

# 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.

## 2009-2010 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, M.A.  
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](mailto: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 2009-10 school year. Individual Centers produce an annual report of accomplishments available from each Center.***

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### 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 \$1.875 million for the 2009-2010 school year. **Centers continue to be severely handicapped by inadequate funding. In 2009-10, the Network's legislative funding was reduced by an additional 25%; since 2002, Center funding has been cut a total of 82%.** 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 76% fewer program hours for students as compared to the 2002-2003 school year, when full funding was available.

# IMPACTS AND OPPORTUNITIES



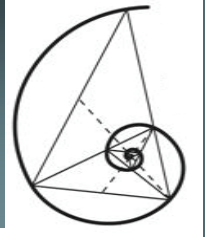
The Michigan Mathematics and Science Centers Network offered programs and services to thousands of teachers and their students, all designed to improve the teaching and learning of mathematics and science. In 2009-10, the Network's legislative funding was reduced by an additional 25%; since 2002, Center funding has been cut a total of 82%. *This was the seventh year of significantly reduced funding from the Michigan Legislature, which 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](mailto:connie@bcamsc.org); Phone: 269-965-9440) or [www.mimathandscience.org](http://www.mimathandscience.org).

## Highlights from the 2009-10 Annual Report

- In addition to the many regular local and regional activities, the Network facilitated four major statewide projects serving Michigan teachers and their students:
  - Algebra for All
  - High School Math and Science Success IV
  - Assessment collaboration and database development
  - High School Science Priority Expectations
- 14,082 different teachers and other educators participated in programs, including: 281 teaching pre-K, 7,066 teaching elementary, 1,692 teaching middle/jr. high, 2,752 teaching high school, and 2,286 identified as others (administrators, paraprofessionals, etc.).
- 2,265 professional development programs were offered: 787 in math, 1,234 in science, 87 in technology, 5 integrated math/science/technology, and 152 in other topics.
- A total of 12,592 hours of PD were provided; 30,838 total PD enrollments.
- 103,310 students participated directly in Center programs: 438 pre-K, 32,232 elementary, 15,182 elementary and middle/jr. high, 12,303 middle/jr. high, 4,564 middle/jr. high and high school, 7,565 high school, and 31,026 from mixed grade levels (some students may have attended multiple programs).
- Over the past 11 years, 25,801 PD programs were offered; total enrollment in 11 years was 379,083 (many teachers participated multiple years in multiple programs).
- In the past 11 years, 2,481,835 students were served directly by Centers (some students served multiple years in more than one program).
- Math and Science Centers, in collaboration with Michigan Virtual University, provided statewide professional development to middle and high school math teachers through Algebra for All. Fourteen Math/Science Centers across Michigan served over 750 middle and high school teachers of algebra including special education teachers. Over 14,000 students were involved in the project.
- Through a special statewide teacher professional development initiative—HSMAS-IV—Centers served 493 middle and high school mathematics and science teachers. Over 9,000 math and science middle and high school students were involved. Teachers learned to use writing strategies to help students communicate about mathematics and science.
- 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 innovative 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.

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 a leadership role.
- Brings resource materials into the hands of teachers.

## Statewide Projects in 2009-10:

- Algebra for All
- HSMASS-IV (High School Math and Science Success): Writing in High School Science
- Assessment collaboration and development of a database of math and science items
- High School Science Priority Expectations rollouts
- Measurement for Elementary Teachers

Other aspects of statewide projects:

- 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-IV (HSMASS-IV)

## SELECTED FINDINGS FROM THE EXTERNAL EVALUATION OF HSMASS-IV (Writing in High School Science: Strategies for Student Success)

**HSMASS** 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. **HSMASS-IV** (Writing in High School Science: Strategies for Student Success), implemented during the 2009-10 school year, was designed to 1) improve students' ability to communicate about science, 2) improve teachers' ability to use writing strategies to help students communicate, 3) identify gaps in curriculum and classroom instruction – what is taught and how it is taught – using the SEC, 4) increase teachers' use of formative assessment to improve student learning, and 5) increase teachers' use of inquiry-based instructional strategies to improve student learning. Centers across Michigan conducted a series of workshops for 8<sup>th</sup>-12<sup>th</sup> 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 2009-10 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 449 middle and high school teachers. Over 9,000 middle and high school students were involved.
- Results of a pre/post test of students of participating teachers show an increase in scores on items related to the argumentation writing strategy pre to post across the Network. Students reported a positive attitude pre to post toward writing in 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 writing instructional strategies. By the end of the workshop series, they indicated significantly improved familiarity and understanding. There was a statistically significant positive change pre to post.

- Center director interview data indicates that incorporating writing strategies into the classroom was timely and relevant professional development for middle and high school teachers. Educators reported learning new techniques to incorporate writing into science; respondents had implemented at least one of those techniques in their classroom.
- Interviews were conducted with 34 teacher leaders who participated in the HSMASS-IV workshops. Teachers reported that the opportunity to collaborate with other educators, learn new strategies, and use the Surveys of Enacted Curriculum (SEC) to identify opportunities for improvement were the best aspects of the HSMASS-IV training.
- Some of the teachers interviewed also participated in previous HSMASS efforts. Past participants reported changed teaching, such as integrating inquiry and writing improved assessments, as a result of those programs.
- Teachers stated they were using writing strategies more often in their science teaching and felt more comfortable integrating writing into science as a result of HSMASS-IV workshops.

For more information about the HSMASS-IV evaluation, contact Kristin Everett at SAMPI  
(Phone: (269) 387-3791 or [kristin.everett@wmich.edu](mailto:kristin.everett@wmich.edu)).

