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.

2012-2013 Annual Report

Prepared by

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MICHIGAN MATHEMATICS AND SCIENCE CENTERS NETWORK

Building tomorrow's citizens by inspiring excellence in mathematics and science education today.

The Michigan Mathematics and Science Centers Network is a primary infrastructure supporting the improvement of science, technology, engineering, and mathematics (STEM) education in Michigan. Programs and services of the thirty-three Mathematics and Science 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 2012-2013 school year. Individual Centers produce an annual report of accomplishments available from each Center.***

What's Inside?

TWENTY-SIX YEARS OF SERVICE TO MICHIGAN SCHOOLS

In the 26 years of its existence, the Network has provided programs and services to teachers, students, schools, and communities across Michigan. The Mathematics and Science Centers Program was created by legislation in 1988, providing grant funds to establish Centers in cooperation with local and intermediate school districts and higher education institutions. Today, all school districts across Michigan have access in their region to one of 33 M/S Centers.

Base funding for M/S Centers, part of the annual State Aid Act-Section 99, totaled $1.875 million for the 2012-2013 school year. For the tenth year in a row Centers have experienced reduction in their base funding, totaling an 82% decrease since 2002. Opportunities for schools, teachers, and students to improve STEM education are severely limited. Although the Network and Centers have actively sought grants, contracts, and in-kind contributions to support programming, most Centers are holding on "by a thread." The overall lower funding levels since 2002 have resulted in many fewer professional development hours for teachers, fewer STEM program hours for students, decreased services to support curriculum improvement, less STEM educational resource sharing, and less time to lead STEM education improvement efforts.

IMPACTS AND OPPORTUNITIES

Michigan Mathematics and Science Centers Network

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. *This was the tenth 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 Amy Oliver, President (aoliver@alleganaesa.org or 269-686-5087) or www.mimathandscience.org.

Highlights from the 2012-13 Annual Report

- In addition to the many regular local and regional activities, the Network facilitated five major statewide projects serving Michigan teachers and their students:
  - ◊ Science and Mathematics Misconceptions Management (SaM^3)
  - ◊ Promoting Reform in Mathematics Education (PRIME)
  - ◊ Next Generation Science Standards (NGSS)
  - ◊ Experiential Science Education Research Collaborative (XSci Africa) Program
  - ◊ Michigan STEM Partnership
- 11,667 different teachers and other educators participated in programs, including: 105 teaching pre-K, 5,188 teaching elementary, 1,572 teaching middle/jr. high, 2,228 teaching high school, 1,118 teaching mixed grade levels, and 1,456 identified as others (administrators, parapros, etc.).
- 1,899 professional development programs were offered: 868 in math, 675 in science, 95 in technology, and 261 in other topics.
- A total of 10,871 hours of PD were provided; 29,860 total PD enrollments.
- 65,720 students participated directly in Center programs: 421 pre-K, 28,581 elementary, 15,303 elementary and middle/jr. high, 6,939 middle/jr. high, 2,802 middle/jr. high and high school, 4,479 high school, and 7,195 from mixed grade levels (some students may have attended multiple programs).
- Over the past 14 years, 31,316 PD programs were offered; total enrollment in 14 years was 462,441 (many teachers participated multiple years in multiple programs).
- In the past 14 years, 2,671,444 students were served directly by Centers (some students were served multiple years in more than one program).
- Through a special statewide teacher professional development initiative—SaM^3—Centers served over 70 middle and high school mathematics and science teachers from a second cohort of teachers and almost 30 math and science teachers who continued with the program for a second year. The goals of this multi-year project are to increase 1) teacher content and pedagogical knowledge of 7th-12th grade mathematics and science subjects and 2) teacher awareness of student misconceptions of content in mathematics and science.
- Twelve Math/Science Centers at fourteen sites across Michigan served over 658 middle and high school teachers during the second year of Promoting Reform in Mathematics Education (PRIME), a continuation of Algebra for All which ended in 2011, with many of the same participants. Project PRIME PLUS will continue these efforts into the 2013-14 school year, focusing on instructional strategies aligned with the “Standards for Student Mathematical Practice”.
- 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.
- Centers targeted 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 32 different public and private Michigan colleges/universities as well as 8 out of state colleges/universities, engaging science, math, engineering, and technology faculty.

Special *accomplishments*

NEW MASTER PLAN & NEW EXECUTIVE DIRECTOR

A new five-year Master Plan for the Michigan Mathematics and Science Centers was approved by the Michigan Board of Education in 2013. The plan describes two primary goals for the Network over the next five years, during which *the Network will use its resources to advance STEM education in Michigan by focusing on two areas*: 1) *Increasing the capacities of teachers to improve student career and college readiness through substantive teacher professional learning in STEM subject areas*, and 2) *Continue facilitating the development of the Michigan STEM Partnership by expanding Network partnerships and collaborations among STEM-related stakeholders, including key business and industry*. The plan can be accessed at http://www.mimathandscience.org/; a link can found on the main page, MMSCN Master Plan 2013-2017.

Mary Starr is the new Executive Director of the Michigan Mathematics and Science Centers Network. She is very excited about the opportunity to work with the Center Directors and staff to help navigate the changing waters of mathematics and science teaching and learning in Michigan. It is a great time to be part of this group because the Network has been creating and sustaining programs for teachers, students and families for decades and is ready to support the integration and implementation of the CCSS and the NGSS in K-12 schools, summer and evening programs.

Mary has experience in science curriculum development from her work on Project-based Inquiry Science (It's About Time, publishers), teaching through her work in higher education, and coaching/mentoring in her current role as a science coach. She loves being in classrooms, working with teachers and students to create and improve science and mathematics learning experiences. There's nothing better than watching a student dissect a flower and talk about how the scientific works makes her "feel like a doctor".

Her goal for working with the Network Directors is to continue and to improve the way the Network leverages current technologies, create and sustain programs that are aligned with the new standards, and evaluate these programs for success in order to seek additional funding sources. Currently funding is a challenge for each Center and additional funding is necessary to fully realize the potential of the Network for all students in Michigan. Given that, funding is a main priority for Mary.

For more information about the Michigan Mathematics and Science Centers Network, please contact Mary Starr (Phone: 734-612-8780 or Email: mary@starrscience.com).

