

## AMSD Calendar

**MAY 9, 2008**

Board of Directors  
Meeting, 7 a.m., TIES  
Building, St. Paul

**MAY 16, 2008**

Legislative Committee  
Meeting, 7:30 a.m.,  
TIES Building, St. Paul

**MAY 23, 2008**

Board of Directors  
Meeting, 7 a.m., TIES  
Building, St. Paul

**JUNE 13, 2008**

Executive Committee  
Meeting, 7:30 a.m.,  
TIES Building, St. Paul

**JULY 11, 2008**

Executive Committee  
Meeting, 7:30 a.m.,  
TIES Building, St. Paul

## AMSD's Mission

*To advocate for state  
education policy that enables  
metropolitan school districts to  
improve student learning.*



Association of  
Metropolitan School Districts

## Mahtomedi Engineering Leadership Program inspires student discovery



Through Mahtomedi's Engineering Leadership Program, students in grades 6-12 learn how to compete in a global market.

The message for Minnesota schools is clear: Increase academic rigor in all that we teach and apply the knowledge of mathematics and science throughout all subject areas. Mahtomedi Public Schools has accepted this challenge. The school district is in the process of rolling out the Mahtomedi Engineering Leadership Program, which prepares students in grades 6-12 to lead discovery and innovation in a competitive global economy.

"Not only do we want to inspire students' interest in math, science, engineering, and technology, but we also want to provide them with opportunities to apply their math and science knowledge in hands-on, problem-based learning," explains Kathe Nickleby, director of the engineering program. "For those students who specialize and excel in engineering coursework, we will provide them with the opportunity to earn college credit while still in high school."

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## From the Chair

It seems you can't read a newspaper or listen to the news on the TV or radio without hearing about another school district adopting major budget cuts and laying off large numbers of teachers and other school staff. Recent surveys conducted by various education and news organizations indicate that more than 1,000 school staff will be laid off prior to the 2008-09 school year.

It is easy to get discouraged in these challenging times. That is why it was so uplifting to read HF 4178/SF 3828 - the legislation recently introduced by Rep. Mindy Greiling and Sen. Terri Bonoff. The "New Minnesota Miracle" bill offers hope to students, parents, educators and anyone concerned about the future of our state. The bill includes many of the recommendations contained in the P.S. Minnesota report. As Rep. Greiling noted at the press conference announcing the bill, "For the first time, we're actually providing enough money to fairly fund the needs of every student and every district, so they can meet the academic expectations we set for them."

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# Investments needed in science, math and technology resources

*Education Week article studies the status of STEM programs nationwide*

Over the past decade, efforts have been undertaken across the country to enhance and broaden the Science, Technology, Engineering and Math (STEM) experiences for students. Minnesota has a strong tradition of providing high quality instruction in all areas and our public schools are stepping up efforts to enhance rigor in the STEM areas.

But Minnesota is average when it comes to utilizing technology in our schools according to the 11th edition of *Technology Counts*, a joint project of *Education Week* and the Editorial Projects in Education Research Center. The project assessed the status of STEM programs across the country and ranked states in three broad technology areas: Access to technology, use of technology, and capacity to use technology.

