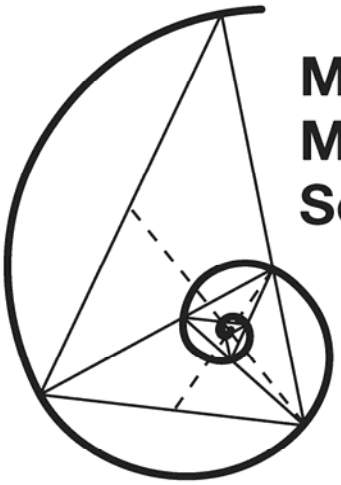


Michigan Mathematics and Science Centers Network

Building a 21st century workforce by inspiring and nurturing excellence in mathematics and science for all Michigan schools, students, teachers and communities.

2008-2009 Annual Report

Prepared by

Science and Mathematics Program Improvement (SAMPI)

Western Michigan University

Science and Mathematics Program Improvement (SAMPI)
Mallinson Institute for Science Education
Western Michigan University

Technical Assistance Team
Kristin Everett, B.S.
Mark Jenness, Ed.D.
Steve Winquist, M.B.A.

Supported by:
Delores Huber, B.A.
Crystal Stein, B.A.

For more information about the Michigan Mathematics and Science Centers Network, contact:

Connie Duncan, President
Michigan Mathematics and Science Centers Network Executive Board
Phone: 269-965-9440
connie@bcamsc.org

http://www.mimathandscience.org

For more information about this report, contact:

Kristin Everett—SAMPI—Western Michigan University
Phone: 269-387-3791 Email: kristin.everett@wmich.edu

MICHIGAN MATHEMATICS AND SCIENCE CENTERS NETWORK

Building a 21st Century workforce by inspiring and nurturing excellence in mathematics and science for all Michigan schools, students, teachers, and communities.

The Michigan Mathematics and Science Centers Network is a primary infrastructure supporting the improvement of mathematics, science, and technology education in Michigan. Programs and services of the thirty-three Mathematics and Science Centers (M/S Centers) are made available to all Michigan public and private schools in their service areas. ***This report summarizes the work across the Network during the 2008-09 school year. Individual Centers produce an annual report of accomplishments available from each Center.***

What's Inside?

FUNDING CHANGES

The Mathematics and Science Centers Program was created by legislation in 1988, providing grant funds to establish Centers in cooperation with school districts, higher education institutions, science museums, and professional associations. Since that time, the program has undergone significant changes, including development of a new Master Plan in 2007 for funding and operating Centers and implementation of several important statewide programs. Today, all school districts across Michigan have access in their region to one of 33 M/S Centers.

Base funding for M/S Centers is now part of the annual State Aid Act-Section 99 and totaled $2.5 million for the 2008-2009 school year. This is the sixth year of **75% reduced** state funding. **Centers continue to be severely handicapped by inadequate funding. Opportunities for schools, teachers, and students to improve science, mathematics, and technology education are severely limited. In 2008-2009, state funding cuts resulted in 29% fewer professional development hours for teachers and 74% fewer program hours for students as compared to the 2002-2003 school year, when full funding was available.**

IMPACTS AND OPPORTUNITIES
Highlights from the 2008-09 Annual Report

Michigan Mathematics and Science Centers Network

Again in 2008-09, the Michigan Mathematics and Science Centers Network offered programs and services to thousands of teachers and their students, all designed to improve the teaching and learning of mathematics and science. ***Although a sixth year of significantly reduced funding from the Michigan Legislature necessitated reductions in programming, the 33 Centers continued to provide public and private schools in their regions with various student services, teacher professional development, curriculum, leadership, community partnership, and resource sharing programs.*** **Below are highlights from the annual report of the Michigan Mathematics and Science Centers Network. Readers are encouraged to review the entire report. Information about the Network is available from Connie Duncan, President (connie@bcamsc.org; Phone:** 269-965-9440**) or www.mimathandscience.org.**

- In addition to the many regular local and regional activities, the Network facilitated five major statewide projects serving Michigan teachers and their students:
    - Michigan Mathematics Leadership Academy
    - Michigan Science Leadership Academy
    - High School Math and Science Success III
    - Michigan Mathematics and Science Leadership Collaborative
    - Michigan Virtual University Partnership—Back on Track: Ready for Algebra
- 11,777 different teachers and other educators participated in programs, including: 5,034 teaching elementary, 1,802 teaching middle/jr. high, 2,221 teaching high school, 232 teaching pre-K, and 2,488 identified as others (administrators, parapros, etc.).
- 2,304 professional development programs were offered: 844 in math, 1,119 in science, 71 in technology, 1 integrated math/science/technology, and 269 in other topics.
- A total of 12,049 hours of PD were provided; 35,419 total PD enrollments.
- 176,421 students participated directly in Center programs: 43,474 elementary, 60,188 elementary and middle/jr. high, 30,102 middle/jr. high, 7,379 middle/jr. high and high school, 11,661 high school, 980 pre-K, and 22,637 from mixed grade levels (some students may have attended multiple programs).
- Over the past 10 years, 23,536 PD programs have been offered; total enrollment in 10 years was 348,245 (many teachers participated multiple years in multiple programs).
- In the past 10 years, 2,378,525 students have been served directly by Centers (some students served multiple years in more than one program).
- In partnership with the Michigan Virtual University, Centers enrolled 921 students in the Back on Track: Ready for Algebra summer math camp and 2,276 students enrolled in the afterschool intervention.
- Through a special statewide teacher professional development initiative—HSMASS-III—Centers served 534 high school mathematics teachers and 493 high school science teachers. Over 16,000 math and science middle and high school students were involved. Teachers learned about the use of inquiry-based instructional strategies to help them improve the teaching and learning of mathematics and science.
- Through the statewide Michigan Mathematics and Science Teacher Leadership Collaborative (MMSTLC), 58 mathematics and science Teacher Specialist Leaders were prepared to serve more than 200 of their math/science colleagues in about 35 schools and more than 20,000 students in high needs schools.
- Centers targeted high priority schools, providing intensive assistance including classroom-level professional development: classroom observations to identify areas of need, modeling science lessons, targeted small group PD, content integration advice, assessment assistance, achievement gap analysis, and resource acquisition.
- Centers collaborated on activities with 31 different public and private Michigan colleges and universities, engaging science, math, engineering, and technology faculty.
- Centers provided innovate outreach and accelerated high school programs to meet student needs in their service areas. These highly motivating math and science programs are not otherwise available to schools.

Value of Statewide Projects

The 33 Michigan Mathematics and Science Centers have functioned as a collaborative Network since their inception in 1988. The past several years have been marked by an increase of statewide projects. The Network provides common professional development or student activities to target the needs of teachers, students, schools and districts across the state. The Network has become an essential means of communication between organizations, like the MDE, Michigan teachers, and students.

Statewide Projects in 2008-09:

- Inquiry in Instruction—HS-MASS III (High School Mathematics and Science Success III)
- MMLA (Michigan Mathematics Leadership Academy)
- MSLA (Michigan Science Leadership Academy)
- MMSTLC (Michigan Mathematics and Science Teacher Leader Collaborative)
- Back on Track: Ready for Algebra!

Network statewide projects:

- Provide research-based, ready-to-implement curriculum and professional development
- Focus on topics and issues important to teachers and the state
- Address the needs of students and teachers
- Connect local teachers to a broader network of teachers
- Allow the collection of student and teacher data
- Lend credibility and urgency to the nature of the content presented
- Provide financial support for substitutes and instructional materials
- Allow teachers to remain up-to-date with the latest information
- Give teachers the opportunity to step outside the role of teacher and experience the a leadership role
- Economy-of-scale allows Centers to share resources and planning. All Centers, regardless of size, are able to offer instructional services that may not otherwise happen.
- Centers have opportunities to collaborate and network with each other. They look beyond themselves and focus on the needs of others across the state.
- Centers and teachers have opportunities to build and strengthen relationships with universities and ISDs.
- Increased visibility as a network and as individual centers in the community.
- Increased communication with local principals, curriculum directors, teachers, etc.
- Teachers learn and implement new technology

Michigan Mathematics and Science Centers Network—
Michigan Department of Education
HIGH SCHOOL MATH AND SCIENCE SUCCESS-III (*HSMASS-III*)

Michigan Mathematics and Science Centers Network
STATEWIDE PROJECT
Building a 21st century workforce by inspiring and nurturing excellence in mathematics and science for all Michigan schools, students, teachers and communities.

SELECTED FINDINGS FROM THE EXTERNAL EVALUATION OF INQUIRY IN INSTRUCTION -I^3
(HS-MASS III)

HS-MASS is a statewide collaborative effort of the Michigan Mathematics and Science Centers Network begun in 2006 to provide high school mathematics and science teachers with professional development opportunities designed to help t hem improve teaching and learning and increase student success. **HS-MASS III**, (Inquiry in Instruction—I^3) implemented during the 2008-09 school year, was designed to 1) increase awareness and knowledge of key elements of an inquiry-based approach to teaching mathematics and science concepts and 2) development and implementation of lessons and investigations that exemplify the key elements of inquiry. Centers across Michigan conducted a series of workshops for 8^{th}-12^{th} grade mathematics and science teachers in their service areas. Below are summary statements based on an analysis of data collected as part of the external evaluation. Reports based on other evaluation data, as well as detailed information supporting this report, are available.

- In collaboration with the Michigan Department of Education, during the 2008-09 school year, the Network developed professional development materials, trained facilitators, planned and implemented workshops, and conducted a results-oriented external evaluation at Centers across Michigan.
- The Network conducted half and full day workshops, serving 534 high school mathematics teachers and 493 high school science teachers. Over 16,000 math and science middle and high school students were involved.
- Results of a pre/post test of students of participating teachers shows an increase in scores pre to post for both mathematics and science across the Network. In mathematics, 19% of the Centers exhibited a statistically significant increase. In science, 11% showed a statistically significant increase. Students were also asked to report the confidence of their answer. Student confidence increased in both mathematics and science.
- Results of a pre/post assessment/survey of participating teachers show a significant increase in mean score ratings pre to post on all items related to workshop topics and activities.
- Most teachers indicated very little familiarity with the key elements of inquiry-based teaching and learning. By the end of the workshop series, they indicated significantly improved familiarity and understanding. There was a statistically significant positive change pre to post.
- About 80% of science teachers were able to identify the best response to a group of student's inconsistent findings; 70% of math teachers could identify inquiry-based strategies that could be used to help students.
- Center director interview data indicates that inquiry was timely and relevant professional development for high school math and science teachers. Many educators left with an upgraded perspective of how to use inquiry-based instructional strategies.
- Interviews were conducted with 42 teachers that participated in the HS-MASS workshops. Teachers reported that learning new teaching methods, the opportunity to collaborate with other educators, and learning about the new state standards were the best aspects of the HS-MASS training.
- Teachers stated they were using inquiry-based teaching more often in their classroom and they had a better understanding and use of assessment as a result of HS-MASS workshops.