Value of Statewide Projects

The 33 Michigan Mathematics and Science Centers have functioned as a collaborative Network since their inception in 1988. Recent 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 2012-2013:

- SaM^3 (Science and Mathematics Misconceptions Management)
- Project PRIME (Promoting Reform in Mathematics Education)
- Next Generation Science Standards (NGSS)
- XSci Africa Program
- Michigan STEM Partnership

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. Limited resources are used more efficiently.
- 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 such as Nspire calculators.
- After participating in numerous projects, Centers have cadres of teachers “speaking the same language” and willing to share instructional strategies, successes, and failures.

ACCOMPLISHMENTS OF SaM^3—Year 3

Science and Mathematics Misconceptions Management

The goal of the MMSCN and partners' four-year Science and Mathematics Misconceptions Management (SaM^3) grant program is to increase the content and pedagogy knowledge of 7th-12th grade mathematics and science teachers and to increase teacher awareness of student misconceptions of content in these two disciplines. The program focuses on the provision of professional development to two groups of teachers in the Tier 1 cohorts:

- A core group of teachers who are providing instruction in schools designated by the Michigan Department of Education (MDE) as "Persistently Lowest Achieving Schools" in Michigan who will participate as Long-Term Schools over the four year grant period, (Cohort 1). Long-Term School teacher teams in Cohort 1 meet each summer for a one-day summer conference to share their year of learning and plan for the next year of PLCs.
- Teacher teams from schools that have identified a need to reform math and science instruction in their School Improvement Plans: one year of state SaM^3 PD and PLCs (Cohort 2 and Cohort 3).

Over the course of the four-year grant cycle, each of 33 Michigan Mathematics and Science Centers will have the opportunity to send a teacher team of 6 math and 6 science teachers in grades 7th-12th to the state SaM^3 Tier 1 professional development program. These teacher teams participate in a five-day SaM^3 Summer Institute and in six full-day Professional Learning Community (PLC) programs in their home school district, with targeted outcomes of:

- Increased core content knowledge, with an instructional context of Fractions (math) and Energy (science) across the disciplines, for Cohort 2 and Cohort 3 teachers.
- Increased core content knowledge, with an instructional context of Models in Mathematics and Science, across the disciplines, for Cohort 1 teachers (Long-Term Schools).
- Increased understanding of content knowledge and student misconceptions in the teacher's content area.
- Implementation of strategies to student misconceptions and teach for understanding.
- Development of usable lesson plans to address student misconceptions in their classroom.
- Ability to analyze student work for understanding.
- Consistent and timely feedback on instruction and student understanding.

In Year 3 of this Section 99.6 grant program, regional Math/Science Centers implemented a Tier 2 training to provide SaM^3 outreach to more teachers in their Center's service area. Each Center who indicated interest received $11,000 to fund a regional SaM^3 professional development training, in addition to sending a Tier 1 teacher team to the state SaM^3 professional development in the three year cycle. During the 2012-13 school year, twenty-eight Centers offered a Tier 2 SaM^3 professional development training and, in some cases, PLCs, in their region.

SaM^3 Cohort 3 teacher teams, the last group of Center teams to be trained, participated in the SaM^3 Summer Institute in August 2013, with six follow-up PLCs during 2013-14, led by state facilitators. On June 18, 2014, all three cohorts of Tier 1 teacher teams, as well as Math/Science Center directors and Center SaM^3 facilitators, will come together to share professional learning in the statewide SaM^3 Summit at the Lansing Radisson Conference Center.

For more information about SaM^3, please contact Pam Bunch, SaM^3 project director, Pam.Bunch@lisd.us.

Michigan Mathematics and Science Centers Network

STATEWIDE PROJECT

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Promoting Reform in Mathematics Education (PRIME): 2012-2013 Highlights

In 2013, PRIME won the highest honor, *"2013 Michigan's Best of the Best Award for Education Excellence"*, from the Michigan Association of School Boards. The award was for research on teachers' work with instructional strategies and student assessment in 92 after school team meetings conducted statewide from November 2012 through February 2013.

PRIME is an intense professional development program that builds algebra content with pedagogical knowledge of middle and high school teachers to ensure that mathematics classroom instruction meets the learning needs of all students. In 2012-2013, twelve Mathematics and Science Centers at fourteen sites across the state served more than 658 middle and high school mathematics teachers through a consortium of partners: Wayne RESA's Mathematics and Science Center (Wayne RESA), the University of Michigan—Dearborn's Center for Mathematics Education (CME), and the Michigan Mathematics and Science Centers Network (MMSCN). Fifty percent of school teams received coaching with classroom visits from their coach a quarter of a day per month for four months. All teachers had the opportunity to participate in up to five after school meetings during the school year.

The evaluation design included pre/post performance of teachers on the Learning for Mathematics Teaching Scale (LMT), focus groups conducted at five sites across the state, surveys, and a sample of 44 teachers statewide provided pre/post classroom videos in a two-year pilot using the Mathematical Quality of Instruction (MQI) Protocol in order to examine implementation of project strategies in classrooms. Interview data was collected from the video pilot participants and the project leadership team, including facilitators and site directors.

PROJECT FINDINGS. LMT indicated tremendous growth during the first Project year in 2011-2012 which was augmented with additional gains in 2012-2013. Statewide results over the entire project period from 2011-2013 indicated a gain from 70.3 percent to 79.3 percent correct for 196 matched scores (statistically highly significant with less than one percent of a Type 1 error). Self-reported indicators of teacher pedagogical practices also indicated significant improvement. Findings from the 2012-2013 data indicate statistically significant progress over a five-month period on three of the seven measured MQI scales ($p \leq .05$).

Teachers' focus on student learning is evident in the NVivo word tree in Figure 1, derived from after school meeting team reflections. Read the tree by beginning at the left and following through to the right. Quantitative evidence of PRIME's impact on students is derived from Michigan Merit Exam (MME) percent proficient scores. Using MME data aggregated from each school participating in PRIME, results indicate that five percent more students in PRIME schools scored proficient in comparison to the statewide average, a statistically significant result at the five percent level of making a Type 1 error.