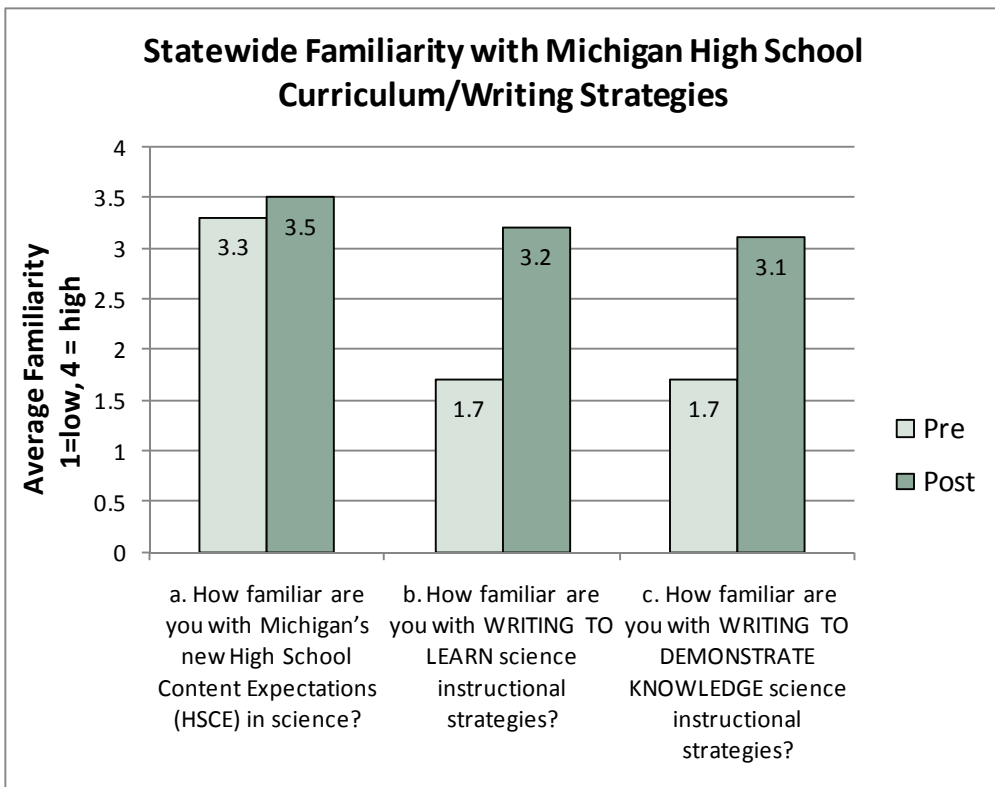
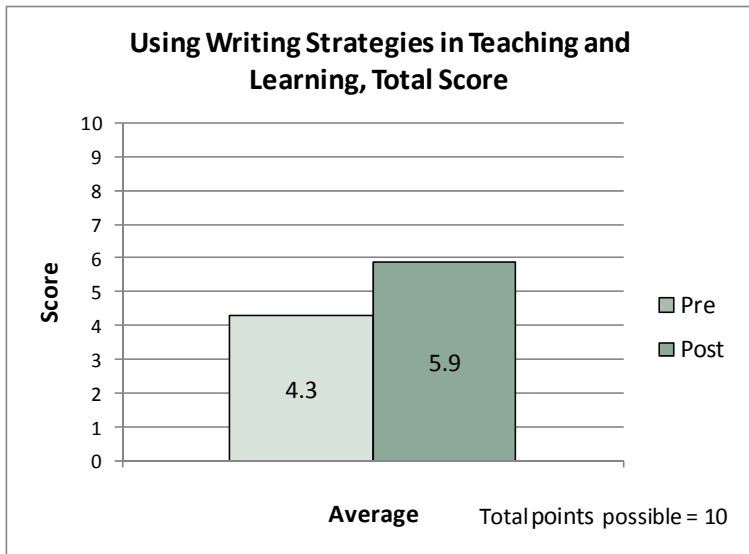


**Writing in High School Science: Strategies for Student Success  
High School Mathematics and Science Success-IV  
HSMASS-IV**

**Writing in High School Science: Strategies for Student Success (HSMASS-IV)** was a statewide collaborative effort of the Michigan Mathematics and Science Centers Network during the 2009-10 school year that focused on professional development aimed to increase teacher knowledge of classroom writing strategies. As part of the external evaluation of the project conducted by Science and Mathematics Program Improvement—SAMPI, at Western Michigan University, participating teachers were asked to complete an assessment instrument before and after the program. The same instrument was used each time. Four-hundred ninety-three (493) teachers completed the pre-test; 430 completed the post-test; and 423 completed both the pre- and post-test.

Participating teachers were asked to complete an assessment related to teaching and learning science through writing at the beginning and end of the HSMASS-IV professional development series.

**Results:** The initial average score was  $4.3 \pm 0.2$ ; the post-test average score increased to  $5.9 \pm 0.2$ . A statistically significant improvement ( $\alpha=0.5$ ) was observed in total statewide teacher scores ( $p<0.001$ ).



Teachers participating in HSMASS-IV reported their familiarity of the Michigan High School Content Expectations and writing instructional strategies at the beginning and end of the program.

**Results:** Teacher familiarity with the High School Content Expectations and writing instructional strategies showed a statistically significant increase for all items ( $p<0.001$ ).



**Michigan Mathematics and Science Centers Network, Michigan Virtual University,  
and the Michigan Department of Education**

## **ALGEBRA FOR ALL STATEWIDE EVALUATION AND REVIEW**

### ***Highlights of Findings from Year One 2009-2010***

Algebra for All (AFA) is an intense professional development program that builds the algebra content and pedagogical knowledge of middle and high school teachers so that mathematics classroom instruction meets the learning needs of all students. It takes a functions-based approach to algebra instruction. Broad goals include:

- deepening teachers' understanding of the functional approach to learning algebra,
- teachers believing that all students have the capacity to learn algebra, and
- teachers experiencing new methods of engaging students that will impact the learning of all students as well as the use of technology as a teaching and learning tool.

Algebra for All was developed and implemented by a consortium of partners: the Michigan Mathematics and Science Centers Network, Michigan Virtual University, and the Michigan Department of Education. The program built upon professional development materials and processes designed and delivered by the Wayne Regional Educational Service Agency (RESA) and the University of Michigan Dearborn's Center for Mathematics Education (CME) over the past several years.

In the first year of the project, fourteen Math/Science Centers across Michigan served over 750 middle and high school teachers of algebra including special education teachers. Sites ranged from 15 to over 100 participants. The project included coaching for a randomly chosen 25 percent of participants. Each AFA session was led by the two lead facilitators from the Wayne RESA Mathematics and Science Center who were available live via the Internet. MVU provided online resources for participants including social networking with peer leaders as well as access to all project materials online.

The evaluation design included continuous formative assessment for the first year with an emphasis on qualitative data collected through focus groups, surveys, and interviews. Quantitative data included pre/post algebra content tests administered to students and baseline performance of teachers on the Learning for Mathematics Teaching Scale (LMT). A stratified cluster sample of 118 randomly selected teachers provided data in the form of classroom observations, surveys, and an end-of-year interview. Interviews were also conducted with all 32 of the site facilitators, 14 of the 15 site coordinators, and all 11 members of the project management team.