For more information about the HS-MASS III evaluation, contact Kristin Everett or Mark Jenness at SAMPI (Phone: (269) 387-3791 or kristin.everett@wmich.edu or mark.jenness@wmich.edu).

High School Mathematics and Science Success

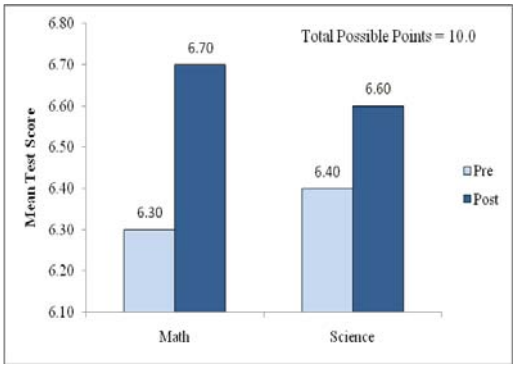
HS-MASS

Michigan Mathematics and Science Centers Network

IMPACT ON STUDENTS OF PARTICIPATING TEACHERS

2006-07, 2007-08, 2008-09 School Years

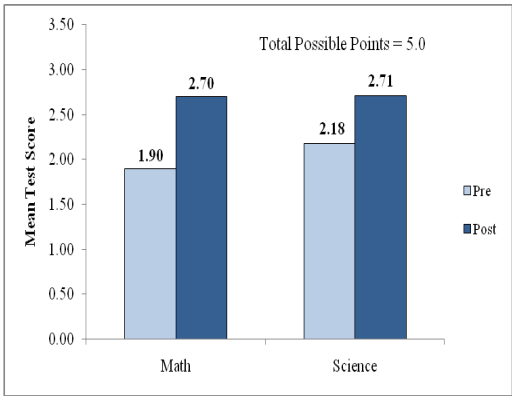
HS-MASS is a statewide collaborative effort of the Michigan Mathematics and Science Centers Network begun in 2006 to provide high school mathematics and science teachers with professional development opportunities designed to help them improve teaching and learning and increase student success.



HS-MASS I

2006-07 (HS-MASS I). Participating teachers administered a test consistent with MME/ACT before and after a classroom intervention developed during HSMASS focused on data interpretation, an area identified as weak among high school students across Michigan. Over 11,000 math students and 13,000 science students were tested.

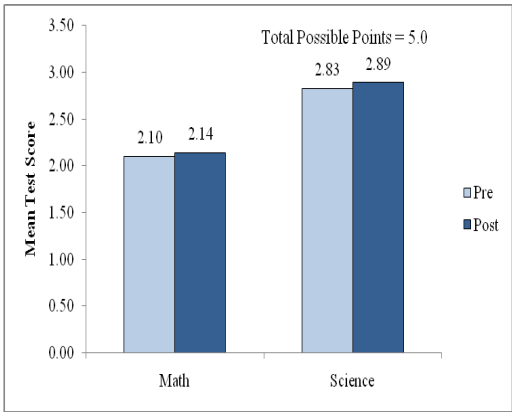
Results: **Student *data interpretation skills* showed a statistically significant improvement as a result of HS-MASS. Statewide mean test scores increased from pre to post in both science and mathematics.**



HS-MASS II

2007-08 (HS-MASS II). Teachers administered tests with five specified strands consistent with either state mathematics or science high school expectations before and after a classroom intervention developed during HS-MASS as part of their study of formative (classroom) assessment strategies. Over 10,000 math students and 10,000 science students were tested.

Results: **Total statewide student test scores showed a statistically significant improvement as a result of the HS-MASS program. Mean test scores increased pre to post in both science and mathematics.**



MMSTLC
THE MICHIGAN MATHEMATICS & SCIENCE TEACHER LEADERSHIP COLLABORATIVE

Michigan Mathematics and Science Centers Network
STATEWIDE PROJECT

MAJOR ACCOMPLISHMENTS AND RESULTS SUMMARY REPORT: 2006-2009

Begun in July 2006, the Michigan Mathematics and Science Teacher Leadership Collaborative (MMSTLC) was a statewide partnership among the Michigan Mathematics and Science Centers Network, Grand Valley State University, Saginaw Valley State University, The University of Michigan—Ann Arbor, The University of Michigan—Dearborn, and the Michigan Department of Education. State-level funding for the project ended in August 2009. Purposes were to develop a cadre of Teacher Leaders (TLs); establish collaborations among the TLs, school administrators, Math/Science Centers, and STEM (Science, Technology, Engineering, Mathematics) faculty; and improve math and science teaching and learning in targeted high priority schools.

Internal and external evaluation was conducted to provide evaluative data for program improvement and to determine impact of the program on targeted audiences. What follows is a summary of evaluation findings from the 3-year project. A full MMSTLC report is available from the Michigan Department of Education.

SELECTED OVERALL IMPACTS

MMSTLC increased Teacher Leader (TL) mathematics and science content knowledge.*

Participating STEM faculty refined their understanding of inquiry-based instruction and how it can be applied to their college classrooms, increased their understanding of specific instructional needs of middle school teachers, and provided assistance to TLs and their Core Teams.

TLs increased math and science content knowledge among their home-region colleagues.*

TL capacities to serve as leaders of mathematics and science improvement efforts in their home districts expanded as a result of their participation in MMSTLC through improved math/science content knowledge, understanding of effective pedagogical strategies, and leadership skills.

Many regions of Michigan now have TLs who can serve as leaders in regional and statewide efforts to improve the teaching and learning of mathematics and science; the TLs (and other MMSTLC team members) can now network with each other as a statewide learning community.

SELECTED IMPACTS ON TEACHER PARTICIPANTS

There was a statistically significant increase (at the .05 level) from pre to post in scores on content tests in science for Cadre II and on mathematics content tests among both Cadre I and Cadre II Teacher Leaders.* This provides one measure of improved TL content knowledge as a result of MMSTLC.

Cadre I Teacher Leaders provided professional development and other assistance to their home region teacher colleagues as part of school-level improvement efforts initiated through MMSTLC. Among a subset of these colleagues across the eight Cadre I Math/Science Center sites, there was a statistically significant gain (at the .05 level) from pre to post in scores on both mathematics and science content tests.* This suggests content knowledge among these teachers increased as a result of the PD and assistance provided by Teacher Leaders.

Data in items with an asterisk (*) were supplied by Moore and Associates, Inc., Southfield, MI, MMSTLC External Evaluators.

MMSTLC
THE MICHIGAN MATHEMATICS & SCIENCE TEACHER LEADERSHIP COLLABORATIVE

OPPORTUNITIES TO LEARN

Fifty-eight (58) middle school math and science teachers from across Michigan were provided with sustained inquiry-focused formal professional development opportunities in science and mathematics teaching and learning and leadership development.

Through multi-month sabbaticals, 19 of the Teacher Leaders (TLs) carried out customized personal professional learning plans to build their instructional and leadership capacities, as well as lead math and science improvement efforts in their home schools; other TLs received several days of release time to facilitate professional development and other improvement efforts among their teaching colleagues.

Over 200 math/science teacher colleagues of the TLs have received professional development and other assistance from the TLs as part of school-level math and science improvement efforts.

More than 20,000 students in participating schools had opportunities to learn math and science through inquiry-based approaches, strategies that actively engage them in their own learning.

STEM (Science, Technology, Engineering, Math) faculty had opportunities to learn about the needs of middle school teachers and students, as well as gain new knowledge about inquiry-based learning for integration into their own courses.

PROGRAMMATIC ACCOMPLISHMENTS

Established 19 Math/Science Center-based core teams (Cadre I capacity-building 2007-09 and Cadre II 2008-09).

Prepared 58 mathematics and science Teacher Leaders (TLs) in Cadres I and II to regularly serve more than 200 of their math/science colleagues in about 35 schools and more than 20,000 students. Supported multi-month sabbaticals for 19 TLs and release time for 15 TLs to enhance their capacities to help colleagues improve math/science teaching and learning.

Distributed $1.6 and $2.0 million respectively in Cadres I and II to support their work in improving mathematics and science teaching and learning; provided competitive grants for Cadre I teams.

Created a website (www.mmstlc.net) for general audiences, with links to sites for MMSTLC teams to access resource/instructional materials.

Prepared a variety of MMSTLC math/science content and pedagogical instructional, professional development (PD), and leadership materials for Teacher Leaders and other core team members, being made available electronically for future use.

Provided more than 185 hours of state-level PD over 2.5 years to Cadre I teams, including 83 hours devoted to math and science content and pedagogy and 64 hours to building leadership skills.*

Provided 139 hours of professional development to Cadre II teams over 12 months, including 59 hours of math and science content and pedagogy and 52 hours building leadership skills.*

Eight Cadre I teams implemented a total of 534 PD, student, and other MMSTLC activities at the Center/school level over a 24-month period, July 2007-June 2009; a total of 2329 hours provided; attendance of 6833 across all activities.

Eleven Cadre II teams implemented a total of 564 PD, student, and other MMSTLC activities at the Center/school level over a 12-month period, July 2008-June 2009; a total of 4887 hours provided; attendance of 4160 across all activities.

Data in items with an asterisk (*) were supplied by Moore and Associates, Inc., Southfield, MI, MMSTLC External Evaluators.

Back on Track: Ready for Algebra!

A Partnership between the Network and MVU

Michigan Mathematics and Science Centers Network
Statewide Project

MICHIGAN VIRTUAL UNIVERSITY

The *Back on Track: Ready for Algebra!* Program was a partnership between the Michigan Mathematics and Science Centers Network (MMSCN) and Michigan Virtual University (MVU). The program offered a 48 hour afterschool intervention and 20 hour summer math camps to targeted eighth grade students in selected Centers across the state. Students could participate in one or both interventions. They were invited to participate in the program based on their 6th and 7th grade math MEAP scores.

A summary of findings prepared by an MVU evaluator include the following:

Thirteen Centers participated in this effort: Allegan, AMA/Iosco, Berrien County, CASM, Detroit, Dickinson-Iron-Menominee, Eastern UP, Huron, Jackson, Muskegon, Northwoods, St. Clair, and Wayne.