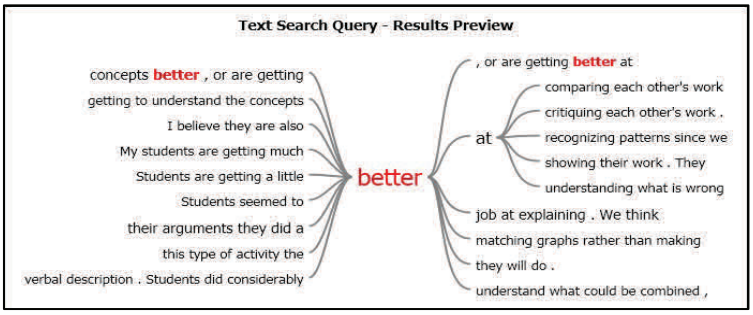

Figure 1. Graphic Tree for the Word "Better" as Used by Teachers in Focusing on Student Learning

LOOKING AHEAD TO PRIME PLUS. The 2013-2014 overall goal is supporting schools and districts in full implementation of the CCSS. Institute sessions will focus on instructional strategies aligned with the "Standards for Student Mathematical Practice" which may differ significantly from participants' experiences with mathematics.

For more information about PRIME, please contact Libby Pizzo, Wayne RESA M/S Center director, PizzoL@resa.net. For more information about the evaluation of PRIME, please contact Dr. Frederica Frost, Center for Evaluation Research, FrostF@resa.net.

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NEXT GENERATION SCIENCE STANDARDS: 2012-2013 Highlights

Introduction

The Michigan Mathematics and Science Centers Network along with the Michigan Department of Education offered workshops to provide school personnel with information regarding the Next Generation Science Standards (NGSS). Workshops were designed to help administrators, teachers and other staff better understand the intent, structure, use, timeline and implications of the NGSS. Workshops were provided on several dates in January 2013 at various locations throughout Michigan. Workshop attendees represented more than 150 Michigan school districts and also included private and charter school staff.

As part of the workshop, attendees were asked to respond to an eight-question, pencil and paper survey. Four hundred sixty-four (464) surveys were collected by MMSCN staff and directors. The vast majority of participants were teachers (74.8%); administrators (8.0%) and a mix of "other" professionals (17.2%), including educational consultants, trainers, curriculum specialists, pre-service teachers, business and industry representatives, university faculty, and retired teachers.

Teachers were asked to note the subject or subjects they teach. Of those who responded (n = 367), 71.9% reported teaching science and/or some combination of science and another subject. Among these, most reported that they only teach science (82.2%). Elementary teachers (17.2%) comprised the largest non-science group. The remaining teachers noted that they are responsible for all subjects (6.0%) or subjects such as special education, language arts and literacy.

Summary Findings from Rating Questions

Participants were asked to think back to their understanding of the NGSS prior to attending the review session and to consider their understanding of the NGSS after the workshop. Participants responded to a series of statements regarding NGSS by indicating their level of agreement both before (pre) and after (post) attending the workshop. Agreement ratings were provided using a four-point Likert-type scale, where 1 = "strongly disagree," 2 = "disagree," 3 = "agree," and 4 = "strongly agree."

With respect to understanding the intent of the NGSS, more than half of workshop participants reported that they did not understand the intent of the new standards prior to attending the workshop (52.9%); after the workshop almost all agreed (96.3%) that they understood the intent of the NGSS.

Regarding understanding the structure of the NGSS, 70.4% of participants reported that they did not understand the structure of the new standards prior to attending the workshop; after the workshop the vast majority agreed (89.7%) that they understood the structure of the NGSS.

In terms of understanding how to use the NGSS to support teaching and learning, the majority of participants reported not understanding this topic before attending the workshop (77.0%); after the workshop most agreed (79.0%) that they understood how to use the NGSS to support teaching and learning. However, for this particular statement, a larger number of those who attended the session (21.0%) continued to disagree, indicating that additional time may be required to help school personnel improve their understanding regarding the ways in which NGSS should be used to support teaching and learning.

A little more than 73% of workshop participants did not understand the NGSS timeline prior to attending the session; the majority (88.8%), however, stated that they understood the timeline upon completion of the session.

Slightly more than 70% of the session attendees did not understand the implications NGSS will have on curriculum prior to attending the workshop; after the workshop most attendees (83.9%) reported that they understood the implications NGSS will have on curriculum.

For more information about this report, contact Dr. Mary Anne Sydlik, Science and Mathematics Program Improvement (SAMPI), Western Michigan University (Phone: 269-387-5393 or Email: maryanne.sydlik@wmich.edu).

Michigan Mathematics and Science Centers Network
Statewide Project

XSci Africa Program:

"Send someone on an adventure of a lifetime and they will be inspired. Send a teacher, and they will inspire others."
~ Teresa McLain, XSci Leader ~

A generous grant provided by the Merck Company Foundation, in partnership with the University of Colorado's Experiential Science Education Research collaborative (XSci), the Michigan STEM Partnership, the Michigan Mathematics and Science Centers Network, and Michigan Technological University (MTU), allowed fifteen teachers from across the state of Michigan to take part in an extraordinary yearlong professional development opportunity of a lifetime, culminating in a three week experiential science trip to Africa! Through this journey participating teachers experienced the sights, culture, and science of Tanzania to create "their story", bringing science to life in their classrooms to inspire the next generation of STEM students.

Teachers were made aware of this opportunity through a variety of networks including the Michigan STEM Partnership, MMSCN, and the National Science Teachers Association—Michigan Science Matters e-blast. MTU hosted the online application, which was opened for one week. Approximately 500 Michigan teachers completed the application. The applications were sorted by the teacher's school location into the five regional hubs of the Michigan STEM Partnership. The hub leadership determined their top five candidates and submitted them to the state selection committee. The state committee selected the top three candidates from each of the five hubs. To qualify, applicants had to be a K-12 Michigan teacher of science. Preferential treatment was given to minority teachers, teachers of at-risk students, and teachers who would otherwise be unable to afford the cost of a trip of this magnitude.

For six months prior to the trip, teachers met regularly online. Some of the meetings were facilitated by experts in the field; others were facilitated by the participating teachers in which they shared their research about various science topics and experiences they would encounter in Africa. Contacts from past participants led to connections in classrooms at St. James School in Moshi, Tanzania. As teachers' excitement grew through this communication, the excitement and encouragement of their students and communities also grew. Some of the classrooms became pen-pals; others raised charitable donations of lanterns, classroom supplies, musical equipment, and water filtering supplies.

Sights and experiences encountered in Africa included the city of Mwanza on the shore of Lake Victoria (the second largest freshwater lake by surface area in the world and origin of the Nile River), safaris in Serengeti National Park and Ngaruroro Crater Conservation Area, Oldupai Gorge, and climbing Mount Kilimanjaro. Cultural experiences were equally rich, including an orphanage for street boys, dancing with a Sukuma tribe, visiting a traditional Maasai family, and an opportunity to share their passion for teaching kids at St. James School in Moshi. The teachers brought with them lessons and supplies for teaching science, math, and technology, which were arranged prior to the trip with the school administrator. The children's faces were full of excitement as they engaged in these hands-on lessons. Connections between classrooms and teachers were also made and strengthened through face-to-face relations. These connections have continued well beyond the trip, impacting lives in both countries.