# ALGEBRA FOR ALL:

## *Highlights of Findings from Year One*

### ***Impact on Teachers:***

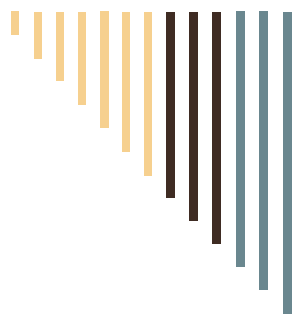
- Focus groups from ten sites suggest that teachers believe their students benefited from the program due primarily to three factors: collaboration with colleagues; the cognitively challenging classroom activities presented during the sessions; and the power of the graphing calculator. Barriers to implementation included four factors: student characteristics (prior knowledge, special education students, student motivation); lack of teacher motivation to change; time constraints; and technology knowledge and availability.
- Focus group teachers reported approximately 90 percent implementation of AFA activities at varying levels. When asked how their *teaching had changed* as a result of AFA, teachers reported more use of real world applications and use of technology in their classrooms.
- In a pre/post survey, teachers report higher level of technology skills, especially related to graphing calculators, database software, PowerPoint software, and online social networks.
- A pre/post survey of teacher graphing calculator skills showed teachers reporting improvement on all 14 items.
- Teachers were asked about using technology to: gather and collect information, analyze data, and communicate with others. Teachers showed a statistically significant increase on items related to the frequency of gathering data on the internet, using spreadsheets, and using computers and digital cameras to create presentations.
- Results of the LMT showed a statistically significant gain ( $p < 0.0001$ ) in the pre- to post-test for all teachers. Teachers' overall confidence in their responses also increased.

### ***Impact on Students:***

- Students were administered a 19-item pre- and post-assessment; those results show a statistically significant gain in the pre- to post-test scores ( $p < 0.0001$ ).
- In the focus groups, *97 percent of teachers* reported implementing at least one strategy from AFA in their classroom. The most common was graphing in a variety of forms: reading graphs, shapes of algebra, time-distance, data collection, and writing stories to match graphs. A teacher said, "I was amazed at how they [the students] grasped the concepts." Using small groups and different ways to form groups was included as well.

### ***Results from Interviews:***

Interviews were conducted with facilitators, site coordinators, and the project management team. As a result of feedback from sites, the AFA instructional format was changed for Year 2. Rather than live distance learning, sessions are taped beforehand, allowing sites to adjust the timing to their own context. Similarly, teachers found that the online component was difficult to navigate; this was simplified for Year 2.



# M/S Centers Network Assessment Committee:



## *Providing math and science assessment items to districts*

The purpose of the Assessment Committee (MMSCN and partners) is to collectively assist and support Michigan educators in assessing students' proficiency with the Michigan mathematics and science High School Content Expectations (HSCEs) to ultimately improve instruction and positively impact student achievement.

The primary outcomes of the Assessment Committee's work include:

- Supporting Michigan educators with assessing students' understanding of the Michigan mathematics and science HSCEs.
- Impacting instruction and encouraging both formative and summative assessment practices.
- Initiating a partnership between the MMSCN and Ottawa Area ISD focusing on the strengths of both organizations for true collaboration.
- Avoid duplication of assessment services within and across the MMSCN service area and leverage resources for assessment work via a collaborative effort.

The Assessment Committee **coordinated a work session** that developed a bank of math and science assessment items aligned to the HSCEs that went through a substantial jurying process to ensure quality. The items were subsequently entered into four different databases/platforms for flexibility in use (Access, ExamView, Data Director and ELAR). **The item bank was made available for free to any educator that wanted to use them.**

The Assessment Committee also **provided professional development on balanced assessment** to MMSCN staff using a Train-the-Trainer format. MMSCN staff was provided strategies and resources for conducting their own professional development on assessment but with an emphasis on guidelines for writing and jurying quality multiple choice and constructed response assessment items. **The Committee also created a Blackboard site which serves as a resource clearinghouse for various assessment resources.**

The Assessment Committee also **negotiated a partnership agreement** with the Ottawa Area Intermediate School District (OAISD). The partnership was a collaborative effort that focused on the strengths of both organizations. The MMSCN contributed the juried assessment item bank which included the formatting and entry of items into OAISD's assessment tool called ELAR (Electronic Learning Assessment Resource). In addition to access into ELAR, OAISD contributed the technical support which included professional development for trainers, the creation of accounts for users and the software/technical assistance to support those accounts. **The MMSCN then provided training to educators on how to create assessments using the item bank and ELAR tool.**

For more information about the Network Assessment Committee contact Amy Oliver, Director, Allegan/Van Buren M/S Center (aoliver@alleganaesa.org or 269-686-5087).

# Innovative Student Programs

In Centers across the Network, students have opportunities to learn and work in unusual environments; sample Science, Technology, Engineering, and Mathematics (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 as 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.

## 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.

Five Centers currently provide accelerated high school programs: Battle Creek Area, Berrien County, Kalamazoo Area, Macomb County, and Mecosta-Osceola Counties.

In the 2009-10 school year, 1,106 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 one hundred twenty six (126) 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 2/3 were enrolled AP Calculus. More information about Accelerated HS programs can be found on page 16.



## Other 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.

- The Macomb M/S Center held its 5<sup>th</sup> consecutive “Math and Science Career Symposium for Middle School Girls.” Over 300 middle school girls attended; students were arranged by interest and given time to interact with professional women from over 23 careers in math and science.
- Students at the Kalamazoo Area M/S Center begin the research program as early as ninth grade, learning and understanding the basics of scientific research. The ultimate goal is to become a part of the research team, with the opportunity to be mentored by a scientist in the real world. These opportunities have led to student participation in both local and national competitions.
- The EUP Trig-Star Competition was held for the fourth consecutive year this spring at the Eastern Upper Peninsula Mathematics and Science Center. Students traveled to the Soo Locks park and were introduced to the field of surveying. They participated in activities with two local surveyors and were also given both a historical and engineering perspective of the Locks after being introduced to an on-site engineer and historian.
- The COOR S/M Center sponsors a one-week summer camp for fifth grade students. Any student who passed the MEAP is eligible to pick from a wide array of class offerings. The classes are hosted at Kirtland Community College; students have access to all college facilities, including laboratories. Students can choose classes such as Natural History, Techniques of Science in Criminal Investigations, Fun with Physics (Roller Coasters, Rockets and Racers), or Web Page Design.
- Berrien M/S Center partnered with community math and science practitioners to highlight Science Week. Community professionals visited local elementary and middle-school classrooms to speak and lead an activity. The professionals discussed their careers and how science was used. In addition, they led a hands-on math or science related experience for students.