Over 2,200 students initially enrolled in the afterschool program; 223 students attended at least half the sessions.

Over 900 students enrolled in the summer camps; 465 attended at least one day.

Students from 111 organizations including middle schools and Math and Science Centers attended the afterschool program. Each school provided computers and a qualified math teacher.

Students in the afterschool program used Compass Learning, a commercial, online algebra program. 569 students completed enough of the afterschool program to be included in the pre/post test. Of the 569 students that took the tests, 336 students (59%) scored higher on the post-test than the pre-test.

Students in the summer camps used the Michigan Virtual Summer Mathematics Camp, an online program. Of the 921 students enrolled in the program, 262 student completed the pre and post tests. The results of the test show a statistically significant change.

In a survey of parents of students in the afterschool program, respondents appreciated the extra time children had to work on math. They also believed the program helped prepare their children for high school math.

Teachers of the afterschool program identified several obstacles to satisfactory completion of activities by students including afterschool student conflicts, poor attendance, lack of motivation, bored students, and computer issues.

A full summary report of the program is available from MVU.

For more information about the Network-MVU partnership, contact Dee Benjamin, Director, Dickinson-Iron-Menominee Math, Science, and Technology Center (906-779-2609 or dbenjamin@diisd.org) or Jamey Fitzpatrick, Director, Michigan Virtual University (517-336-7733 or jfitz@mivu.org)

Innovative Student Programs

In Centers across the Network, students have opportunities to learn and work in unusual environments; sample **S**cience, **T**echnology, **E**ngineering, and **M**athematics (STEM) careers; and engage in real-world research with practicing scientists and other professionals. Often partnering with business and industry, government agencies, non-profit organizations, and individuals, programs are designed to motivate ALL students to pursue STEM subjects in elementary, middle, and high school, as well in college and adult careers. Interesting and exciting opportunities made available through M/S Centers, and not usually available in their home schools and districts, open new worlds to these students.

Innovative Student Services

Many Centers provide innovative outreach programming using local resources to provide opportunities and meet needs of schools, teachers, and students in their service areas. These highly motivating programs are not otherwise available to schools. Innovative instructional practices are used to engage ALL students. Below are a few examples of unique programming provided by Centers.

- Middle and high school students at the Allegan M/S Center have the opportunity to design, build, and race model solar and battery powered cars. This project engages students and their teachers in a problem-solving, team-building and design-based experience while also meeting the science and math GLCEs and HSCEs.

- The Lake Superior Stewardship Initiative (LSSI) at the Western UP Center focuses on helping students assume the role of contributing citizens in their community. Teachers, students, parents and community organizations partner to address a stewardship need in their community. Students, with the guidance of teachers and community partners, design and implement projects that enhance the quality of life in their community and have a positive impact on the health of the Lake Superior watershed.

- PRO-SOLVE, a 3rd-8th grade, 5 event per year, classroom-based problem solving program completed its 14th year in St. Clair County schools and the school districts across the state. Schools, as well as studies conducted early in its tenure in St. Clair County, attribute increased MEAP performance to this program.

- The Manistee, Wexford-Missaukee M/S Center sponsors a LEGO competition for students. The competition focuses on green energy and the exposition is called "Boogie Bots" and the students have to program their robots to dance to music.

- The Regional Math and Science Center (GVSU) celebrated its 25th Anniversary Michigan Science Olympiad Tournament in March 2009. The tournament has been the largest regional tournament in the nation for most of the twenty-five years directly serving approximately 1800 students yearly and impacting the classrooms of thousands of students in Kent and Ottawa counties.

Accelerated High School Programs

High school students spend half of each school day at Centers enrolled in challenging and diverse college preparatory programs in science, mathematics, and technology. Equipped with up-to-date science and computer labs, students engage in activities to learn about basic and cutting-edge STEM topics.

Many students, as part of their Math/Science Center experience, are also enrolled in college courses, where they learn college-level science and mathematics subject matter.

In the junior/senior years, students have opportunities to work with mentors, including physicians, surgeons, computer scientists, chemists, veterinarians, field and lab biologists, and other researchers.

Seven Centers currently provide accelerated high school programs: Battle Creek area, Berrien County, Kalamazoo area, Macomb County, Mecosta-Osceola Counties, Oakland Schools, and Sanilac County.

In the 2008-09 school year, 1,169 students were enrolled in accelerated high school programs. At least 99% entered college programs. Students graduated with ACT scores above state and national averages. For example, seniors at Battle Creek Area M/S Center graduated with an average ACT of 28. At the Kalamazoo Area M/S Center eighty-five seniors and juniors were enrolled in at least one Advanced Placement course during the school year, at Macomb all seniors were enrolled in advanced AP science classes and AP Calculus. More information about Accelerated High School programs can be found on page 16.

FOCUS ON HIGH PRIORITY SCHOOLS

Providing services to high priority schools continues to be a major focus of the Michigan Mathematics and Science Center Network.

As high priority schools are identified by the Michigan Department of Education, Centers make a variety of programs and services available to help improve teaching and learning of science and mathematics at these schools. The 33 Centers regularly invite all high priority and other schools in their service areas to participate in staff professional development, student programming, curriculum support activities, and instructional resource distribution. Print, electronic, and personal invitations are extended to schools and teachers throughout each school year. As financial resources become available, Centers customize services for specific high priority schools.

Examples of Programs and Services for High Priority Schools

Centers target high priority schools each year, providing intensive building-wide professional development. Much of this PD occurs at the classroom level and may include 1) modeling math or science lessons, 2) conducing lesson observations to determine areas of need, 3) design and implement customized small group PD, 4) provide curriculum revision advice, 5) conduct achievement gap analysis, and 6) assist in accessing instructional resources.

Through the *High School Mathematics and Science Success (HSMASS)* statewide initiative, the Network provides professional development designed to help high school teachers improve teaching and learning and increase student success. Since 2006, math and science teachers have participated in the multi-session programs.

The Oakland M/S/T Center provided math coaches for high priority schools, who worked one-on-one with math teachers, helping them plan and implement lessons and assess impact of the new programming on students. Coaches advised school improvement teams to help them better address needs across all grade levels.

The Manistee-Wexford M/S Center participates in weekly professional learning community sessions at one of their high priority schools. Using student achievement and other school data, the Center helps teachers and administrators devise curriculum, instruction, and assessment strategies to improve teaching and learning.

Michigan High Priority Schools—2008-09 School Year.

The Michigan Department of Education identified 465 high priority schools across Michigan. Approximately 35% are schools providing students with alternative programming, including learning centers, alternative high schools, developmental centers, adult education schools, etc.; about 10% of the high priority schools are public charter schools; the rest are primarily regular high schools, along with a few middle and elementary schools.

Of the 33 mathematics and science centers, 30 have two or more high priority schools; 3 have no MDE-identified high priority schools for the 2008-09 school year. Numbers of high priority schools vary from 2 to 71 for math/science center service areas.

FOCUS ON HIGH PRIORITY SCHOOLS

High Priority Schools Served by the Network

Based on an analysis of participation data from across the Network, the table below shows the extent of professional development programming provided by the Network in 2008-09 to teachers in high priority schools.

High priority schools served	**242***
Number of teachers from high priority schools served	**555**
Number of different activities/programs provided to teachers in high priority schools	**360**
Number of activity hours provided to teachers in high priority schools	**3,399**
Number of total contact hours received by teachers across all high priority school	**13,511**

* This number includes the 71 high priority schools in the Detroit Math/Science Center service area for which specific participation data are not available (Wayne Math/Science Center may serve teachers in Detroit, but those teachers are not included in the data for the table above—only schools outside Detroit in the Wayne service area are included in this table).

Teachers in 242 out of 465 (52%) high priority schools received professional development programming in the 2008-09 school year, in addition to teachers in non-high priority schools who were served. This has been accomplished despite a 75% decline in Network funding.

Detroit Math/Science Center Serving Their High Priority Schools

The Detroit M/S Center focuses on high priority schools in two major ways: district-wide initiatives and focused school-level interventions. Examples of district-level efforts include development and implementation of pre/post assessments to guide instruction, incorporation of "essential questions" to guide curriculum units, and providing access to electronic curriculum guides. Associated PD, organized around grade level or subject-matter, is provided to help teachers implement these initiatives in their classrooms.

Through a DTE Energy Foundation grant, 120 middle school students in one high priority school were involved in a year-long real-world math program focused on fractions, decimals, and percents, a subject area identified as needing attention in this school. Students were able to apply core math concepts and skills in a comprehensive and authentic study of stock markets. They used information technology to research, analyze, and then "purchase" stocks. They prepared reports with tables, graphs, and charts illustrating the results of their investments.

Muskegon Area ISD Regional M/S Center
Sees Continuing Math Improvements in Targeted High Priority Middle Schools

MAISD Regional M/S Center has been working with middle school math teachers and administrators in Muskegon Public Schools for several years. These schools continue to see annual improvement in their mathematics MEAP test scores, consistently achieving their Annual Yearly Progress goals. The only major math intervention has been the Center's efforts, in collaboration with Western Michigan University, Grand Valley State University, and Muskegon Community College. It has been designed to provide intensive and sustained professional development (workshops, summer institutes, professional learning communities, etc.) for teachers. Evaluation data and consensus among administrators and teachers indicates these improvements can be attributed to this Math/Science Center effort.

PROFESSIONAL DEVELOPMENT

State Board of Education Major Activity: *"Develop and implement a framework for excellence in teacher preparation."*

U.S. Department of Education goal: *"Preparing high quality teachers."*

Mathematics and Science Centers Network Goal: *"Provide professional development opportunities to strengthen and update teaching practices based on current research and local needs."*

How are M/S Centers supporting teachers in meeting NCLB challenges?

- Centers facilitate and support teachers in developing teacher portfolios with records and certificates of completed professional development.

2,304 professional development sessions were offered by M/S Centers in 2008-2009.

12,049 hours of professional development programming were offered by M/S Centers in 2008-2009.

- Center directors provide support to administrators and teachers through phone, email, and direct contact in regards to "highly qualified issues."
- A statewide Teacher Leader program builds capacity of selected teachers to plan and deliver PD at schools in their areas.

11,777 teachers and administrators enrolled in one or more professional development sessions facilitated by M/S Centers. These participating teachers and administrators averaged 15 hours of professional development offered by M/S Centers in 2008-2009.*

*Detailed numbers of hours, enrollments, and content of professional development sessions can be found on pages 30-31.

