, given ESEA’s call for large-scale testing and other accountability measures and its addition of science to the state assessment schemes across the country.

2003-2004 SciMathMN continued its work as a non-profit organization with the board directing Executive Director, Nancy Nutting, to carry out the action plan set for 2003-04.

Two leadership forums were held supported by NASSMC’s Linking Leaders work. A science forum held in October 2003 was timed to highlight issues emerging in the development of state science standards. The forum generated an op ed piece in the local media and a position statement sent to legislators.

A mathematics forum centered on what defines a high quality mathematics education and reviewed some of the national trends in math education. It also generated several ideas for SciMathMN’s work in the coming year.

SciMathMN was one of the state coalitions awarded a grant from NASA in collaboration with NSTA and NASSMC to serve as an advisory group to the Minnesota NASA Explorer Schools to help strategize how their programs could become sustainable and meet the need for professional development in earth and space education, a critical need in the area of teacher licensure.

SciMathMN began planning for a larger public awareness initiative, including the revitalization of the Project Talent work under the banner of “Take Math, Take Charge.”