Following the trip, teachers reflected on their experiences to determine how it had impacted their lives. Each teacher created a video that was shared publicly at a film festival in Traverse City. Teachers have also shared their experiences through a variety of other venues including professional organizations, local and school papers, and presentations. The teachers continue to keep their experiences alive through regular communication, lesson sharing ideas, and cross-cultural communication.

For more information about the XSci Africa Program contact James Emmerling, Director, Genesee Area M/S Center (jemmerling@geneseeisd.org).

Michigan Mathematics and Science Partnership Grants *Highlighting*

Greater Proficiency in Mathematics (GPM): Upper Peninsula Mathematics and Science Partnership (UPMSP) and Supporting the Implementation of Intel® Math (SI^{2}M) SVSU Regional Mathematics and Science Center

Michigan Mathematics and Science Partnerships. The Michigan Mathematics and Science Centers Network has collaborated with institutions of higher education and other partners to implement Michigan Mathematics and Science Partnership (MSP) projects over the past several years. Nearly all Centers have participated in one or more MSPs. Several Centers are currently involved in these partnerships and more have been proposed to the Michigan Department of Education. The Michigan MSP grant program requires active participation of one or more Centers in a project. Some MSPs have been statewide, involving many Centers.

Two Math Partnerships focus on the Intel® Math Program. Two current Mathematics and Science Partnerships are highlighted here. Both use Intel® mathematics materials. The *Greater Proficiency in Mathematics II (GPM-II)* is an MSP grant that supports the development of a deeper understanding of mathematical concepts among elementary and middle school teachers across the Upper Peninsula. The primary components of the program are: (1) the implementation of content specific workshops in partnership with the Intel® Math program and (2) the Mathematics Learning Communities program, a companion program to Intel® Math. *Supporting the Implementation of Intel® Math (SI^{2}M)* MSP grant supports the development of a deeper understanding of mathematics content and pedagogy among elementary and middle school teachers around Saginaw Valley State University and across the Lower Peninsula. The first two elements of the program are the same as for *GPM*, but *SI^{2}M* also includes a third component, coaching to provide ongoing support to the participants in their school setting.

***GPM II* Intel® Math** is the second phase of Intel® in the U.P. GPM II involves 12 workshop days at the same Centers. In all, 102 K-8 teachers completed GPM I and 133 were recruited for GPM II. Math faculty members were recruited from Michigan Technological University, Lake Superior State University, and Northern Michigan University to receive training from Intel® Math and to teach the Intel® course to K-8 teacher participants. The first five days were taught through a Summer Institute in August 2013; the remaining days are scheduled during the school year. Teachers also participated in a Mathematics Learning Community (MLC) specific to the needs and pedagogy of high quality mathematics instruction in the elementary and middle grades. Ten teacher leaders of these MLCs were identified for each year of the program, two for each of the five participating Centers. Teacher leaders were trained in the facilitation of the MLC through a three-day training conference. The MLCs took place through face-to-face workshops and an online community, and focused efforts on pedagogical practices as they relate to the more rigorous mathematics content provided through the other learning activities.

***SI^{2}M* Intel® Math.** SI^{2}M received additional funding to greatly respond to the number of Centers in 2013-2014. The new phase of SI^{2}M involved 13-14 workshop days at five Centers across the Lower Peninsula. In all, 33 K-8 teachers completed SI^{2}M I and a new set of 189 K-8 teachers were recruited for SI^{2}M II. Math faculty were recruited from Saginaw Valley State University and other locations to receive training from Intel® Math and to teach the Intel® course to K-8 teacher participants. The first five days were taught through a Summer Institute in June or August 2013; the remaining six days are scheduled during the school year or following summer. Teachers also participated in Mathematics Learning Group (MLGs), the goal of which was to facilitate lessons in their classrooms and then bring samples of student work to share with colleagues for examination. Teachers also received coaching. Coaches met with teachers to support their efforts to implement the course content into their classrooms. Project coaches supported teacher participants in a safe, blame free environment where they could reflect on their lessons and receive the encouragement they needed to keep trying in their efforts to implement their training and navigate changes to their instructional practices.

Annual Report to the Michigan Department of Education
Preliminary Findings of an Analysis of Pre/Post Teacher and Student Participant Assessment Data—2012-2013

In the 2012-2013 enabling legislation for the Michigan Mathematics and Science Centers Network, the Michigan Legislature required that all Centers submit results of pre- and post-assessments in selected activities for teachers and students. Center Directors, in collaboration with Michigan Department of Education representatives, created a system for reporting results designed to be consistent across all Centers. Each Center selected one teacher activity (professional development session, workshop, or event) and one student activity (workshop, class, or event) at which they administered a pre- and post-assessment pertinent to the activity. A summary of the data is presented below.

Results of additional analysis of data supplied by the Centers will be available in early 2014.

For more information about the Math/Science Centers Network and annual reporting of results, contact Amy Oliver, Network President, at (269) 686-5087 (aoliver@alleganaesa.org). For more information about this report, contact Dr. Mary Anne Sydlik at SAMPI—Western Michigan University (maryanne.sydlik@wmich.edu).

The following represent a preliminary analysis of data from Center pre/post assessment activities.

Teacher Activities

- More than 728 teachers participated in the reported activities
- Twenty-one programs were related to mathematics, including sixteen Project PRIME, three Common Core State Standards, and two Intel® Math (GPM and SI^2M) activities
- Six science-related activities were reported, including four public review sessions covering the Next Generation Science Standards and one activity involved CCSS for ELA Literacy in Science
- Two activities involved science and mathematics Science and Mathematics Misconceptions Management (SaM^3)
- One activity involved technology

Student Activities

- More than 3,188 students participated in the reported activities
- The breakdown of targeted grade levels was: nine middle school student activities, five K-8 activities; four K-5; four middle and high school; two high school; and one K-12
- Less than half (10) of the reported activities involved engineering or engineering-related topics
- Fewer activities (7) concentrated on science
- Five activities involved science and math while one activity involved STEM
- Only two activities mentioned mathematics

Math Leadership Team (MLT) and Science Leadership Team (SLT)

The Math and Science Leadership Teams consist of MMSCN directors. Each of the 33 Center directors is on either the MLT or the SLT, depending on their area of expertise. The MLT and SLT meet during the MMSCN Quarterly meetings. The meeting time is focused on discussing current issues related to science and mathematics. It provides the opportunity for the directors to discuss current topics and trends of mathematics and science in a smaller setting.