Examples of Professional Development Targeted at High Priority Schools

- Allegan County M/S Center worked intensively with a high school that did not achieve AYP in 2008. As a result of their work, the school made AYP in 2009.
- The Detroit M/S Center was able to focus work with one high priority school through a DTE Energy Foundation Grant. As a result, students had better attendance and increased MEAP scores. Additionally, social interactions and collaborations improved.
- Teachers from a school that failed to make AYP in the WUP service area have been involved with math and science professional development offered by the Center.
- Centers throughout the state have worked intensively with high priority schools through the MMSTLC, other MSPs, HSMASS, and local initiatives.
- In many Centers, teachers are trained to analyze MEAP data to identify gaps in student knowledge.

TYPES of PROFESSIONAL DEVELOPMENT OFFERED THROUGH CENTERS' PROGRAMMING

- **Content knowledge workshops**
- **Professional development series**
- **Graduate courses**
- **Courses leading to certification in mathematics and science**
- **Distance-learning series**
- **Sponsorship of teachers to attend educational conferences**
- **New teacher induction programs**
- **Mentoring programs**
- **Summer institutes**
- **Video-conferencing**
- **In-class coaching**
- **Technology training and integration**
- **Lesson study**
- **Professional learning communities and study groups**
- **Online webinars and classes**

IMPACTS AND OPPORTUNITIES: PROFESSIONAL DEVELOPMENT SERVICES

Teachers are becoming mathematics and science leaders in their schools and districts.

- As part of the Michigan Mathematics and Science Teacher Leadership Collaborative (MMSTLC), Teacher Leaders work with STEM faculty and others to address mathematics and science needs in local schools.
- The Flint schools felt so strongly about the impact of MMSTLC they asked for the MMSTLC team to offer the same PD to a new group of teachers.
- Through MMLA (Michigan Mathematics Leadership Academy), teachers, coordinators, and administrators participate in trainings and then bring back materials and information to share with their schools and districts.
- Building a Presence for Science (BaPS) builds a communication network between science teachers and science leaders throughout Michigan.

Michigan M/S Centers lead teachers in developing an understanding of Michigan's new Grade Level Content Expectations (GLCEs) and High School Content Expectations (HSCEs).

- Teachers throughout the state participated in Inquiry in Instruction (High School Math and Science Success (HS-MASS III), a program to assist secondary math and science teachers' understanding of inquiry-based teaching and integrating the Grade Level Content Expectations.

M/S Centers organized the writing of and led rollouts of the newly released K-7 science GLCEs.

- The Battle Creek Area M/S Center and others organized and facilitated the writing of the K-7 Science Companion Document for the MDE. The result is a comprehensive document to assist Michigan teachers in implementing the new curriculum.
- M/S Centers offer in-person and distance learning workshops to aid teachers in the implementation of the mathematics and science GLCEs. Centers offering workshops included CASM, CMU, St. Clair, Genesee, Grand Traverse, and Mecosta. During the "rollout" of the science HSCE, teachers studied the standards, explored course configurations to meet the MMC graduation requirements, compared instructional materials, and continued efforts to align current science curricula.

Addressing the math and science GLCEs throughout the state.

- The Allegan/Van Buren M/S Center provided consultations to many of its districts to provide gap analysis and curriculum realignment support.
- The Detroit M/S Center and MMSTLC science team created instructional units guided by "driving questions" with pre/post assessments that were aligned to the newly adopted K-7 GLCEs.
- Macomb M/S/T Center developed grade specific science workshops for teachers in grades K-7. The training was specifically aligned to the GLCEs and had direct impact on teacher readiness in science.

Teachers gain knowledge about the Michigan Merit Curriculum graduation requirements and the Michigan Merit Exam.

- Teachers across the state explored course configurations to meet the MMC graduation requirements.
- Throughout the state, teachers became familiar with the structure and learned effective techniques for teaching the mathematics and science content of the MME through Center workshops.

Teachers who participate in Center programming learn research-based, best instructional practice for all students in their classrooms.

- Teachers network-wide are engaged in best practice workshops and learn skills that are readily transferable to the classroom.

STUDENT SERVICES

Michigan Department of Education Strategic Goal:
"Attain improvement in academic achievement for all students with primary emphasis on high priority schools and students"

Examples of Programs for Underrepresented Students

- Conferences for middle school girls focused on math, science and/or engineering.
- M/S Centers provide strategies for teachers to work with special needs students such as differentiated instruction, Universal Design for Learning, and methods for teaching writing and literacy.
- Active recruitment of under-represented students for accelerated and special programs, including summer camps.

U.S. Department of Education goal:
"Improving the academic achievement of the disadvantaged"

Support for Students Attending High Priority Schools

- M/S Centers identify high priority schools for targeted programming such as summer courses and special mathematics and science opportunities that support and enhance classroom work.
- Whenever possible, programs are offered to students at no (or low) cost.

U.S. Department of Education goal:
"Promoting innovative programs"

Accelerated High School Programs

- Seven Centers provide advanced mathematics and science courses through half-day accelerated high school pull-out programs in collaboration with local districts. Recruitment of minorities is a high priority. See page 16 for reported outcomes of these programs.
- Centers save Michigan families money by providing Advanced Placement Courses and Dual Enrollment opportunities with local colleges.

CUTS TO STUDENT PROGRAMMING

Due to a sixth year of a 75% cut in base funding to M/S Centers, student programming hours have been drastically reduced. In the past year, there were 74% fewer programming hours than seven years ago. In addition, some of the accelerated high school programs are in jeopardy.

What types of student outreach services are provided by M/S Centers?

- **Weekend, evening, and after-school programs**
- **Research and professional programs**
- **Classroom instructional programs**
- **Outdoor education programs**
- **Mathematics, science, and engineering fairs**
- **Summer camps and academies**
- **Internships in industry and medical fields**
- **Mentoring**
- **Academic competitions/LEGO Leagues**
- **Advanced technology training**
- **Online learning through MVU**
- **Resources available for schools such as STAR Labs**

IMPACTS AND OPPORTUNITIES: PROGRAMMING FOR STUDENTS

Test Scores

- Allegan, BCAMSC, Lapeer, Macomb, Manistee-Wexford, Muskegon, Northwoods, Oakland, St. Clair, and Wayne M/S Centers have all worked intensively with local schools; the schools are showing increases in MEAP test scores.
- Science MEAP data shows that the gap between Detroit Public Schools scores and state average scores is decreasing.
- Results of the Middle School Intensive Assistance Program for high needs at schools at Battle Creek M/S Center showed gains in MEAP test scores. They increased from 80% of state average to 87%.

Increased student access to quality mathematics and science programming

- Michigan Virtual High School Courses are available through the M/S Centers.
- Students have opportunities to attend and present at events such as "Ecology Day," regional "Mathematics, Engineering, and Science Symposiums," and other academic competitive events.
- Students across the state have access to Star Lab and Science Olympiad programs.

- 502 middle school students participating in *Back on Track: Ready for Algebra* improved their Algebra readiness skills as evidenced by pre- and post-tests scores in the Compass Learning online program. 72 middle school students increased their math skills through online math camps, as measured by pre- and post-test scores.

Real World Applications

- At the Seaborg Center the AGES program (Area Geriatric Education Scholars) provided 42 high school students with three days of on-campus training in geriatric health care.
- Mason-Lake Oceana M/S Center offered a forensic science summer camp for students. 98% of surveyed students indicated that the camp was valuable and that they learned more about Forensic Science because of the program. The mean increase on the 10-item pre-test to post-test was 4.35. This was a 108% increase in scores from pre- to post-test.
- Exposure to STEM related careers increased for Detroit students with WSU visiting professors, DREAM tour, IBM engineering week, Future City, Recycling Initiative, and You Be the Chemist programs.
- Designing and conducting formal research allows students to engage in scientific inquiry. At the Battle Creek Area M/S Center and the Kalamazoo Area M/S Center students identified specific areas of interest and mentors guided them to design authentic research projects.
- The Western UP Center naturalist educator engaged K-8 students in a variety of inquiry-based activities using area forests, fields, wetlands, and streams as classrooms.

STEM Opportunities for Students

The COOR S/M Center continues to sponsor a one-week training for students in the summer between their fourth and fifth grade years. Any student who successfully passed the MEAP is eligible to pick from a wide array of class offerings to study for the week. The classes are hosted at Kirtland Community College, and students have access to all college facilities, including laboratories. In the sciences, students can choose among Natural History, Techniques of Science in Criminal Investigations, Fun with Physics (Roller Coasters, Rockets and Racers), Web Page Design, Explorations in Biology and Aquatic Chemistry. Instructors include Center personnel, area science teachers, and college faculty.

IMPACTS AND OPPORTUNITIES: PROGRAMMING FOR STUDENTS (continued)

Increased Interest in Mathematics and Science

- **Interest in science and mathematics is growing:** Each year Central Michigan S/M Technology Center continues to have strong enrollment in the Summer Science and Mathematics two-week camps. This is a strong endorsement since several factors work against high enrollment. For example, many families are struggling financially and even though costs are kept as low as possible, families have to make difficult budget decisions.
- **Exposure to the possibility of college:** Through a Section 57 Grant (Advanced and Accelerated), nearly 150 students from the Allegan M/S Center participated in three college visits to Ferris State University, Grand Valley State University or Grand Rapids Community College. The purpose was to expose them to the college experience, motivate them to go to college, and explore degrees in STEM related fields.
- Increased participation in science fairs, science Olympiad, Robofest, Project Green and the Green Schools Initiative at the Genesee Math/Science Center.

EXAMPLES OF OUTCOMES IN ACCELERATED HIGH SCHOOL PROGRAMS

- More than 99% of students in Center-sponsored accelerated high school programs go on to pursue college degrees.
- Students graduating from accelerated high school programs received millions in grants: $3.2 million in the Kalamazoo area, over $1 million in Berrien County, $925,000 in Battle Creek, and $200,000 in Oakland County.
- The Battle Creek M/S Center produced 2 National Merit Scholars and 2 National Merit Commended Scholars. Students at the school had a 28 composite ACT average. At the school 136 students enrolled in AP coursework.
- All students at Oakland M/S Center achieved 100% (Level I) in both math and science on the MME.
- The Sanilac County Science and Mathematics Center has a strong research component beginning with the freshman year, with students conducting independent research based on personal interest.

Examples of Opportunities for Students to Participate in Academic Competitions

- Through efforts of M/S Centers, students around the state have had opportunities to participate in science fairs, olympiads, and competitions.
- The "You Be the Chemist" competition engages 5th to 8th grade students around the state in science. Enrollment has increased significantly across participating Centers.
- LEGO Robotics tournaments prepare students across the state for high technology jobs requiring innovative thinking and teamwork.
- Funds and leadership were provided to help support the Regional Science Olympiad and Middle School Math Meet with students from Van Buren ISD.