## **FOCUS ON HIGH PRIORITY AND PERSISTENTLY LOWEST ACHIEVING SCHOOLS**

**Providing Services to High Priority Schools Continues to be a Major Focus of the Michigan Mathematics and Science Centers 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) conducting 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 fourth year of the *High School Mathematics and Science Success (HSMASS)* statewide initiative, the Network provided 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.**

**Through the *Algebra for All* project, Centers were able to provide professional development to mathematics and special education teachers at high priority schools. In the Grand Rapids region, 24% of the total participants in the region were from high priority schools. In addition, cadres of teachers from high priority schools received both individual classroom coaching and facilitated group discussion sessions targeted to their specific needs.**

**The Livingston M/S Center partnered with the University of Michigan and Eastern Michigan University to support an NSF-funded cohort of the Algebra Project at a high priority school in the Center's service area. The Algebra Project is a program created to meet the needs of struggling students in under-served populations. The program allows for students to learn four years of high school mathematics by using a curricular process for moving from concrete to abstract conceptualization by building on common shared experiences. Each year, the Algebra Project provides a national training for selected teachers on both Algebra Project curriculum and pedagogy.**

# FOCUS ON HIGH PRIORITY AND PERSISTENTLY LOWEST ACHIEVING SCHOOLS

## Persistently Lowest Achieving Schools Served by the Network

Beginning in 2010, state law required the identification of the lowest achieving schools. 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 2009-10 to teachers in the 92 schools identified as persistently lowest achieving schools.

<b>Persistently lowest achieving schools served</b>	<b>72</b>
<b>Number of teachers from persistently lowest achieving schools served</b>	<b>209</b>
<b>Number of different activities/programs provided to teachers in persistently lowest achieving schools</b>	<b>221</b>
<b>Number of activity hours provided to teachers in persistently lowest achieving schools</b>	<b>1,998</b>
<b>Number of total contact hours received by teachers across all persistently lowest achieving schools</b>	<b>5,206</b>

*Teachers in 71 out of 92 (77%) persistently lowest achieving schools received professional development programming in the 2009-10 school year in addition to teachers in high priority AND non-high priority schools who were served. This has been accomplished despite an 83% decline in Network funding.*

### Detroit Math/Science Center Serving Their High Priority Schools

The Detroit Center focuses on high priority schools in two different ways: focused school visits and student services.

Focused school visits included classroom visits, meeting with the principal, and discussing various intervention strategies, including demonstration lessons, focused professional development at the school level, as well as one-on-one consulting for specific teachers. These school visits also allowed for distribution of materials and information as needed. The Center also made special contact with the high priority schools regarding materials that are available through the Resource Clearinghouse.

The Detroit Center provides multiple student services focused on high priority schools. The Center provides kits and materials aligned to the instructional sequence. The Center has developed parent guides to assist parents at high priority schools with instruction at home. One of the most significant ways the Center impacts high priority schools is through sponsoring and facilitating district-wide events and student competitions such as You Be the Chemist, Recycling, and the Annual Mathematics and Science Awards Ceremony.

### Genesee Area Math/Science Center Works with High Priority Schools

During the 2009-2010 school year, GAMSC has implemented various initiatives with Flint schools. All of the Michigan Mathematics and Science Teacher Leader Collaborative (MMSTLC) teacher team members are from Flint and the Professional Development sessions provided by the team have been offered to Flint teachers first. The Center offered five sessions, impacting over 125 Flint elementary and middle school teachers. Most of these teachers are from buildings that did not successfully reach AYP. GAMSC and the MMSTLC team will be very involved in 2010-11, as there is the annual obstacle of teacher turnover and teacher transition to a new building and/or a new grade level.

The Center also engaged many elementary buildings in science staff development sessions that were more content specific. This past year, all of the "Mr. Science" sessions were in Flint elementary and middle school classrooms.

# PROFESSIONAL DEVELOPMENT

**State Board of Education Priority:**  
*“Provide effective support and professional development for teachers and administrators.”*

**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.
- 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.

**2,265** professional development sessions were offered by M/S Centers in 2009-2010.

**12,592** hours of professional development programming were offered by M/S Centers in 2009-2010.

**14,082** teachers and administrators enrolled in one or more professional development sessions facilitated by M/S Centers. These participating teachers and administrators averaged 16.5 hours of professional development offered by M/S Centers in 2009-2010.\*

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

## 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
- Statewide professional development

## Examples of Professional Development Targeted at High Priority Schools

- At the request of principals, the Wayne RESA M/S Center provided four professional development sessions for high school teachers plus in-school coaching support.
- The St. Clair M/S Center worked intensively with a high-priority district, offering professional development, parent nights, in-class coaching, and assistance in writing the school improvement plan.
- Mason-Lake Oceana M/S Center has worked with a high priority district since 2007. MEAP results have improved during this time.
- Centers throughout the state have worked intensively with high priority schools through Algebra for All, other MSPs, HSMASS, and local initiatives.
- Teachers in many Centers are trained to analyze MEAP data to identify gaps in student knowledge and problem solving abilities.

## **IMPACTS AND OPPORTUNITIES: PROFESSIONAL DEVELOPMENT SERVICES**

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

- The K-6 Lapeer County Science Leadership Team was developed to ensure the sustainability of the Battle Creek kit program by providing support for their colleagues in the form of professional development, training videos, documents, and websites.
- At the Manistee, Wexford-Missaukee M/S Center, content and strand data analysis for math and science has been brought to Math and Science Centers Network teams and taken into each building to share and analyze. The Center is seeing utilization of the charts and monitoring the adjustments being made to achieve higher student success.
- Building a Presence for Science (BaPS) builds a communication network between science teachers and science leaders throughout Michigan.

### **Teachers are integrating writing into science and math classrooms**

- As part of HSMASS-IV, teachers around the state learned how to utilize the Writing Across the Curriculum document (developed by the Michigan Department of Education) in their science and mathematics classes.
- A sample of teachers were contacted for a phone interview a few months after the workshop. Teachers who were interviewed reported embedding writing into their lessons and using more writing strategies after participating in the workshop.
- Forty-two of forty-four teachers interviewed (95% of interviewees) said they had shared what they learned during HSMASS-IV with their colleagues at school.

### **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.

### **Opportunities to strengthening teachers' use of assessment to improve instruction.**

- Creating common assessments for the 6 districts in the Mecosta M/S Center service area has been a top priority this year. The Center has worked closely with teachers from all core subject areas and across all grade levels to strategize a single test that can effectively measure where students are at each level. This will assist the districts as the populations served become more transient in response to economic trends. Professional development has been provided in this area to keep educators abreast of trends in various forms of assessment techniques and collaborative methods in creating common assessments. Updated curriculum practices and data-driven decision-making practices were also addressed at these learning sessions.
- The Allegan M/S Center provided the initial grade level training as well as various other types of support such as formative assessment strategies, consistent writing strategies across the grades, and developing rubrics for assessing the summative portions of the student journals. Support also comes by way of classroom management strategies and efficient inventory tools.

### ***How are Centers impacting classroom practice?***

- Observed changes in teaching practice due to participation in the Center Program include more hands-on investigations, inquiry-based teaching and learning, concept mapping, and technology integration.
- Training on the use of science kits has encouraged inquiry-based learning.
- Feedback from teachers indicates that confidence in teaching science and math basic content is increasing.

# STUDENT SERVICES

**Michigan Department of Education Goal:**  
*“Significant improvement in the academic performance of all students with major emphasis on lowest achieving 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 underrepresented 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**
- Five 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.