Math Leadership Team Accomplishments: 2012-2013

- MSU Strengthening Tomorrow's Education in Measurement (STEM)—Representatives from seven Centers or ISDs participated in the February 14-15, 2013 train-the-trainer professional development held at MSU. Representatives of these Centers, as well as others previously trained, facilitated PD back in their service areas, some with financial support from STEM NSF grant.
- Project PRIME: In 2012-2013, twelve Mathematics and Science Centers at fourteen sites across the state served more than 658 middle and high school mathematics teachers. Sites ranged from 11 to over 140 participants with site facilitators provided for approximately every 30 teachers. The project included coaching for approximately 50 percent of school teams; teachers in the PRIME coaching component received classroom visits from their coach a quarter of a day per month for four months. All teachers had the opportunity to participate in up to five after-school meetings during the school year.
- MAISA Mathematics Unit training was provided to all directors at the May 2013 Network meeting. Centers were encouraged to send representatives to the MCTM Institutes in August 2013 for more in-depth training.
- Also at the May 2013 meeting, the team set a goal for 2013-2014 to increase collaboration and share professional learning projects for mathematics.

For more information about the MLT, please contact Tamara Barrientos, Chair of the MLT committee and Director of the SVSU Regional M/S Center, tarizola@svsu.edu.

Science Leadership Team Accomplishments: 2012-2013

- Striving to be more inclusive: After much discussion about how to be more collaborative with other organizations and individuals who are doing similar science professional development in the state, the SLT, along with the MMSCN in general, extended the invitation for non-directors to join in Day 1 of our quarterly meetings. The SLT is working on creating more opportunities for collaboration and ensuring that our agenda during the SLT time allows for conversation between directors and non-directors in order to maximize the resources that are present.
- Involvement with Next Generation Science Standards (NGSS): Members of the SLT were part of the Michigan NGSS internal review team, several members participated in various focus groups, and the current progress of NGSS was discussed at our quarterly meetings.
- Next Generation Science Standards (NGSS) public review sessions: Through collaborative work of multiple members, materials were provided to each Center director to conduct a public review session for the NGSS in January of 2013. The SLT also created a smaller sub-group to work on preparation and response to the NGSS in between quarterly Network meetings.
- MAISA Collaboration: The SLT started the conversation with MAISA to complete a project around support for NGSS. Members from SLT were integral in the formation and outline of the project, and the initial meetings as the project was being described. Updates regarding this work have been shared during SLT work time at the MMSCN Quarterly Board Meetings.
- Michigan Mathematics and Science Centers Network Website maintenance: The SLT updated the science portion of the website because we have direct access to the website to make corrections.
- Science Lab Safety online course organized by the SLT continues to be available for SBCEUs: This course is offered quarterly for Middle School (.6 SBCEUs) and High School (.7 SBCEUs). The sessions run April-June, July-September, October-December, January-March. The Macomb Mathematics and Science Center is the point of contact for submissions. Additionally, the SLT provided information about changes in safety policies that go into effect December 2013, to ensure that all directors were aware.

For more information about the SLT, please contact Alycia Meriweather, Director of the Detroit M/S Center, alycia.meriweather@detroitk12.org.

MICHIGAN STEM PARTNERSHIP

Update on Activities 2012-2013

The Michigan STEM Partnership is a statewide public-private collaboration whose vision is to build and retain a STEM literate population that establishes Michigan as a national leader in economic and talent development, innovation and prosperity. Its mission is to promote innovation, elevate student achievement, and support the development of the 21st Century workforce through high-quality STEM education. The MMSCN has played a pivotal role in the development of the Partnership over the past year both at the state level (membership in the Michigan STEM Partnership Board) and regional level (leadership and facilitation of the five STEM hubs).

Partnership Development

Successes include:

- Established leadership, charters and a quarterly meeting schedule for five regional hubs. Each hub has built memberships of regional K-20 educators, business/industry representatives, and other stakeholders.
- Hosted Family Engineering Nights at various Math and Science Centers across the state, giving K-6 students and their parents exposure to potential STEM careers to increase interest at an early age.
- Membership in STEMx, a national network of statewide STEM education organizations.
- Participated in and financially supported the following STEM conferences in Michigan:
    - ◊ STEM Symposium sponsored by Dow Chemical and hosted by the Engineering Society of Detroit
    - ◊ 3rd Annual Synergy Summit sponsored by Square One
    - ◊ Governor Snyder's Education Summit and the Michigan STEM Workforce Call-to-Action Seminar
    - ◊ 2013 Michigan Career Educator & Employer Alliance
    - ◊ Hosted the first STEM Solutions Showcase
- Disseminated information regarding the following organizations in their efforts to bring STEM content to students in Michigan schools, colleges and universities:
    - ◊ FIRST Robotics sponsored competitions for students which develop STEM skills and career interest ages 6-18. Thousands of students participate annually. Governor Rick Snyder attended the competition held at Eastern Michigan University.
    - ◊ Square One who sponsors student competitions in building drivable hybrid-electric vehicles and underwater remote operated vehicles.
    - ◊ Michigan GEAR UP seeks to help underrepresented students plug into STEM programs and improve college access.
    - ◊ The After School Alliance supports activities that promote strong computation and engineering skills.
    - ◊ Intern Michigan helps find meaningful internships to college educated talent across Michigan.
- Supported Next Generation Science Standard reviews facilitated by regional Michigan Mathematics and Science Centers Network.

Governance

An Executive Director, Dr. Barbara Bolin, was hired to lead the Partnership's statewide efforts. An Executive Board of Directors was appointed to oversee operations and give direction to Partnership projects. The 24 member board consists of representatives from business and industry (including Dow, Consumers Energy, General Motors), Michigan governmental officials (including CTE, MDE, MVU), K-12 content specialists, community college and university representatives, workforce developers (WIN), non-profit and community groups (MITECH+, Boy Scouts), and directors of Mathematics and Science Centers.

Funding

Through Section 99.7, the MMSCN fiscaled a grant of $100,000 from Michigan Legislature for an executive director and operational expenses. Also, a grant was secured from the Michigan Economic Development Corporation (MEDC) for hub development and Family Engineering Activities.