LEADERSHIP

Michigan Department of Education School Improvement Framework Standard: *"Create a shared environment where everyone contributes to a cumulative, purposeful, and positive effect on student learning."*

Mathematics and Science Centers Network Goal: *"Articulate a shared vision of improved teaching and learning of mathematics and science, facilitate collaboration among Centers, and develop professional development programs to meet the needs of Network members."*

NETWORK LEADERSHIP ACTIVITIES

Each quarterly Network meeting includes presentations about new resources and programs, updates on MDE initiatives and grant opportunities, and focused workshops related to Center functions and organization, evaluations, professional development, etc.

Intensive two-day training sessions for implementation of the HSMASS statewide project are prepared and facilitated by Center Directors for their colleagues.

STATEWIDE INITIATIVES

The Michigan M/S Centers Network has a taken a lead role in several major statewide initiatives to improve mathematics and science:

- Michigan Mathematics Leadership Academy (MMLA)
- Michigan Science Leadership Academy (MSLA)
- Partnership with Michigan Virtual University (MVU)
- Michigan Mathematics and Science Teacher Leadership Collaborative (MMSTLC)
- Inquiry in Instruction (High School Math and Science Success-III; HSMASS-II)
- Algebra for All (began summer 2009)

See pages 3-6 for details about some of these programs.

DEVELOPING TEACHER LEADERS TO SERVE HIGH PRIORITY SCHOOLS through the Michigan Mathematics and Science Teacher Leadership Collaborative (MMSTLC)

From 2006-2009 nineteen Centers worked in teams to support 58 mathematics and science Teacher Specialist Leaders to serve more than 200 of their math/science colleagues in about 35 targeted schools and more than 20,000 students.

Pre and post content tests show a statistically significant difference in Teacher Leader math and science content knowledge.

Over 200 math and science teacher colleagues of the MMSTLC Teacher Leaders have received professional development and other assistances from Teacher Leaders as part of school-level math and science improvement efforts.

As a result of MMSTLC, many regions of Michigan now have Teacher Leaders available to serve as leaders in regional and statewide efforts to improve the teaching and learning of mathematics and science.

IMPACTS AND OPPORTUNITIES: LEADERSHIP

Teacher Leader Networks are Developed

- Through the statewide Michigan Mathematics and Science Teacher Leadership Collaborative (MMSTLC), 8 core Math/Science Center-based teams began capacity-building in 2007-08 (Cadre I), continuing into 2008-09; an additional 11 teams began in the 2008-09 school year (Cadre II). Throughout the program Cadre I teams implemented a total of 534 hours of PD, student, or other MMSTLC activities at the Center/ school level; a total of 2,329 hours provided; and attendance of 6,833 across all activities. Cadre II teams implemented 564 PD, student, and other MMSTLC activities at the Center/school level over a 12-month period; provided a total of 4,887 hours of PD; and attendance of 4,160 across all activities.
- The Michigan M/S Centers Network continues to be a partner in the statewide Building a Presence in Science. Through this program, there are "Points of Contact" at most school buildings in Michigan who disseminate up-to-date information about science assessments, student programs, grade-level content expectations, and PD opportunities.
- Teacher leaders at the Allegan M/S Center receive many leadership development opportunities such as attending state level conferences or participating in regional training efforts. In return, the teacher leaders facilitate PD. The Center supports 100% of the costs so that no district has to bear a financial burden for having a teacher participate in leadership or PD activities. Districts with teacher leaders can use their involvement in the Center as evidence of building leadership capacity on their School Improvement Plan.

Centers Support Quality Teaching Experiences and Professional Development for Pre-Service Teachers

By collaborating with colleges and universities, Centers take a leadership role in ensuring that new teachers entering the field have relevant experiences and are well prepared to meet Michigan's standards for teaching as well as the Grade Level Content Expectations and High School Course Expectations.

- Northern Michigan University students partnered with the Seaborg Center and conducted weekend College for Kids programs under the supervision of Center staff.
- Students at Kalamazoo College and Western Michigan University served as tutors and mentors in a Kalamazoo Area M/S Center outreach program in a low-income housing project.
- The SVSU Regional M/S Center sponsored a science Saturday for 2nd through 8th grade students. Pre-service teachers from SVSU plan and implement activity-based lessons with the children.

Studying Mathematics Learning from a Student Perspective: Creating a Community of Math Leaders

This program at Livingston-Washtenaw M/S Center allowed K-12 mathematics teachers to examine mathematics teaching and learn strategies to enhance problem solving in a student-centered classroom. Participating teachers spent a week working on mathematics problems as participants in a student-centered classroom.

Participants then met monthly as a professional learning community to look at student work, collaboratively plan lessons, and participate in peer observations. This first cohort then attended a facilitator training, allowing them to become leaders in their district in the 2009-2010 school year.

Centers have been collaborating with Michigan universities and colleges to develop professional development workshops, seminars, and courses for teachers, developing instructional units, and providing summer institutes for both students and teachers.

Universities and Colleges involved have included: Adrian College, Alpena Community College, Andrews University, Baker College, Bay Community College, Central Michigan University, Eastern Michigan University, Ferris State University, Finlandia University, Grand Valley State University, Jackson Community College, Kalamazoo College, Kettering University, Lake Superior State University, Marygrove College, Michigan State University, Michigan Technological University, Muskegon Community College, North Central Michigan College, Northern Michigan University, Northwestern Michigan College, Oakland University, Saginaw Valley State University, Sienna Heights College, Spring Arbor University, University of Detroit-Mercy, University of Michigan, University of Michigan-Dearborn, University of Michigan-Flint, Wayne State University, West Shore Community College, and Western Michigan University.

CURRICULUM SUPPORT

Michigan Department of Education Major Activity:
"...Provide a forum for sharing best practices that help high schools be successful with all students."

Mathematics and Science Centers Network Goal:
"Support principals in identifying the professional development needs of teachers, analyze MEAP data to identify instructional needs of students, and work with school improvement and curriculum development teams to align programming and instruction with state and national standards."

SUPPORT OF MICHIGAN'S GRADE LEVEL CONTENT EXPECTATIONS (GLCEs) and HIGH SCHOOL COURSE EXPECTATIONS

- HSMASS-III, a statewide initiative, provided professional development to help 8th-12th grade math and science teachers improve inquiry-based instruction, increase awareness and knowledge of the High School Content Expectations and the math and science companion documents.
- Multiple sessions were provided to assist teachers in their understanding of Michigan's GLCEs.

K-7 Science Grade Level Content Expectations Rollouts

Centers across Michigan facilitated the rollout of the K-7 science GLCEs. Participants received a variety of materials and activity suggestions to support GLCE implementation in their classrooms.

CURRICULUM SUPPORT FOR HIGH PRIORITY SCHOOLS

More than half of the Centers in the Network have been key partners in Michigan's Math/Science Partnership Grants. These grants focus on preparing teachers from high priority districts (under-achieving, disadvantaged, or extreme rural) to teach curricula aligned with the GLCEs and High School Course Expectations.

PROFESSIONAL DEVELOPMENT SUPPORTING CURRICULUM ALIGNMENT WITH STATE STANDARDS

- Oakland M/S/T Center developed and presented a series of workshops for elementary teachers that included SCoPE curricula and its alignment to the new state science GLCEs. This series included materials and activities for each grade.
- The Western UP M/S Center partnered with MTU to develop a project focused on developing teachers' pedagogical and mathematical content knowledge to effectively teach the mathematics in the 4th-7th GLCEs in a way that builds on students' prior knowledge and develops mathematical understanding.
- The Macomb County Math/Science Center developed the M-GLAnCE modules (Michigan Grade Level Assessment and Content Expectations). This program provides professional development for K-8 teachers focused on grade-level assessment related to content expectations. The Macomb County Mathematics Curriculum Guide supporting M-GLAnCE is being distributed statewide.

USING STUDENT ASSESSMENT RESULTS TO IMPROVE INSTRUCTION AND CURRICULUM

Centers continued to work with districts on data analysis. The Manistee, Wexford-Missaukee Regional M/S Center provides data analysis for each building and district in the service area. As a result of this effort, teachers are working in teams to analyze student data and to study scientifically-based research.

At the Eastern Upper Peninsula Math/Science Center, regional, district, and classroom level data, analyzed by the Center, is provided annually for use by School Improvement teams, administrators, and teachers throughout the region. These materials have been particularly useful in designing targeted interventions in high priority schools.

IMPACTS AND OPPORTUNITIES: CURRICULUM SUPPORT TO LOCAL SCHOOL DISTRICTS

Support science and math achievement in identified high priority schools

- Beginning January 2007, the Battle Creek Area M/S Center began the 3-year Intensive Assistance Battle Creek Middle School Program. Baseline district science MEAP scores from 2006 showed the schools involved were at 80% of the state science average. After one year involved in the program the 2008 science MEAP scores of participating schools showed an increase from 80% of the state average at the beginning of the grant to 87% of the state average. With the curriculum now written, it is anticipated that scores will continue to rise throughout the Intensive Assistance period, which ends in June 2010.
- The Berrien M/S Center continued to work with the Benton Harbor Area Schools middle schools (grades 4-8), Benton Harbor Charter School, and Buchanan Middle School to improve student achievement in mathematics. This work included professional development for mathematics teachers in content and pedagogy.

Facilitate the integration of technology into the math and science curriculum

- All Centers are supporting the integration of technology into math and science lessons.
- At Dickinson-Iron-Menominee M/S Center, teachers from all districts in the service area were trained to use "clickers" for classroom assessment.
- The Oakland M/S/T Center conducted workshops on technology for teachers using cell phones, digital blue microscopes, and CBL/graphing calculators.
- The Detroit M/S Center offered K-12 Technology Workshops for teachers.
- Teachers participating in MMSTLC at the Eastern UP M/S Center focused on integrating technology into middle school mathematics and science classrooms.
- Genesee M/S Center received a MSP grant designed to help teachers learn how to use technology as teaching tools. Teachers worked with GPS units, temperature probes, motion sensors, document projectors, flip cameras, and digital cameras.

Assist MDE with math and science initiatives

- Local schools are more aware of state mathematics and science initiatives, changes in state assessment, and policy changes because Centers disseminate information to teachers and administrators.
- High School Math and Science Success-III (HS MASS-III) was a statewide project providing professional development and other services to teachers and schools to improve teacher knowledge and pedagogical skills related to inquiry-based instruction. Over 1,000 8th-12th grade teachers and 16,000 students participated in the project in the 2008-09 school year.