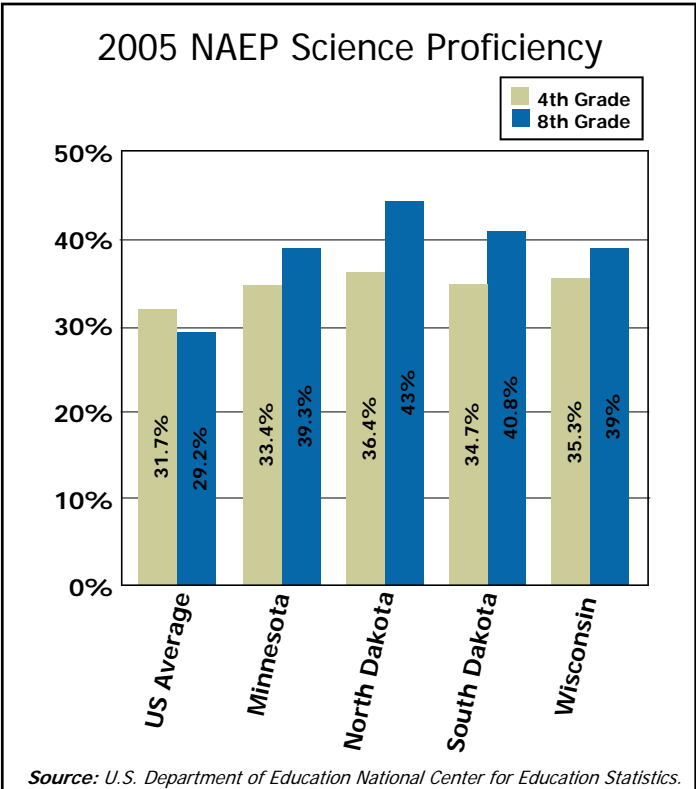
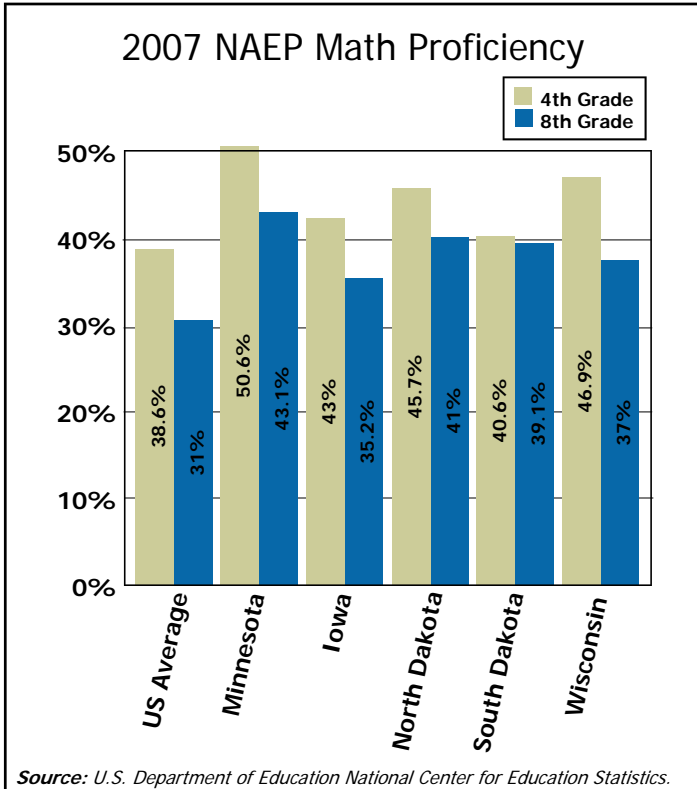
Minnesota was given an overall grade of “C,” which was less than the national average of “C+” and among the lowest in the five-state area. Clearly, our state leaders need to invest in technology initiatives to ensure that Minnesota students have the resources they need to be successful in the STEM curriculum. Last year, the legislature did make a positive step forward by approving about \$90 million in one-time technology aid but now they need to create a sustainable funding stream.

State	Overall	Access	Use	Capacity
South Dakota	A-	A	A-	B
North Dakota	B	A	B-	B
Wisconsin	B-	A	D+	C
Iowa	C	C+	D+	B-
Minnesota	C	C+	B-	D
US Average	C+	C	B-	C

*Source: Education Week, March 27, 2008.*

Despite low rankings in access to technology and capacity to use technology, Minnesota students continue to score well on the math and science portions of the National Assessment of Educational Progress (NAEP) achievement tests. According to the most recent data available from the U.S. Department of Education National Center for Education Statistics, Minnesota ranks in the top 10 states in all but fourth grade science where it falls in at

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# Study determined need for engineering and technology program

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## Program Background

A 2006 study examined the feasibility of launching an engineering and technology program in Mahtomedi schools. Written by Dr. David Bennett, an education consultant and former superintendent of St. Paul Public Schools, the study addressed the following questions: How can the Mahtomedi School District respond to this growing need for technically literate citizens and an engineering-minded workforce in American society? Would the creation of an engineering/technology magnet program in the Mahtomedi middle school and high school be a realistic and effective



**Mahtomedi's innovative program was launched in 2007-08 and will be phased in over three years.**

solution? Could such a program also address future challenges of declining enrollment?

Dr. Bennett's study involved extensive interviews and research and considered factors including curriculum, training, enrollment, and community support. The study recommended that Mahtomedi proceed with the development of an engineering and technology program in its middle school and high school, for reasons including the need for future engineers and the potential for support from Mahtomedi's disproportionately large population of adults with engineering or engineering-related careers.

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# MN proficiency in math/science above average

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13th. This includes a second place ranking in eighth grade math proficiency with 43.1 percent, which is well above the national average of 31 percent. Minnesota ranked fifth in fourth grade math proficiency and seventh in eighth grade science proficiency. A breakdown of the Midwestern states' proficiency percentages is shown in the charts on the bottom of Page 2. (Science proficiency was not tested in 2007.)

As the public continues to demand more rigorous math and science curriculum in all our schools, the education community has been responding. In 1989, Minnesota required one year of math and one year of science for high school graduation. By 2006, both math and science requirements had been increased to three years. There has been a similar trend across the country.

Currently, there is a great deal of debate about closing the achievement gap in STEM areas. Minnesota's "math-gap change" for the eighth grade NAEP (2003-2005) was a narrowing of .1 percent. The "science-gap change" for the eighth grade NAEP (2003-2005), however, was widened by 3.6 percent.

It is imperative that state policymakers and educators work together to narrow the achievement gap. An important part of that effort is making sure that our students have access to the latest tools that help students learn and compete in today's high tech environment.

While Minnesota continues to be a leader in many facets of STEM, it is clear that we need to step up our efforts to make sure all students have access to computers, the internet and the latest technology tools.