For more information about the Michigan STEM Partnership, please contact Amy Oliver, MMSCN President, Director of the Allegan/Van Buren Math and Science Center, 269-686-5087, aoliver@alleganaesa.org.

Innovative Student Programs

In Centers across the Network, students have opportunities to learn and work in unusual environments; sample **S**cience, **T**echnology, **E**ngineering, and **M**athematics (STEM) careers; and engage in real-world research with practicing scientists and other professionals. Often partnering with business and industry, government agencies, non-profit organizations, and individuals, programs are designed to motivate ALL students to pursue STEM subjects in elementary, middle, and high school, as well 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 2012-13 school year, 1,074 students were enrolled in accelerated high school programs. All five Centers had 100% of graduating seniors entering college programs. Graduating seniors of Berrien County and Kalamazoo Area Math/Science Centers were offered more than $5.4 million in scholarships. Students graduated with ACT scores above state and national averages. For example, students at Battle Creek Area M/S Center averaged ACT scores of 30.6. At the Kalamazoo Area M/S Center, one hundred thirty-eight (138) students were enrolled in at least one Advanced Placement course during the school year; at Macomb, all seniors were enrolled in AP science classes and 2/3 were enrolled in AP Calculus. More information about Accelerated High School Programs can be found on page 20.

Other Innovative Student Services

Many Centers provide innovative outreach programming using local resources to provide opportunities and to 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.

- Berrien County M/S Center and Berrien RESA partnered with Notre Dame University to support a 9th grade student who undertook valuable Cancer research in the oncology lab on Notre Dame's campus. This student won the regional International Science & Engineering Fair and continued on to the ISEF conference in Phoenix, AZ to present her research. She intends to continue her research in this topic area throughout her high school experience while continuing to partner with Notre Dame.
- The Student Spaceflight Experiments Program (SSEP) is a remarkable U.S. national Science, Technology, Engineering, and Mathematics (STEM) education initiative that gives students the ability to design and propose real microgravity experiments to fly in low Earth orbit. Thanks to the leadership and hard work of local teachers, 311 students in grades 5-11 submitted 69 proposals from the Huron M/S Center. Local educators, engineers, and scientists identified three finalists from which a national panel selected one experiment to be performed in microgravity. The team that designed the proposal that was selected to be performed traveled to Washington, D.C. this summer to attend a symposium and to present their design and research at the Smithsonian National Air and Space Museum. The audience included other student teams as well as professional engineers and space scientists. The experiment will be flown to the International Space Station (ISS) later this year to be carried out.
- The Water Festival sponsored by the WUP M/S Center gave 1,019 students in grades 4-8 the opportunity to participate in four 40-minute sessions on a wide range of topics related to Lake Superior and water resources. Sixty-seven presenters volunteered their time throughout the day to conduct the sessions. Presenters were scientists, graduate and undergraduate students from Michigan Tech, National Park Service, U.S. Forest Service, U.S. Fish & Wildlife Service, Copper Country Arts Center, Friends of the Land of Keweenaw, Keweenaw Land Trust, U.S. Coast Guard, Copper Country Trout Unlimited, Lake Dance in Chicago, and the Michigan Nature Association.

FOCUS ON PRIORITY SCHOOLS

Providing Services to Priority Schools Continues to be a Major Focus of the Michigan Mathematics and Science Centers Network.

As 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 Priority Schools, in addition to 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 Priority Schools.

Examples of Programs and Services for Priority Schools

Centers target Priority Schools each year, providing intensive building-wide professional development. PD occurs at the classroom level and group level. PD at the classroom level 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.

The Detroit Center has chosen to have continued focus on Priority Schools in two different ways: resource clearinghouse and student services. The Detroit Center provides multiple student services focused on Priority Schools. Primarily, through the Center's Resource Clearinghouse, kits and materials are provided that align to the instructional sequence. The Center also has developed parent guides to assist parents at Priority Schools with instruction at home. The most significant impacts of Priority Schools is through sponsoring and facilitating district-wide events and student competitions such as You Be the Chemist, Recycling, and the Science and Engineering Fair of Metro Detroit. This year, the Center also had several opportunities that were presented to the Center that were distributed only to Priority Schools. Field trips to the Detroit Science Center and Children's Museum (Title I funds) were facilitated through the Detroit Center, and those funds were designated to Priority Schools. Finally, preference was given to Priority Schools for the awarding of the mini grants that were provided through the Detroit Center. Those mini grants were used to provide materials directly to teachers/classrooms, provide field trips, and provide supplies for outdoor classrooms.

Seven schools within the Genesee Area Math/Science Center (GAMSC) service region were designated as "High Priority" in the 2012-13 school year. These districts have been made aware of the opportunities available to them through GAMSC, which include leadership meetings, professional development, consultant services, material resources, and student services at Ligon Outdoor Center. The Flint Community School District encompasses the majority of the Genesee County schools labeled "High Priority". Their math and science leadership have sought guidance from GAMSC for creating a curriculum transition plan and various STEM initiatives. Representatives from these schools regularly participate in both Math and Science Leadership Network meetings and professional development offerings. Ninety-three participants from Flint and seventeen from Beecher districts attended a variety of professional development provided by GAMSC during the 2012-13 school year. Additionally, GAMSC has internally supported Genesee Intermediate School District's afterschool and summer programs which are focused on under resourced schools, some of which are considered high priority.

FOCUS ON PRIORITY SCHOOLS

Priority 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 2012-13 to teachers in the 137 schools identified as Priority Schools.

Priority Schools served	**48**
Number of teachers from Priority Schools served	**176**
Number of different activities/programs provided to teachers in Priority Schools	**201**
Number of activity hours provided to teachers in Priority Schools	**1,627.75**
Number of total contact hours received by teachers across all Priority Schools	**3,571.72**

Teachers in 48 out of 137 (35%) Priority Schools received professional development programming in the 2012-13 school year, in addition to teachers in Priority AND non-Priority Schools. **They have received more activity hours and more total contact hours than in previous years. This has been accomplished despite continued reduced Network funding.**

Hillsdale-Lenawee-Monroe Math/Science Center Serving Priority Schools

Litchfield Community Schools, an MDE Focus School for 2012, registered their entire staff of 17 math or science teachers to participate in the *Changing the Equation Using Intel® Mathematics* MSP Grant Program. To increase their investment in the professional learning opportunity, Litchfield School will serve as the host site for nineteen training sessions from June 2013-June 2014. Members of the CEIM Research and Design Team, with the HLM MSC Director serving as the Principle Investigator for the grant, have nurtured the connection between Litchfield Community Schools, their new high school principal and new superintendent, Hillsdale County ISD, and the Center.