Assist districts with statewide math and science test alignment and analysis

- Centers around the state are supporting districts in aligning curriculum, instruction, and assessment to state standards. For example, all districts in the Dickinson-Iron-Menominee M/S Center area participated in curriculum mapping/pacing activities to better align their curriculums.
- More and more districts are adopting the K-8 math exit skills, gap analysis systems and exit assessment programs as evidenced by the increased participation by districts in Center workshops. In Allegan M/S Center, 17 of the 19 districts participated at some level in administering the exit assessments in spring 2009.
- An increasing number of schools engage in the analysis of assessment data, goal setting, instructional improvement, and alignment of curriculum to state and national standards because of the work of Centers across the state. At the COOR M/S Center, five of the six school districts in the Center's service area have utilized Center personnel to undergo a review of curriculum alignment and development of assessment materials.

COMMUNITY AND PARENT ENGAGEMENT

U.S. Department of Education goal:
"Partnering with parents and communities."

Michigan Mathematics and Science Centers Network goal:
"*Engage businesses, universities, museums, governmental agencies, and parents in supporting and providing quality mathematics and science education and experiences."*

Partnerships With Other Institutions and Organizations

- Centers have collaborated with over 30 Michigan universities and colleges to plan teacher and student programming, write grants, and share resources.
- Over 14 museums and planetariums have shared programming with Centers.
- Centers have provided programming and consultation to environmental/outdoor education centers across the state.
- The St. Clair M/S Center, for example, has partnered with the Blue Water Chapter of the Society of Professional Engineers, the St. Clair County Medical Society, Cardiology Associates of Port Huron, Orthopedic Associates of Port Huron, Detroit Edison, the Endocrinology and Diabetes Center of Port Huron, the Water Reclamation Facility of Port Huron, the Michigan Department of Natural Resources, the U.S. Fish and Wildlife Service, the U.S. Forest Service, Conservation Districts, and local Watershed Councils.

Business/Industry/Agencies have collaborated with Centers to provide:

- "Real-World" application of research projects such as water monitoring
- Mentoring and job shadowing experiences for students
- Used office furniture, scientific equipment, and supplies for schools
- "Teacher in Industry" internship experiences
- Student internships in technical fields such as medicine, information technology, website design, engineering, architecture, aviation, pharmacy, dentistry, veterinary medicine, and forensic science
- Career talks by business professionals

Through Centers' efforts, professionals in the community are assisting with student research projects, Science Olympiads and science fairs, career presentations, and mentoring.

EXAMPLES OF ENGAGING PARENTS AND OTHER COMMUNITY MEMBERS

Many Centers organize Family Math and Science Nights and community education classes designed to engage parents and students in hands-on, inquiry-based activities. These programs build parents' awareness of and familiarity with inquiry-based teaching and learning that students are participating in at school.

Examples of Partnerships with Foundations

- The Huron M/S Center environmental stewardship event, "Embracing Our Earth," partners with the Michigan Energy Office, the Detroit Edison Energy Foundation, the Huron County Community Foundation, the Convergence Education Foundation, and Purdue University–Learn and Serve to provide innovative educational opportunities to students, families, and the community.
- The Western UP Center collaborated with faculty at Michigan Technological University, Boston Museum of Science, American Society for Engineering Education, and the Foundation for Family Science to secure funding from the National Science Foundation (NSF) for the Family Engineering Program.

IMPACTS AND OPPORTUNITIES: ENGAGING PARENTS AND COMMUNITIES

M/S Centers collaborate with community groups to co-sponsor math and science programs

- The SVSU Regional M/S Center hosted 400 parents and students for First LEGO League competition in cooperation with Delphi Steering Systems of Saginaw.
- The partnership between the Allegan M/S Center and the US-131 Motor Sports Park allows students to use the racing facilities for free for the Center's Eco Races.
- Grand Traverse M/S Center collaborates with a variety of community organizations to develop and provide professional development, curriculum support, and student services. Partners include: The Watershed Center; Inland Seas Education Association; Michigan Sea Grant; Grand Traverse County Health Dept.; Great Lakes Children Museum; and U.S. Fisheries and Wildlife Service.

Community groups are involved in planning and implementing programs

- A partnership between the Allegan M/S Center and Allegan AESA Work Force Office connects business and industry representatives with the Center and contributes to teaching math and science using real world contexts.
- Expanding the partnership with the Detroit M/S Center and Greening of Detroit has created more school gardens and outdoor classrooms.
- Northwoods M/S/T Center worked with NewPage Corporation to bring the School Ship Inland Seas to the area. Fifth grade students and community members experienced half or full day sails while learning about the ecology of Lake Michigan and Little Bay de Noc.

Parents are more engaged and involved in M/S Center and school activities

- Parents of middle school girls at the Capital Area M/S Center are more informed in choices their students have in math and science classes and STEM careers.
- Parents participate as volunteers for the Invention Convention and the Regional Science Fair at Dickinson-Iron-Menominee M/S Center.
- At the Jackson M/S Center parents volunteer to assist schools participating in Center student mathematics and science programs.

Financial and human resources are acquired to provide Centers' six basic services

- At the Seaborg Center, local businesses supported the Science Olympiad Tournament with $5,000 of contributions, allowing students to attend at no cost.
- Allegan M/S Center and US-131 Motor Sports Park partnered together to provide an authentic venue for the Center's Eco-Races.
- Community and business support of Battle Creek Area M/S Center science kit program: $70,000 raised in 2008-09.
- Centers across the state are receiving financial and in-kind support from area businesses, organizations, and agencies because of increased awareness of the importance of math and science.

Public understanding of the goals and issues of math and science education is promoted

- A community science festival is held twice a year at AMA M/S Center Sprinkler Lake Outdoor Center (Alpena Area). Over a thousand people attend these festivals annually, providing opportunities to increase awareness of science in their everyday lives.
- In the Lansing area, the Girls Math/Science Conference is held for sixth grade girls and their parents. The conference gives them resources to make informed choices about math and science careers and classes (example from Capital Area M/S Center).
- Centers maintain working relationships with their area news media. Frequent newspaper articles describe M/S Center programs and keep the community aware of the Centers.
- Individual Center websites and the Michigan Mathematics Science Center Network website (www.mimathandscience.org) communicate math and science activities with a world-wide audience.

RESOURCE CLEARINGHOUSE

Ways Center resources are being used to support best practices in mathematics, science, and technology education

M/S Centers support schools in the use of technology by:

- Providing training for integration of technologies.*
- Allowing teachers to copy materials and borrow printed resources, videos, kits, and manipulatives required for classroom activities in particular science and/or mathematics curricula.
- Developing partnerships with industries to secure equipment such as graphing calculators, scientific probes, and other lab equipment that would otherwise be cost-restrictive.

*Detailed numbers of hours, enrollments, and technology-focused sessions can be found in the Appendix, pages 31-32.

Maintenance and expansion of resources for local school districts

- Resource libraries are maintained by Centers, many of which are accessible through M/S Center websites.
- M/S Centers are a dissemination point for several organizations including MCTM, MSTA, and MDSTA.
- M/S Centers play an active role in the development, distribution, and maintenance of inquiry-based mathematics and science kits statewide. In addition, M/S Centers provide training and in-classroom support for using the kits or other equipment and instructional materials available on-loan from the Centers.

Centers create and sustain an Internet presence to support mathematics and science education

MVU Partnership—The M/S Centers Network partnered with Michigan Virtual University (MVU) to offer a unique computer-based learning program for middle school students. Virtual Math Camps allowed students to enhance their math skills through the use of technology.

Building a Presence in Science—This national network connects science teachers across Michigan to provide them with information about professional development opportunities and science teaching resources.

The Wayne RESA M/S Center 2008 Chemistry Summer Institute brought general education teachers together with special education teachers for a lab based experience designed to teach chemistry to all students. On the Center's website, teachers have access to materials that support the teaching of all the chemistry content expectations. For every content expectation there are at least five assessment items, laboratory experiments, demonstrations, teaching activities and "I can" statements that turn the content expectation into a target that students can understand. Wayne County educators have filmed demonstrations and laboratory activities that are available for download or steaming from their website. Additionally, the Center is creating a DVD that contains all the demonstration videos.

Centers actively recruit businesses and industries to support mathematics, science, and technology education through donation of equipment, facilities, and supplies. Some of these are used in Center programming but a major focus is the loaning and distribution of these materials and equipment to area schools. Financial resources are often used to support special events such as science fairs, academic competitions, and mathematics and science camps. Some examples of the businesses and industries that have supported Centers in the past year include: Battle Creek Unlimited, Borgess Hospital, Boston Museum of Science, Bronson Hospital, Consumers Energy, Delphi, DENSO, Detroit Edison, DOW, the Endocrinology and Diabetes Center of Port Huron, Flint Cultural Center, General Motors: A World in Motion, HARSCO, Kellogg's, Longway Planetarium, Marquette General Hospital, Mt. Morris Skilled Trade, New Page Corporation, Nordland and Associates, Northern Area Health Education Center, Perrigo Company, Pfizer, PVS Nolwood, and Sandcastles Children Museum.*****

***** Not a complete list.

IMPACTS AND OPPORTUNITIES: RESOURCE CLEARINGHOUSES MAINTAINED AND COORDINATED BY M/S CENTERS

Communities have access to resources provided for and developed by Centers.

- Families have access to high-quality accelerated mathematics and science programs for students that often are only available in wealthy areas. There are eight accelerated high school programs facilitated by Centers across the state (Battle Creek, Berrien County, Detroit, Kalamazoo, Macomb, Mecosta, Oakland, and Sanilac).
- Communities have access to outdoor education centers supported by M/S Centers. Outdoor education centers include Stubnitz Environmental Education Center (Hillsdale-Lenawee-Monroe M/S Center), SEE-North Center for Outdoor Studies, AMA Sprinkler Lake Outdoor Center, Huron Nature Center, Northwoods Clear Lake Education Center, and Flint Ligon Outdoor Education Center.

M/S Centers provide access to quality materials and equipment for the classroom that otherwise would not be available.

Science Kits

- School districts across the state use the K-6 Science Curriculum/Kit program developed by the Battle Creek Area Mathematics and Science Center. More than 5,000 classroom teachers have received training and use the kits to support their science curriculum. BCAMSC revised the K-6 science units to better align with the new science Grade Level Content Expectations.
- Science kit use is facilitated and supported by M/S Centers including Allegan, Battle Creek, Hillsdale, Lapeer, and Northwoods M/S Centers.