- 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 Michigan Virtual University
  - Resources available for schools such as STAR Labs

**CUTS TO STUDENT PROGRAMMING**

In 2009-10, the Network’s base funding was reduced by an additional 25%; since 2002, Center funding has been cut a total of 82%. Due to a seventh year of significantly reduced funding from the Michigan Legislature, student programming hours have been drastically reduced. In the past year, there were 76% fewer programming hours than eight years ago. In addition, some of the accelerated high school programs are in jeopardy.



# IMPACTS AND OPPORTUNITIES: PROGRAMMING FOR STUDENTS

## Engineering Opportunities for Students

- **Girls Exploring Engineering at Wayne State University:** This one day program for girls in grades 4-6 through the Detroit M/S Center has the students break into small groups with a mentor, and follow an interactive schedule with break-out sessions, lunch, and competition.
- **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's in-school programs are provided for students in grades 7-12 throughout the school year.
- **The EUP Trig-Star Competition** was held for the fourth consecutive year this spring at the Eastern Upper Peninsula Mathematics and Science Center; 21 students participated. The day was enhanced this year with a trip to the Soo Locks Park. Students participated in some surveying activities with local surveyors and were given a historical and engineering perspective of the Locks.
- High schools in the Huron M/S Center region participated in **EPICS, a service learning program in engineering.** Each high school designed and implemented its own two-year engineering project to meet a local community need. Projects culminated in a celebration in Spring 2010, where students presented and demonstrated their projects to community/business leaders, political dignitaries, university professionals, and the media.

## Increased Interest and Ability in Science and Mathematics

- At the Capital Area Science and Math Center (CASM), 47 4<sup>th</sup> and 5<sup>th</sup> grade students increased their interest and abilities in mathematics concepts related to measurement, scale, and proportion – as self reported on surveys after participating in After School Math Plus.
- In Battle Creek, the Middle School Intensive Assistance Program for high needs districts showed gains. MEAP scores increased from 80% of state average to 83%.
- The Battle Creek M/S Center also provided an Algebra I course for talented middle school students every week. All students scored above 95% on nationally standardized Algebra I test in end of course assessment on the new Algebra GLCEs.
- At the Dickinson-Iron-Menominee M/S Center, over 100 middle and high school students participated in the Rockets for Schools program.
- Students participating in the High School Symposium at the Regional M/S Center at GVSU reported “I believe I could be successful in a STEM career;” “I have more interest in studying more STEM subjects in the future;” “I think I will major in college in a STEM-related field.”

## Increased Student Access to Quality Mathematics and Science Programming

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

## Involving Detroit Students in a Recycling Initiative

In its third year at the Detroit M/S Center, the recycling initiative, sponsored by Recycle Here, involved 30 schools and expanded to include schools sponsored by the City of Detroit's curbside recycling pick up program. The program has progressed to be more complex and includes several different components including a school-wide informational kick off assembly, community outreach, and 3 classroom lessons by Recycle Here on various elements of recycling and careers associated with the recycling business.

## IMPACTS AND OPPORTUNITIES: PROGRAMMING FOR STUDENTS (continued)

### 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 5<sup>th</sup> to 8<sup>th</sup> grade students around the state in science. Enrollment has increased across participating Centers.
- LEGO Robotics tournaments prepare students across the state for high technology jobs requiring innovative thinking and teamwork.
- At the Hillsdale-Lenawee-Monroe M/S Center, 177 students participated in the Tri-County Science Fair and 438 students participated in the Elementary and Middle School/High School Science Olympiads. These programs are identified by the HLM-MSC Advisory Board as the most important services of the 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: \$3.5 million in the Kalamazoo area, over \$2 million in Berrien County, \$2 million in Mecosta area, and \$1.1 million in Battle Creek.
- The Battle Creek Area M/S Center produced 2 National Merit Scholars and three (3) student teams were national semifinalists in the Conrad Foundation’s Spirit of Innovation Awards Competition, Space Nutrition Category. Students at the school had a 28 composite ACT average. At the school 142 students enrolled in AP coursework.
- All 2010 Macomb County M/S/T Center seniors were enrolled in advanced AP level science classes and over 2/3 of the seniors were enrolled in AP Calculus, while the remaining completed traditional calculus. 100% of this year’s seniors graduated and were accepted to college programs.

### Students Explore Real World Math and Science Careers and Applications:

- Mason Lake-Oceana M/S Center’s mathematics summer camp provided each student with a TI-Nspire calculator and provided them with real-world applications for linear functions to support their learning of Algebra.
- *The REAL* Science program at the Muskegon ISD M/S Center allows students to engage in powerful, real-world laboratory science experiences designed by their teachers. The laboratory experiences are aligned to clear student learning goals which are linked to the HSCes.
- The AGES program (Area Geriatric Education Scholars) provided 42 high school students in the Seaborg Center service area with three days of on-campus training in geriatric health care. All of the students in the program worked in U.P. geriatric facilities for the summer.
- At the Western U.P. Center, Lake Superior Stewardship Initiative teachers report that their students involved in stewardship projects have better attendance and more motivation to work as result of their work in the community.

# 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.

In addition, Center Directors receive MDE and MEAP updates that they pass on to local school district administrators and teachers.

## STATEWIDE INITIATIVES

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

- Algebra for All
- HSMASS-IV: Writing in High School Science
- Assessment collaboration and database development
- High School Science Priority Expectations

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

## DEVELOPING TEACHER LEADERS TO SERVE HIGH PRIORITY SCHOOLS

The Michigan Mathematics and Science Centers Network has continued to provide teacher leaders to high priority districts. MMSTLC (Michigan Mathematics and Science Teacher Leader Collaborative), which ran from 2006-2009, provided the building blocks to developing a teacher leader network. 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.

- The Regional M/S Center at Grand Valley provided in-depth professional development for a group of elementary mathematics teacher leaders in Grand Rapids PS. It was focused on helping these teachers develop the conceptual and pedagogical content knowledge needed to effectively teach measurement concepts at their grade level. RMSC funding was used to supplement the minimal grant funding provided by MSU. Plans are in place to continue this work in the upcoming year.
- At the Oakland M/S Center, teachers and instructional leaders in mathematics education worked together to explore and build models for effective mathematics support classes at the middle and high school levels.

## IMPACTS AND OPPORTUNITIES: LEADERSHIP

### 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 Content Expectations.

- For the 2010-2011 academic year, the number and variety of Learning Lunches offered to CMU's pre-service Mathematics, Science, and Technology education students has greatly expanded.
- 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 2<sup>nd</sup> through 8<sup>th</sup> grade students. Pre-service teachers from SVSU plan, present and implement activity-based lessons with the children.

**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, Siena 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.

### 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). Teacher Leader teams have continued to meet at many Centers.
- 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.