Hillsdale County's Camden-Frontier and Waldron schools were on the 2010 Persistently Low Achieving Schools (PLAS) list, and as such, were chosen to participate as a team in the Section 99.6 MDE grant—Science and Mathematics Misconceptions Management (SaM^3), a four-year grant program. HLM MSC continued to sponsor that SaM^3 teacher team through six monthly SaM^3 Professional Learning Community meetings at their school buildings during the 2012-13 school year, and as presenters at the SaM^3 Summer Conference at MSU Kellogg Center in June 2013.

Capital Area Science and Math Center Works with a Priority School

In CASM's five-county service area, Priority Schools are predominately in the Lansing Area. Teachers and students from the Lansing area participated in CASM programming. Examples of this included the *EMATHS* Algebra II training and the Review of the *Next Generation Science Standards* as well as after school programs sponsored by CASM to increase interest and aptitude in STEM related fields, such as student *Robotics* programs. Workshops were also conducted in the individual school districts within the Lansing school system that were focused on improving literacy and student achievement in mathematics. The topics of these workshops integrated content area reading strategies, vocabulary, numeracy strategies, reading charts and graphs, infusing problem solving across the curriculum and general preparation for the ACT, along with a mathematics consultant who performed instructional rounds at the high school level. Teachers have reported that what they learn in these workshops is useful in their classes.

PROFESSIONAL DEVELOPMENT

State Board of Education Priority:
"The school has 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."

Mathematics and Science Centers Network Goal:
"Provide professional learning for STEM educators that assists them in providing curriculum and instruction aligned to the current standards."

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

Statewide Professional Development

1,899 professional development sessions were offered by M/S Centers in 2012-2013.

10,871 hours of professional development programming were offered by M/S Centers in 2012-2013.

29,860 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 2012-2013.*

*Detailed numbers of hours, enrollments, and content of professional development sessions can be found on pages 27-28.

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 Priority Schools

- Centers throughout the state have worked intensively with Priority Schools through Project PRIME, SaM^3, two Intel Math MSPs, and local initiatives.

- Throughout the year, BCAMSC staff provided *Literacy in Science* workshops for teachers in high priority and underachieving schools in the region. For the past two years, BCAMSC staff has worked closely with a high priority school district to develop an elementary STEM school as a pilot for focused and intensive math, science, and technology curriculum.

- The St. Clair County RESA M/S Center continued the project-based learning (PBL) program at Holland Woods. Three teams of teachers (grades 6-8) designed projects based on training in PBL hosted by RESA in June 2012. Each teacher received ten iPads for use with their students and one for their own use. The teams' projects incorporated technology to enhance instruction and an interdisciplinary unit of their design.

IMPACTS AND OPPORTUNITIES: PROFESSIONAL DEVELOPMENT SERVICES

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.

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

- Over 75% of the Math/Science Centers held Common Core State Standards professional development sessions, which were focused on developing leadership capacity within districts where teacher leaders engaged with instructional units and lessons designed around best practice strategies for implementing the Common Core State Standards.
- In addition, at least twenty-one Mathematics/Science Centers held Next Generation Science Standards (NGSS) public review sessions providing the opportunity to be informed about the process and to provide feedback as the standards continue to be formed.
- The Seaborg Center, in cooperation with the Marquette-Alger RESA, offered thirteen full day professional development days for teacher leaders in preparation for Michigan's Career and College Readiness Standards in mathematics. In total, 72 lead teachers spent over 12 hours together and left willing to share their experiences with their colleagues in their districts/schools.

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, as a result, are deepening their content knowledge of mathematics and science.
- Teachers from Dickinson-Iron-Menominee M/S/T Center received research-based professional development that demonstrated best practices. Twenty-six middle and high school teachers participated in year two of Project PRIME training, while twenty-three teachers completed year one of Greater Proficiency in Mathematics.
- To support elementary teachers in grades 3-5 with CCSS, St. Clair County RESA M/S Center consultant Laura Chambless designed the research-based professional development series, *Math Fluency for All Students*. Participants were instructed on the three phases that students must go through to reach proficiency in math fluency, and provided strategies to reach these targets.

Opportunities to strengthen teachers' use of assessment to improve instruction.

- The Macomb County ISD MST Center offered intensive "video club" professional development that focused on low achieving student classrooms in several of its high priority districts. The trainings utilized real footage of teachers in their classrooms and then looked for ways to improve formative assessment strategies while utilizing TI-Navigator technology. The trainings also incorporated strategies from Dynamic Classroom Assessment.
- iPad University (iPad U) was developed by two Mecosta-Osceola MST Center employees to train local district instructors to effectively implement iPads into their classrooms. Teachers were immersed in activities, created formative assessments, and discussed ideas with the iPads. There were 118 participants who attended this 6+ hour training.

STUDENT SERVICES

Michigan Department of Education Goal:
"Educators in schools/ districts acquire or enhance the knowledge, skills, attitudes, and beliefs necessary to create high levels of learning for all students"

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

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

Examples of Programs for Underrepresented Students

- Active recruitment of underrepresented students for accelerated and special programs, including summer camps.
- 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.

Support for Students Attending Priority Schools

- M/S Centers identify 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.

Accelerated High School Programs

- Five Centers in collaboration with local districts provide advanced mathematics and science courses through half-day accelerated high school programs. Recruitment of minorities is a high priority. See page 20 for reported outcomes of these programs.
- Centers save Michigan families money by providing Advanced Placement courses and dual enrollment opportunities with local colleges.

CUTS TO STUDENT PROGRAMMING

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 tenth year of significantly reduced funding from the Michigan Legislature, student programming hours have been drastically reduced. In the past year, there were 94% fewer programming hours than ten years ago. In addition, some of the remaining five accelerated high school programs are in jeopardy.

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

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

IMPACTS AND OPPORTUNITIES: PROGRAMMING FOR STUDENTS

Students Explore STEM Careers and Opportunities

- Allegan/Van Buren M/S Center hosted **Gearing Up: Exploring Engineering** for middle school students who learned about the engineering design process, fields and careers, and the application of the design process as they built a MagLev car or catapult and then made design changes based on a challenge. Students also learned about STEM programs offered at the Allegan County Area Technical & Education Center (ACATEC) to further spark their interest and encourage them to consider enrolling at the Center as high school students.