Technology

- Centers loan science probes and water test kits for classroom use and student research projects. This equipment allows students to collect authentic and scientifically precise data.
- **DAPCEP** (Detroit Area Pre College Engineering Program) enriches the life of urban students by opening up the world of engineering through classes and special field activities in science, mathematics, engineering and computer related fields on Saturdays and during the summer. DAPCEP in school programs are provided for students in Grades 7-12 throughout the school year.
- **Future Fuels From Forests Teacher Institute** offered by the Western UP M/S Center and MTU was a week-long program that engaged middle/high school educators in an interdisciplinary investigation of forest-based ethanol production integrating silviculture and landscape ecology, GIS, and chemical engineering through lecture, field trips, and computer investigations.

StarLab throughout Michigan

Several Centers trained teachers to use StarLab in their schools and districts. StarLab is an interactive portable planetarium that creates an ideal environment for hands-on activities. After training, teachers have free use of the StarLab for their school. Thousands of students are able to learn about the solar system through this service. Centers involved with the StarLab program include CMU, Huron, Lapeer, Macomb, Seaborg and Wayne.

Other Resources

- **The Network is in the final phase of placing more than 2,000 math and science assessment items in a web-based test bank available for teachers to prepare classroom tests aligned to the curriculum and state grade level content expectations.**
- **Many Centers have an equipment loan program that has provided direct material support to schools throughout the state. Schools can borrow StarLabs, LEGO robotics kits, classroom GPS sets, data collection probes, as well as numerous other types of equipment to support classroom instruction.**
- **Centers have facilitated the donation (and dissemination) of lab equipment and supplies to districts from other agencies and industries.**

LEVERAGED RESOURCES

Severe Funding Cuts: For the sixth year in a row, the Michigan Mathematics and Science Centers have experienced a major funding set-back. The reduced foundation grant from the State of Michigan, cut 75% by the Legislature in the 2002-2003 school year, continued into 2008-09. An additional 25% cut is scheduled for 2009-10. Never before has the leverage of funds from other sources been so important. To compound the problems, grant acquisition has become more challenging with reduced staff and lack of available matching funds required by many funding agencies. In addition, local school districts have fewer funds available to support teachers to attend professional development or support other services of the Centers. Many Centers are only holding on "by a thread." Leveraged resources have prevented several Centers from closing completely.

Examples of Resources Leveraged Through Collaborations with Business, Industry, Universities and Colleges

- Teacher Quality Grants (Title II, Part A) are developing science leaders in underachieving schools and building teachers' science content knowledge.
- Partnership with universities and school districts result in proposals for the Mathematics and Science Partnership Grants (Title II, Part B).
- Collaborations with state universities to sponsor full-day regional mathematics and science conferences for teachers.
- Inclusion of pre-service teachers in science, mathematics and technology content professional development courses offered to districts.
- Students have the opportunity to visit university campuses during science Olympiads, science fairs and other activities.

In the past year, Michigan Mathematics and Science Centers have leveraged an additional $8,260,512 from grants and community contributions.

Intermediate School Districts and Universities have contributed approximately $3,313,034 toward salaries and $769,636 toward Centers' general funds. A large portion of these contributed funds represent Title II, Part B funds or payment for general education services.

EXAMPLES OF LEVERAGED SUPPORT

- Battle Creek Area M/S Center raised community and business support for its science kit program. $70,000 was raised through business and industry in 2008-09. Additionally, local businesses donated thousands of dollars of shelving for revision of kits; supported with pneumatic system to raise and lower kits; gave engineering assistance for the distribution Center; offered support and on-going consultant for business plan and distribution center evaluation; and gave release time to scientists to work on research with students.
- The Convergence Education Foundation partnered with Huron Math/Science Center schools and provided $10,000 for vehicle design and construction as part of the IVD (Innovative Vehicle Design) project partnership. CEF also provided $2500 to support student projects.
- The Perrigo Company partnership makes each district in Allegan AESA eligible to receive $2,000-$5,000 annually in education funds and $1,000-$3,000 annually in scholarships for math/science.
- At the Seaborg Center local businesses supported the 2008-2009 Science Olympiad Tournament with contributions of $5000, allowing students to attend the event at no cost.

APPENDIX

MEETING STATE AND NATIONAL GOALS

The M/S Centers Network serves as a catalyst and resource for improvement of the teaching and learning of mathematics and science. Centers provide services within their region that enhance and extend beyond those available to local districts. A major focus of their work is supporting schools in meeting the strategic goals of the State Board of Education, the priorities of the Michigan Department of Education, and national education goals.

The table below illustrates the correlation of the Michigan Mathematics and Science Centers Network goals with state and national goals.

Michigan Department of Education School Improvement Framework Performance Indicators	U.S. Department of Education Goals	Michigan Mathematics and Science Centers Network Goals
Highly qualified personnel who continually acquire and use skills, knowledge, attitudes, and beliefs necessary to create a culture with high levels of learning for all.	Preparing high quality teachers.	Provide professional development opportunities that enable and sustain effective teaching in mathematics and science, by keeping teachers current in the field and able to develop positive learning environments for all students.
Staff participates in learning teams; professional learning is conducted with colleagues across the school/district on improving staff practices and student achievement.	Preparing high quality principals.	Provide Teacher Leader programs to develop expertise at a building level in content, pedagogy, assessment and other essential components to teaching high standards. Support principals in their efforts to improve math and science in their schools.
Staff has the professional technology skills to be effective in their positions.	Maximize technology's contributions to improving education	Facilitate and model the integration of technology into the mathematics and science curriculum.
Best practice instructional methods are used to facilitate student learning.	Requiring schools to use research-based instructional programs.	Facilitate the integration of research-based instruction and best practices into the content areas of mathematics and science.
The school and community work collaboratively and share resources in order to strengthen student, family, and community learning.	Partnering with parents and communities.	Engage businesses, universities, museums, governmental agencies, and parents in supporting and providing quality mathematics and science education and experiences.

SUPPORTING MICHIGAN DEPARTMENT OF EDUCATION PRIORITIES

A major focus of the M/S Centers Network in 2008-2009 has been to support the development and dissemination of Michigan's new Grade Level Content Expectations (GLCEs) and companion documents in both mathematics and science as well as supporting high school reform efforts. Support has ranged from serving on advisory teams, preparing science GLCE support documents, and providing workshops for teachers and administrators to become familiar with the GLCEs and companion documents. Work with teachers continues in developing mathematics and science assessments that are aligned with the GLCEs. Centers focused on familiarizing teachers with inquiry-based instructional strategies designed to improve teaching and learning through a series of teacher professional development sessions in Winter 2009. Special effort has been made to work with high priority schools.

Michigan Department of Education Priorities and Activities	U.S. Department of Education Goals	Michigan Mathematics and Science Centers Network Goals
Continue collaboration between general education (including special education) and career and technical education for curriculum alignment and applied learning instructional strategies.	Improving accountability. Providing evidence of effectiveness. Planning evaluation.	Support principals in identifying the professional development needs of teachers, analyzing MEAP data to identify instructional needs of students, and working with school improvement and curriculum development teams to align programming and instruction with state and national standards.
Attain substantial and meaningful improvement for all students with primary emphasis on high priority schools and students.	Improving the academic achievement of the disadvantaged.	Provide opportunities to under-represented students to improve achievement in mathematics and science.
Continue to provide a forum for sharing best practices that help schools be successful with all students, particularly in the area of math, including differentiated and project-based learning and student centered environments.	Promoting innovative programs.	Provide accelerated mathematics and science programming to motivated math and science students (with a focus on recruiting under-represented students); provide teacher professional development using research-based instructional strategies.

NETWORK BOARD OF DIRECTORS AND COMMITTEES

The Network continued to put in place structures and procedures in accordance with its status as a 501(c)(3) non-profit organization. The 2007-08 school year saw major changes in the structure and organization of the Network, as well as expansion of activities and support for individual centers. New roles and responsibilities for the Board of Directors and committees were established.

Non-Profit Organization Status. As a 501(c)(3) non-profit organization, the Network's Board of Directors is made up of the Directors of the 33 Mathematics and Science Centers, meeting quarterly to conduct the business of the Network. They annually elect a President, Vice President, Treasurer, and Secretary. Various committees (see below) are appointed by the President. Each committee has an elected chair.

As a 501(c)(3) organization, the Network can seek, accept, and administer grants and contracts directly (previously it was through one of the individual Centers). This provides greater flexibility in securing supplemental and project funding to support the Network and individual Centers, especially in light of the current state fiscal situation. UCI of Ann Arbor, MI is providing financial and other management services to the Network. Science and Mathematics Program Improvement (SAMPI) at Western Michigan University continues to provide evaluation technical assistance, data collection and reporting services.

Collaborative Relationship with the Michigan Department of Education. The Network continues to receive allocations from the Michigan Legislature, which requires that the Michigan Department of Education (MDE) provide oversight and guidance to the Centers about programming and other requirements. However, the Network collaborates with MDE, both supporting the improvement of mathematics, science, and technology education in Michigan and assisting the Department with selected state level initiatives. Centers also provide a venue to help MDE disseminate educational support materials, services, and programs.

Committee Structure. In compliance with 501(c)(3) expectations, the Board of Directors uses both permanent and temporary committees to advance its various internal and external programs and services. An Executive Committee, made up of Network officers and chairs of permanent committees, meets quarterly (or more often as needed) to plan Board meetings and conduct business between Board meetings as necessary. Permanent committees include Communication, Governance, Evaluation, Finance, Visioning, and Policy and Procedures. Special committees and task forces are appointed for specific projects or initiatives.

NETWORK BOARD OF DIRECTORS AND COMMITTEES continued...

PACE and Partners. Through a grant from the W.K. Kellogg Foundation, PACE and Partners of Lansing, a public relations firm, continues to work with the Network to raise awareness among state policy makers, philanthropic organizations, and the business community about the importance and value of the Centers to the K-12 educational community they serve. PACE has supported the Network in seeking grants and other funding as well as preparing various promotional materials.

Website. The Network inaugurated a new website in 2008, http://www.mimathandscience.org/. The updated website provides information about the Network and its activities, as well as links to the 33 individual centers and their programs. A password-protected portion of the site contains documents, forms, and guides for Center Directors and staff.

Partnering with Michigan Virtual University (MVU). The Network is working collaboratively with MVU to provide summer and school year opportunities for middle and high school students for online courses and other web-based activities. A new statewide program integrating face-to-face and online teacher professional development, "Algebra for All," was initiated in summer 2009.