### Differentiation Series for Everyday Mathematics: Creating a Community of Math Leaders

Oakland Schools/OSMTech mathematics consultants in collaboration with LEA mathematics coordinators and Teacher Leaders built upon the *2008-09 Differentiation Series for Everyday Mathematics*. The 2009-2010 series continued the work around differentiation strategies, but incorporated a content focus on algebraic thinking. This work supported teachers in understanding their role in students' development of the algebraic thinking and reasoning skills needed for success in middle school and high school algebra. Work started in the summer and continued throughout the school year.

# 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 CONTENT  
EXPECTATIONS**

- HSMASS-IV, a statewide initiative, provided professional development to help 8<sup>th</sup>-12<sup>th</sup> grade math and science teachers improve writing in math and science and increase awareness and knowledge of the High School Content Expectations.
- Multiple sessions were provided to assist teachers in their understanding of Michigan's GLCEs.
- The Battle Creek Area M/S Center revised K-7 science units in their kit program. The kits are used by students in their service area as well as 30% of the state. Newly revised units include instruction for all science GLCEs and include literacy GLCE integrations.

**PROFESSIONAL DEVELOPMENT SUPPORTING  
CURRICULUM ALIGNMENT WITH  
STATE STANDARDS**

- 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.
- Great Lakes M/S Center provides intense, one-on-one professional development to area teachers. A science consultant visits 5-6 classrooms during a day and spends an hour per classroom on a Science GLCE chosen by the teacher and modeled with the teacher's students. The consultant presents a science lesson covering the requested grade-level GLCE objective.
- Oakland Schools/OSMTech offered science workshop series for K-4 teachers. Teachers explored the GLCEs and the units of study in the SCoPE curriculum. They had opportunities to discuss, grapple with, and plan for best practices in the teaching of elementary school science.

**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.

**ASSISTING THE 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-IV (HSMASS-IV) 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. Almost 500 7<sup>th</sup>-12<sup>th</sup> grade teachers and 9,000 students participated in the project in the 2009-10 school year.

# IMPACTS AND OPPORTUNITIES: CURRICULUM SUPPORT TO LOCAL SCHOOL DISTRICTS

## 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.
- The Battle Creek Area M/S Center continued to implement Data Director to examine student achievement data to provide focus for school improvement efforts.
- Along with support for direct curriculum and assessment development, the COOR M/S Center also worked with teams from each of the local buildings in training staff to use data more effectively for better lesson design and differentiation.
- 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.
- Professional development has been provided in the Mecosta M/S Center service area to keep educators abreast of trends in various forms of assessment techniques and collaborative methods in creating common assessments. Updated curriculum practices and data-driven decision-making practices were also addressed at these learning sessions.

### Support science and math achievement in identified high priority schools

- The Macomb M/S Center science and math consultants have also made numerous visits to our lowest performing schools to support and provide leadership as the work to align curriculum, improve teaching practice and improve student learning.
- The Manistee, Wexford-Missaukee M/S Center consultants assist with curriculum, instruction, assessment and intervention ideas at a local high priority school.
- Since 2007, Mason-Lake Oceana M/S Center has worked with Baldwin Community Schools through on-site professional development, collaborative professional development, in-district planning of initiatives, administrative support, curriculum support, course sequencing meetings, and assessment support.

### Facilitate the integration of technology into the math and science curriculum

- All Centers are supporting the integration of technology into math and science lessons.
- Macomb M/S Center professional development offerings have utilized classroom video to analyze opportunities for improvement and also take advantage of available TI-Navigator and Clicker technologies to gather data on student learning.
- The Battle Creek M/S Center hosted TechCamp 2009 for 75 educators, providing training for the effective integration of technology in the classroom.

### Assist districts with statewide math and science test alignment and analysis

- The EUP Center conducted monthly district level work with high school and mathematics teachers on alignment of curriculum, balanced assessment systems, common assessments, as well as course placement for students entering high school in 2010.
- Centers around the state are supporting districts in aligning curriculum, instruction, and assessment to state standards.

### Offer Professional Development in Formative Assessment

- More Centers offer professional development based on formative assessment in the classroom. For example, Allegan M/S Center facilitated and coached a team of teachers from the Allegan County Technical Education Center on the formative assessment process.

# 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 Grand Traverse Area M/S Center, for example, has partnered with:
    - ◆ Northwestern Michigan College’s Water Studies Institute
    - ◆ Grand Traverse Conservation District
    - ◆ TBAISD Career Tech Center-Manufacturing Technology Academy
    - ◆ The Watershed Center, Grand Traverse Bay
    - ◆ Michigan Sea Grant, Grand Traverse County Health Department, US Fisheries & Wildlife Service
    - ◆ Grand Traverse Bay Underwater Preserve

- 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.
  - St. Clair RESA and its Math/Science Center is partnering with St. Clair Community Foundation, St. Clair County Community College, the Economic Development Alliance and local districts to be involved in the national program KnowHow2GO. Over 2,700 students, parents and educators participated in various activities sponsored by this effort during the 2009-2010 school year.

## **IMPACTS AND OPPORTUNITIES: ENGAGING PARENTS AND COMMUNITIES**

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

- The Lapeer M/S Center has created partnerships with local watershed agencies to improve watershed education and awareness within the communities.
- 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. Fish and Wildlife Service.
- Expansion of the partnership between the Detroit M/S Center and Greening of Detroit has created more school gradients and outdoor classrooms, enhancing local communities.

### **Community groups are involved in planning and implementing programs**

- Business and industry, foundations, and private individuals have been involved in the support of the GVSU Regional Math and Science Center programs. They have provided in-kind and monetary support. Over 377 individuals volunteered for *Science Olympiad* and 120 helped during the *STEPS* camps this summer, indicating a commitment to K-12 education in science and math.
- At the Capital Area Science and Math Center, community volunteers learned about and assisted with the first Michigan pilot of the After School Math Program. News media covered the culminating event.

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

- The Western UP Center conducted twenty family science/math nights at local elementary schools in their service area. Students and their parents participated in two 40-minute age appropriate hands-on activities.
- The Detroit M/S Center sponsored Family Math and Science and the Annual Mathematics and Science Awards Ceremony to bring academics to parents. These types of events help parents and others in the community see the schools and academic activities in a positive light.
- The Macomb M/S Center's Symposium for Middle School Girls, robotics programs, and partnerships with industry (PVS/Nolwood Chemistry Challenge, Macomb Service Learning Project) are excellent examples of the impact the Center is having on the community. Students, parents and community volunteers have drawn together to serve over 1000 individuals.