# From the Chair: New Minnesota Miracle aims to simplify and stabilize school funding

(Continued from Page 1)

Rep. Greiling and Sen. Bonoff plan to conduct hearings on the legislation this summer to gather input and build support for this major reform effort. This is the most comprehensive school funding proposal since the original Minnesota Miracle passed in the early 1970's. It would simplify and stabilize education funding in Minnesota and help ALL students reach their full potential. AMSD board members stand ready to assist legislators and help educate the public about the importance of this landmark legislation.

*John Malone, school board member from Orono, is chair of the Association of Metropolitan School Districts.*

**AMSD Members:** Bloomington, Brooklyn Center, Burnsville, Chaska, East Metro Integration District 6067, Eden Prairie, Edina, Elk River, Fridley, Hopkins, Intermediate District 287, Intermediate District 917 (Associate Member), Inver Grove Heights, Mahtomedi, Minneapolis, MSU Mankato Center for Engaged Leadership (Associate Member), Minnetonka, Mounds View, Northeast Metro Intermediate School District 916 (Associate Member), North St. Paul/Maplewood/Oakdale, Orono, Richfield, Robbinsdale, Roseville, Rosemount-Apple Valley-Eagan, Shakopee, South St. Paul, Spring Lake Park, St. Anthony/New Brighton, St. Louis Park, St. Paul, Wayzata, West Metro Education Program, and West St. Paul

# Mahtomedi schools have partnered with businesses and community

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In February 2007, the Mahtomedi School Board approved the creation of the engineering and technology program and it was named the Mahtomedi Engineering Leadership Program. Nickleby, in turn, was assigned to lead the program's development and implementation. A committee of technical advisors was created to inform program planning. These community experts include education consultant David Bennett, retired 3M engineer Dale Johnson, University of Minnesota engineering professor Randal Barnes, Hamline University chemistry professor Nick Schlotter, Century College engineering professor and program director Tim Grebner, and University of St. Thomas engineering dean John Povolny.

A faculty steering committee comprised of high school and middle school science, math, language arts, social studies, art, music, business education, world language, and industrial technology teachers was formed to plan curriculum components. In addition, other faculty members have been identifying ways to incorporate engineering and technology teaching across school curriculum. This planning paved the way for the launch of the Mahtomedi Engineering Leadership Program during the 2007-2008 school year.

## Phased Implementation

The program is being implemented over a three-year period beginning with the 2007-2008 school year and is based at Mahtomedi's middle school and high school.

The program will also include field experiences, internships, and mentoring by local professionals, which will be generated through active partnerships with business, academia, and the community (see the

## Mahtomedi's Current Partners

Academic Partners: Century College, Hamline University, Rose Hulman, The Humphrey Institute, Iowa State, Mahtomedi Public Schools, University of Minnesota, University of North Dakota, University of St. Thomas, University of Wisconsin-Stout

Corporate and Funding Partners: 3M, Boston Scientific, Caterpillar Inc., Dimensional 3D Printers, Engel Scholarship Endowment, F.R. Bigelow Foundation, Gateway S.T.E.P.S, HB Fuller, HKM Engineering, Iowa State University and Minds of Tomorrow, The Kern Family Foundation, Mahtomedi Area Educational Foundation, Master Graphics, Inc., Medtronic, Minnesota Department of Education, Minnesota High Tech Association, Museum of Science Boston, Project Lead the Way, Science Museum of Minnesota, Tapemark, TKDA, The Works

sidebar, "Our Current Partners"). Through Project Lead the Way, Advanced Placement, College in the Schools, and internships with our academic partners, incoming freshman for the 2008 school year will have the opportunity to earn up to 24 college credits.

The Mahtomedi Engineering Leadership Program's core curriculum is derived from Project Lead the Way, a renowned national resource for engineering and technology education. The middle school curriculum, which has been available to students since September 2007, emphasizes project-based learning that incorporates national education standards in science, math, and technology. As a result of Mahtomedi Engineering Leadership Program efforts, Mahtomedi Middle School students have the opportunity to take:

**Industrial Technology:** Designed for students in grades 6 and 7, these required classes introduce students to the concepts of industrial design, construction challenges, materials, processes, craftsmanship, and basic business and manufacturing principles.

**Technology Education:** Students in 8th grade may choose to take four 18-week elective classes that cover

engineering (Design and Robotics, Machines and Electrons) and construction (Wood Production, Home Design and Construction) topics.

Starting in September 2008, the high school curriculum will provide a four-year sequence of classes that introduce students to the scope, rigor, and discipline of engineering and engineering technology prior to entering college.

"By engaging the community in embracing engineering, science, and technology as an important component of a student's academic experience and by partnering with academic and corporate institutions, the Mahtomedi Engineering Leadership Program's comprehensive design is unlike other science and technology school programs in this region," says Nickleby. "The program is positioned to become a national, replicable model."

For more information about the Mahtomedi Engineering Leadership Program, visit [www.mahtomedi.k12.mn.us](http://www.mahtomedi.k12.mn.us) or call Kathe Nickleby, the program's director, at 651.407.2102.

*This month's member spotlight was submitted by Carrie Smith Ardito, Communications Coordinator at Mahtomedi Public Schools.*