Statewide Projects. The Network continues to facilitate various statewide projects, described in another section of this annual report. These projects afford the Network with opportunities for supplemental funding to provide common programming statewide and to partner with various agencies and organizations in Michigan and beyond. For example, special allocations from the Legislature have funded the 4-year High School Math and Science Success (HSMASS) teacher professional development series to build capacities among high school mathematics and science teachers to effectively implement the Michigan Merit Curriculum in classrooms across the state.

Michigan Mathematics and Science Centers Network
Data Tables 2008-2009

PROFESSIONAL DEVELOPMENT

Table 1: Professional Development Participants

			Reported Gender**		Position					
Patici-pants	Different No. of Indiv.	Total Hours	Males	Females	Admin.	Math Tchrs.	Science Tchrs.	Tech Tchrs.	Com-bined Subject	Other or Un-known*
Pre-K	232	2,245.6	13	217	8	2	2	0	162	58
Elemen-tary	5,034	54,577.8	496	4,423	136	29	176	9	4,322	362
Middle/Jr. High	1,802	31,027.25	465	1,273	43	648	618	14	129	350
High School	2,221	48,937.8	936	1,253	67	831	642	34	91	556
Other*	2,488	40,215.35	619	1,541	198	170	196	30	313	1,581
Total	11,777	177,003.8	2,529	8,707	452	1,680	1,634	87	5,017	2,907

*Other includes persons who work across levels, are not teachers or administrators, or did not indicate position.
** 13.2% of individuals did not indicate Gender.

Teachers averaged 15.0 hours of participation in Center programming during the 2008-2009 academic year.

WHAT WERE THE NATURE AND EXTENT OF THE PROFESSIONAL DEVELOPMENT ACTIVITIES?

Professional development was delivered in many ways, depending on the identified needs in the service area. Two primary formats included: 1) single events, lasting from a portion of one day to several consecutive days, and focused on a particular topic, skill, or issue, or 2) series—a series of sessions with a single focus, conducted periodically over a several week/month period.

Table 2: Professional Development Activities

		Math	Science	Technology	Integrated M/S/T	Other	Total
Pre-K	Events	1	7	0	0	0	8
	Hours	6	24.5	0	0	0	30.5
	Participants*	22	59	0	0	0	81
Elementary	Events	147	580	5	1	23	756
	Hours	784.25	1,948.1	19.5	3	71.5	2,826.35
	Participants*	2,778	6,508	64	12	274	9,636
Elementary & Mid/Jr. High	Events	74	107	3	0	14	198
	Hours	434.25	580.25	22.5	0	57.75	1,094.75
	Participants*	1,150	1,993	62	0	279	3,484
Mid/Jr. High	Events	188	129	11	0	53	381
	Hours	1,009	607	41.5	0	244.5	1,902
	Participants*	2,368	1,462	94	0	1,922	5,846
Mid/Jr. High & High School	Events	126	80	6	0	22	234
	Hours	784.1	463.65	35	0	104	1,386.75
	Participants*	1,567	884	48	0	293	2,792
High School	Events	181	127	11	0	21	340
	Hours	1,659	800.5	65	0	58	2,582.5
	Participants*	3,180	1,366	131	0	501	5,178
K-12 Mixed Levels	Events	127	89	35	0	136	387
	Hours	783.5	611.75	186	0	645	2,226.25
	Participants*	3,120	1,615	599	0	3,068	8,402
Total	Events	844	1,119	71	1	269	2,304
	Hours	5,460.1	5,035.75	369.5	3	1,180.75	12049.1
	Participants*	14,185	13,887	998	12	6,337	35,419

*Includes duplicate counts (Individual participants enrolled in more than one program).

Table 3: Student Services Activities

		Math	Science	Technology	Integrated M/S/T	Other	Total
Pre-K	Events	4	21	0	0	0	25
	Hours	25	83.5	0	0	0	108.5
	Participants	50	930	0	0	0	980
Elementary	Events	75	612	11	0	2	700
	Hours	296.25	2,508.5	183	0	42	3,029.75
	Participants	6,616	36,482	199	0	177	43,474
Elementary & Mid/Jr. High	Events	18	61	24	1	3	107
	Hours	290	1,283.5	225.5	3	24	1,826
	Participants	28,127	28,633	981	48	2,399	60,188
Mid/Jr. High	Events	69	133	21	3	9	235
	Hours	531	1,259.5	207	20	67.5	2,085
	Participants	5,232	19,623	783	1,703	2,761	30,102
Mid/Jr. High & High School	Events	10	30	7	1	2	50
	Hours	1,239.5	228.5	181	1	195	1,845
	Participants	219	5,807	80	350	923	7,379
High School	Events	31	101	7	6	4	149
	Hours	903	923.5	206	37	10	2,079.5
	Participants	6,919	4018	128	429	167	11,661
Other Mixed Levels	Events	2	26	1	0	1	30
	Hours	44.5	193.25	30	0	40	307.75
	Participants	1,376	18,361	1,000	0	1,900	22,637
Total	Events	209	984	71	11	21	1,296
	Hours	3,329.25	6,480.25	1,032.5	61	378.5	11,281.5
	Participants	48,539	113,854	3,171	2,530	8,327	176,421

For more descriptive information regarding individual Center programming, see individual Center Reports. These can be obtained by contacting individual Center Directors (see page 34). The Network website also gives additional information: www.mimathandscience.org.

Table 4: Ten Year Summary Data

SUMMARY OF PROFESSIONAL DEVELOPMENT ACTIVITIES 1999-2009

School Year	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007*	2007-2008*	2008-2009*
Total PD Programs Offered	2,549	2,765	3,436	3,239	1,705	1,928	1,725	2,036	1,849	2,304
Total PD Program Hours	14,059	13,067	14,757	14,563	10,507	11,057	11,109	11,933	10,253.85	12049.1
Total PD Enrollments	43,655	47,210	21,904	51,527	28,540	34,237	26,484	30,271	28,998	35,419
Percent PD Science-Focused Programs	42%	40%	43%	36%	41%	31%	41%	40%	36%	49%
Percent PD Math-Focused	17%	21%	23%	27%	30%	41%	45%	45%	42%	36%
Percent PD Technology-Focused	9%	11%	7%	8%	15%	7%	4%	5%	6%	3%
Percent PD Integrated M/S/T	19%	18%	15%	13%	1%	0%	1%	1%	1%	1%
Percent PD Other	13%	11%	12%	15%	14%	21%	9%	9%	15%	11%

*Total PD activities were positively impacted by a special earmarked allocation from the Michigan Legislature to fund a statewide PD effort.

SUMMARY OF STUDENT ACTIVITIES 1999-2009

School Year	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Outreach Sessions	6,763	6,514	6,990	5,024	1,252	1,579	1,112	1,119	960	1,296
Outreach Hours	46,403	52,879.3	159,952	109,815.5	37,893.5	19,151.35	15,983	17,940	13,877.5	11,281.5
Outreach Participants	251,251	263,292	309,716	374,813	239,984	206,906	287,047	160,220	108,875	176,421

NOTE: The program data above represent a significant decline in the level of activities offered to teachers and students, the number of programming hours offered, and the number of enrollments in programs beginning in 2003-04. This was the year that Centers received a 75% reduction in their base funding from the Michigan Legislature. **This clearly suggests that the reduction has significantly impacted the quantity and accessibility of mathematics and science programming for Michigan's students and teachers.**

However, M/S Centers have focused their efforts on providing high quality professional development to ensure teachers are highly qualified and using best practices. Due to leveraged grant monies and a special allocation from the Legislature, professional development programming hours have only been reduced by 29% since 2002-03 despite the 75% cut in core funding. **Unfortunately, the number of student programming hours since 2002-03 have been reduced by 74% due to funding cuts.**

DIRECTORY OF MICHIGAN MATHEMATICS AND SCIENCE CENTERS

Center Name	Contact Person	Telephone
Allegan County M/S Center	Amy Oliver	(269) 686-5087
AMA/IOSCO M/S Center	Tracy D'Augustino	(989) 354-3101
Battle Creek Area M/S Center	Connie Duncan	(269) 965-9440
Berrien County M/S Center	Tonya Snyder	(269) 471-7725
Capital Area Sci/Math Center	Julie Fick	(989) 224-6831
Central Michigan SMTC	Janis Voege	(989) 774-7678
COOR S/M Center	Don Mick	(989) 275-9562
Detroit M/S Centers	Alycia Meriweather	(313) 873-4519
Dickinson-Iron-Menominee M/S/T Center	Dee Benjamin	(906) 776-8137
EUP M/S Center	Valerie Masuga	(906) 632-3373
Genesee Area M/S/T Center	Larry Casler	(810) 591-4470
Grand Traverse Regional M/S/T Center	Tom Wessels	(231) 922-7875
Great Lakes M/S Center	Gus Bishop	(231) 547-9947
Hillsdale-Lenawee-Monroe M/S Center	Pam Bunch	(517) 265-6691
Huron M/S/T Center	Scott Whipple	(989) 269-3473
Jackson County M/S Center	Megan Schrauben	(517) 768-5281
Kalamazoo Area M/S Center	Brenda Earhart	(616) 337-0004
Lapeer County M/S Center	James Emmerling	(810) 667-6981
Livingston/Washtenaw M/S Center	Nicole Garcia	(734) 994-8100
Macomb County M/S/T Center	Mike Klein	(586) 228-3467
MAISD Regional M/S Center	David Krebs	(231) 767-7317
Manistee, Wexford-Missaukee M/S Center	Karen Mlcek	(231) 876-2263
Mason-Lake-Oceana M/S Center	Kathy Surd	(231) 757-4934
Mecosta-Osceola M/S/T Center	Mary Ann Robinson	(231) 796-3543
Northwoods M/S/T Center	Tom Abramson	(906) 786-9300
Oakland Schools S/M/T Center	LaMoine Motz	(248) 209-2378
Regional M/S Center (GVSU)	Karen Meyers	(616) 331-2265
Saginaw Valley State Univ. Regional M/S Center	David McCloy	(989) 964-4114
Sanilac County S/M Center	Nick Miu	(810) 648-4700
Glenn T. Seaborg Center- NMU	Debra Homeier	(906) 227-2002
St. Clair RESA M/S Center	Monica Hartman	(810) 364-8990
Wayne RESA, M/S Center	Libby Pizzo	(734) 334-1375
Western UP M/S Center	Shawn Oppliger	(906) 482-4520