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

- Northwoods M/S/T Center worked with NewPage Corporation to bring the school ship *Inland Seas* to the area. Fifth grade students and various other groups of local citizens experienced sails aboard the schooner and learned about the ecology of Lake Michigan and Little Bay de Noc. Community members were also able to visit the ship in the harbor.
- Community and business support of Battle Creek Area M/S Center science kit program, both financially and otherwise, gained \$40,000 in business/industry support for local kit program in 2009-2010.
- The US 131 Motor Sports Park partners with the Allegan M/S Center and allows the Center to use their racing facilities for free, providing an authentic venue for the Eco Races.
- 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**

- Several thousand people in the Huron M/S Center service area participated in a day-long learning event focused on environmental science and renewable energy.
- 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 Centers Network website ([www.mimathandscience.org](http://www.mimathandscience.org)) communicate math and science activities with a world-wide audience.



# RESOURCE CLEARINGHOUSE

## *Examples of how Center resources are used to support best practices in mathematics, science, and technology education*

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

- 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.
- Providing training for integration of technologies.\*

\*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, MSTTA, 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) in the Algebra for All project.

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.

Wayne RESA has created an online environment for “Chemistry for All,” a resource clearinghouse which contains materials aligned to the High School Content Expectations developed over multiple years. In addition, the Center has supported the “Live365” science music station which provides science programming online 24 hours a day. The Center also produced weekly podcasts on K-12 science education in Michigan and included within iTunesU.

**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:** Alcoa, Amway Aviation, Battle Creek Unlimited, Blue Air Sun, Borgess Hospital, Bronson Hospital, Delphi, DENSO, DOW, the Endocrinology and Diabetes Center of Port Huron, Flint Cultural Center, Gahagan Nature Preserve, General Motors: A World in Motion, GE Aviation, Gerald R. Ford International Airport, HARSCO, Impression 5 Science Center, Kellogg’s, Longway Planetarium, Meijer, Mt. Pleasant Discovery Museum, Nelson Aerodynamix, New Page Corporation, Nordland and Associates, Perrigo Company, Pfizer, PVS Nolwood, Rapid Air, Spectrum Health, and Sandcastles Children Museum, US 131 Motor Sports Park.\*

\* 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. Five accelerated high school programs are facilitated by Centers across the state (Battle Creek, Berrien County, Kalamazoo, Macomb, and Mecosta).
- 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.

### Battle Creek Area M/S Center kits provide access to quality materials and equipment for the classroom that otherwise would not be available.

- School districts across the state use the K-6 Science Curriculum/Kit program developed by the Battle Creek Area Mathematics and Science Center. The BCAMSC units provide instruction for ALL of the science GLCEs and provide the units to over 30% of the State's public school districts. 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.
- A Project 2061 review of the Battle Creek units was completed in 2010 as well as a MEAP analysis of districts using the units. Both studies show positive data.

### Technology and Engineering

- 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's in-school programs are provided for students in grades 7-12 throughout the school year.
- The St. Clair Middle School Academic Academy is a county-wide initiative that brings academically accelerated students to the St. Clair M/S Center to learn science, math and language arts topics. Students participate in project-based curriculum. This year's themes included Engineering and Alternative Energy.
- Wayne RESA has supported the training of Wayne County teachers in the STEM program PLTW (Project Lead The Way). The PLTW Engineering and Biomedical Sciences programs offer students an array of advantages, from career readiness and hands-on experience to college preparatory-level classes, labs, and creative exercises.



★ **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 Northwoods, CMU, Huron, Lapeer, Macomb, Seaborg and Wayne.



**Other Resources**

- 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.
- NASA resources and workshops provide in-service and pre-service teachers access to resources and strategies for integrating math, technology, and social studies with science are available through several Centers (e.g. CMU, DIISD, Genesee, Seaborg, SVSU).

## LEVERAGED RESOURCES

**Severe Funding Cuts:** For the seventh 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, experienced an additional 25% cut in 2009-10. The Centers are now operating at 82% reduced funding. 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 under-achieving 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 \$10,215,271 from grants and community contributions.**

**Intermediate School Districts and Universities have contributed approximately \$2,923,708 toward salaries and \$1,020,760 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. \$40,000 was raised through business and industry in 2009-10. Industry also supported the Center with donation of services and equipment.
- 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.
- Each summer, eighty 7<sup>th</sup> grade girls in the GVSU Regional M/S Center area attend STEPS, a free, four day camp to have an engineering design and manufacturing experience and to encourage them to take higher level mathematics and science courses in high school. Generous corporate, community, and foundation support has provided funds totaling approximately \$500,000 since the camp began. This year's major financial supporters were the Alcoa Foundation and the Michigan Space Grant Consortium.
- Selected Huron Math/Science Technology Center schools as recipient of Innovative Vehicle Design project partnership provided \$10,000 for vehicle design and construction.
- The Community Foundation of St. Clair County generously funded the eleven middle schools of St. Clair County in the amount of \$4,500 each for the purchase of technology for mathematics programs during the 2009-2010 school year.

# 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.

<b>Michigan Department of Education School Improvement Framework Performance Indicators</b>	<b>U.S. Department of Education Goals</b>	<b>Michigan Mathematics and Science Centers Network Goals</b>
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 2009-2010 has been to support the development and dissemination of Michigan's Grade Level Content Expectations (GLCEs), companion documents in both mathematics and science, and statewide priority expectations 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, companion documents, and priority expectations. Work with teachers continues in developing mathematics and science assessments that are aligned with the GLCEs. Special effort has been made to work with high priority schools.

The Network also supports the Michigan Department of Education's priorities in the following ways:

Michigan Department of Education Goals and Priorities	U.S. Department of Education Goals	Michigan Mathematics and Science Centers Network Goals
<p>Excellent Educator Quality Continuum:</p> <ul style="list-style-type: none"> <li>• Provide effective support and professional development for teachers and administrators.</li> <li>• Implement mandatory administrator certification.</li> </ul>	<p>Improving accountability. Providing evidence of effectiveness. Planning evaluation.</p>	<p>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.</p>
<p>Significant and meaningful improvement in the academic performance of all students with major emphasis on the persistently lowest achieving schools and students.</p>	<p>Improving the academic achievement of the disadvantaged.</p>	<p>Provide opportunities to under-represented students to improve achievement in mathematics and science.</p>
<p>Re-imagine the Pre K-12 Educational System in Michigan:</p> <ul style="list-style-type: none"> <li>• Prepare educators for diverse students</li> </ul>	<p>Promoting innovative programs.</p>	<p>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.</p>

# 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 Michigan Mathematics and Science Centers Network became a 501(c)(3) organization during the 2007-08 school year. Since then, major changes in the structure and organization of the Network, as well as expansion of activities and support for individual Centers, have occurred. 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, Professional Development, 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, completed work with the Network in 2010. PACE and Partners worked since 2007 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 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 works 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 statewide program integrating face-to-face and online teacher professional development, "Algebra for All," was initiated in summer 2009 and continues through 2011. More information about Algebra for All is available on page 6.

**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 2009-2010**

**PROFESSIONAL DEVELOPMENT**

**Table 1: Professional Development Participants**

			Reported Gender**		Position					
Partici- pants	Different No. of Individ.	Total Hours	Males	Females	Admin.	Math Tchrs.	Science Tchrs.	Tech Tchrs.	Com- bined Subject	Other or Un- known*
Pre-K	281	2,188.25	10	269	4	1	1	0	147	128
Elemen- tary	7,066	72,711.25	784	6,176	135	76	157	5	6,134	559
Middle/Jr. High	1,697	35,536.5	437	1,228	48	638	543	22	126	320
High School	2,752	60,766.5	1,151	1,547	79	1,119	813	52	110	579
Other*	2,286	37,848	603	1,504	483	2,194	1,859	106	6,882	3,622
<b>Total</b>	<b>14,082</b>	<b>209,050.5</b>	<b>2,985</b>	<b>10,724</b>	<b>462</b>	<b>2,096</b>	<b>1,786</b>	<b>102</b>	<b>6,835</b>	<b>2,801</b>

\*Other includes persons who work across levels, are not teachers or administrators, or did not indicate position.

\*\* 3% of individuals did not indicate Gender.

Teachers averaged 14.8 hours of participation in Center programming during the 2009-2010 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
<b>Pre-K</b>	Events	4	5	0	0	0	9
	Hours	9.25	25	0	0	0	34.25
	Participants*	151	70	0	0	0	221
<b>Elementary</b>	Events	177	700	7	2	14	900
	Hours	998	2,981.75	17.5	9	70.5	4,076.75
	Participants*	2,808	7,531	99	98	109	10,645
<b>Elementary &amp; Mid/Jr. High</b>	Events	35	78	1	0	3	117
	Hours	416.75	513.5	7	0	14.25	951.5
	Participants*	607	806	20	0	17	1,450
<b>Mid/Jr. High</b>	Events	95	108	7	0	9	219
	Hours	799	479	15.5	0	65	1,358.5
	Participants*	1,227	569	44	0	146	1,986
<b>Mid/Jr. High &amp; High School</b>	Events	121	113	10	0	5	249
	Hours	1,099.5	680	64	0	23	1,866.5
	Participants*	2,474	1,517	118	0	58	4,167
<b>High School</b>	Events	208	127	12	3	35	385
	Hours	1,425	818.75	44.5	17	99.75	2,405
	Participants*	3,706	1,402	122	78	364	5,672
<b>K-12 Mixed Levels</b>	Events	147	103	50	0	86	386
	Hours	663.25	631	230.5	0	374.75	1,899.5
	Participants*	2,014	2,213	798	0	1,672	6,697
<b>Total</b>	Events	787	1,234	87	5	152	2,265
	Hours	5,410.75	6,129	379	26	647.25	12,592
	Participants*	12,987	14,108	1,201	176	2,366	30,838

\*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	3	12	0	0	0	15
	Hours	21.5	55	0	0	0	76.5
	Participants	141	297	0	0	0	438
Elementary	Events	41	568	4	1	1	615
	Hours	158	2,096.75	65	35	18	2,372.75
	Participants	1,973	29,811	57	350	41	32,232
Elementary & Mid/Jr. High	Events	7	62	14	0	2	85
	Hours	94	751.5	166.5	0	47.5	1,059.5
	Participants	255	14,390	468	0	69	15,182
Mid/Jr. High	Events	55	129	8	0	15	207
	Hours	247.5	919.5	198	0	40.5	1,405.5
	Participants	1,433	7,614	274	0	2,982	12,303
Mid/Jr. High & High School	Events	5	32	10	0	3	50
	Hours	38	267	120	0	5	430
	Participants	63	4,060	186	0	255	4,564
High School	Events	40	112	6	0	40	198
	Hours	495	1,152.5	442.5	0	97.5	2,187.5
	Participants	1,865	4,044	214	0	1,442	7,565
Other Mixed Levels	Events	2	32	0	0	1	35
	Hours	7	142.5	0	0	2	151.5
	Participants	979	30,046	0	0	1	31,026
Total	Events	153	947	42	1	62	1,205
	Hours	1,061	5,384.75	992	35	210.5	7,683.25
	Participants	6,709	90,262	1,199	350	4,790	103,310

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](http://www.mimathandscience.org).

**Table 4: Ten Year Summary Data**

**SUMMARY OF PROFESSIONAL DEVELOPMENT ACTIVITIES 1999-2010**

School Year	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007*	2007-2008*	2008-2009*	2009-2010
Total PD Programs Offered	2,549	2,765	3,436	3,239	1,705	1,928	1,725	2,036	1,849	2,304	2,265
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	12,592
Total PD Enrollments	43,655	47,210	21,904	51,527	28,540	34,237	26,484	30,271	28,998	35,419	30,838
Percent PD Science-Focused Programs	42%	40%	43%	36%	41%	31%	41%	40%	36%	49%	35%
Percent PD Math-Focused	17%	21%	23%	27%	30%	41%	45%	45%	42%	36%	54%
Percent PD Technology-Focused	9%	11%	7%	8%	15%	7%	4%	5%	6%	3%	4%
Percent PD Integrated M/S/T	19%	18%	15%	13%	1%	0%	1%	1%	1%	1%	0%
Percent PD Other	13%	11%	12%	15%	14%	21%	9%	9%	15%	11%	7%

\*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 1999-2010**

School Year	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010
Outreach Sessions	6,763	6,514	6,990	5,024	1,252	1,579	1,112	1,119	960	1,296	1,205
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	7,683.25
Outreach Participants	251,251	263,292	309,716	374,813	239,984	206,906	287,047	160,220	108,875	176,421	103,310

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 76% 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	Kevin Clark	(269) 471-7725
Capital Area Sci/Math Center	David Schulte	(989) 224-6831
Central Michigan SMTC	Janis Voegel	(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	Christy Cloud	(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	Jodi Redman	(231) 876-2263
Mason-Lake-Oceana M/S Center	Kathy Surd	(231) 757-4934
Mecosta-Osceola M/S/T Center	Jennifer Harrison	(231) 592-9608
Northwoods M/S/T Center	Tom Abramson	(906) 786-9300
Oakland Schools S/M/T Center	Valerie Mills	(248) 209-2378
Regional M/S Center (GVSU)	Karen Meyers	(616) 331-2265
Saginaw Valley State Univ. Regional M/S Center	Tamara Barrientos	(989) 964-4115
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	Jim Licht	(810) 455-4241
Wayne RESA, M/S Center	Libby Pizzo	(734) 334-1375
Western UP M/S Center	Shawn Oppliger	(906) 482-4520