- The Great Lakes M/S Center participated in **Family Engineering Nights** supported by the MMSCN and STEM Hubs, which exposed over 500 students and parents to STEM activities that focused on engineering. Many other M/S Centers across the state hosted Family Engineering Nights as well.

- The GVSU Regional Center collaborated with GVSU's Padnos College of Engineering and Computing to host both the Region 12 **Michigan Science Olympiad** and the West Michigan District **FIRST Robotics Competition** on the same weekend in March to kick-off Michigan STEM Week. Together these events brought over 1,600 student competitors and over 2,000 teachers, parents, and community members to campus for a true "STEM-fest".

- Jackson County M/S Center worked with Jackson Area Manufacturers Association (JAMA) to provide a student **"I Can Make It" camp** at the Center's Lab at Camp McGregor. These camps help introduce students to the STEM careers and the importance of science and math to communities. The camp utilizes our TiViTz game sets which helps more students move on to the county competition and then hopefully the state competition. Another camp was offered in August 2013 that expands the JAMA Machining U day camp into an overnight camp at Camp McGregor where the students built remote operated vehicles (ROV). They will have a competition in a pool where their ROV will have to navigate through an obstacle course.

- In May of 2013, the MAISD Regional M/S Center held two family engineering events at local schools. These events were designed to excite and inform students about the engineer design process and to initiate student thinking about engineering as a future career. Throughout the evening, students were assisted by engineers and STEM professionals. Students participated in twelve small scale stations focusing on different types of engineering and aspects of engineering design.

ASM Tech Early College – Mason-Lake-Oceana M/S Center

This school provides students the opportunity to pursue STEM-related fields and earn up to two years of college for free. There are two cohorts currently with over 30 students in each group. In addition to taking college classes, students at ASM Tech are exposed to STEM activities during their evening meetings and during summer camp. Students take field trips to 4-year universities to learn about STEM career options. This year, the Center was also able to provide an underwater ROV experience to students with the assistance of the USS Silversides Museum. ASM Tech students have connected with Pro-Act Services Corporation to learn more about STEM careers which are available locally.

Provision of STEM Curriculum design and support of its implementation within CMU's GEAR-UP programming

Central Michigan S/M/T Center (SMTC) was responsible for developing a STEM Curriculum for an ongoing GEAR-UP program. CMU has long hosted (originally as a King, Chavez, Parks project) groups of potential first-generation university students for week-long summer experience on campus. This year, the subject matter focus was on STEM and SMTC was asked to design the curriculum, suggest content for classes and help locate appropriate professors to lead the classes.

IMPACTS AND OPPORTUNITIES: PROGRAMMING FOR STUDENTS (continued)

EXAMPLES OF OUTCOMES IN ACCELERATED HIGH SCHOOL PROGRAMS

- One hundred percent of students graduating in 2013 from Center-sponsored accelerated high school programs went on to pursue college degrees.
- Students graduating from accelerated high school programs received millions in grants: over $2 million in Berrien County and $3.4 million in the Kalamazoo area.
- Tenth grade students at the Mecosta-Osceola M/S Center work together with their highly qualified high school math/science teacher on the Ferris State University campus and engage in research projects. They are encouraged to participate in symposiums at the state and national levels. Each student is paired with FSU faculty and works on a graduate-level research project. Many of the students have already had their research published.
- The Battle Creek Area M/S Center produced one National Merit Scholar; 3 of 4 student research projects entered at the Regional International Science & Engineering Fair earned awards with one student qualifying for the State level Stockholm Water Prize. In addition, all 19 students participating in the Michigan Mathematics Prize Competition ranked in the top 1,000 scores. At the school, 113 AP exams were administered with a 96.5% pass rate.

Students Participate in Academic Competitions

Multiple Competition Winners from KAMSC: 1st and 2nd places in the regional JETS competition (1st and 5th places nationally among small selective high schools); a sweep of the top places at the SVSU ACM team competitions (66 KAMSC students); 2nd through 5th places at the EMU MACUL programming competition (60 KAMSC students); and 1st through 3rd places at the Miami University ACM competition (27 KAMSC students).

7th Annual EUP M/S Center TrigStar Competition was held this spring where ten students from the region competed. High school students compete in this one-hour test which includes four problems increasing in difficulty. This year, the EUP winner was also the runner-up at the state level.

MathCounts and You Be The Chemist Competitions: Centers continue to offer students various mathematics and science competitions. MathCounts is heavily supported by local engineers. You Be The Chemist Competition is supported by Dow Midland. These competitions have increased students' interest in mathematics and science. Furthermore, these competitions help students to "feel good" about being good at mathematics and science.

Students Working With Students

The Sanilac County Science/Math Center collaborated with the Sanilac Career Center's Bio-Tech students to put on an outdoor experience for all 2nd grade students in the county. The high school Bio-Tech students put together and presented six different outdoor environmental activities, with 2nd grade students rotating through in about a 2.5 hour cycle. The activities included:

- role playing games to demonstrate metamorphosis
- paper making from wood pulp
- looking at decaying logs to determine life in the log
- scavenger hunt for naturally occurring things
- observing life in and around a pond
- animals in Michigan

This activity took 4 days for all 2nd grade students in the county to attend, and the entire class of Bio-Tech students were involved.

LEADERSHIP

STATEWIDE INITIATIVES

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

- SaM^3 (Science and Mathematics Misconceptions Management)
- Project PRIME (Promoting Reform in Mathematics Education)
- Next Generation Science Standards (NGSS) public review sessions
- XSci Africa Program
- Michigan STEM Partnership

See pages 5-9 and 12 for details about some of these programs.

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, and professional development.

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

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, Albion College, Andrews University, Bay College, Central Michigan University, Delta College, Eastern Michigan University, Ferris State University, Grand Valley State University, Hope College, Jackson Community College, Kalamazoo College, Kettering University, Lake Michigan College, Lake Superior State University, Macomb Community College, Madonna University, Michigan State University, Michigan Technological University, Northern Michigan University, Northwestern Michigan College, Oakland University, Saginaw Valley State University, Siena Heights University, Spring Arbor University, St. Clair County Community College, University of Michigan, University of Michigan—Dearborn, University of Michigan—Flint, Wayne State University, West Shore Community College, Western Michigan University.

Out of state Universities and Colleges involved have included: Case Western Reserve University (Ohio), Columbia University (New York), Cooper Union for the Advancement of Science and Art (New York), Miami University ACM, Notre Dame University (IN), Purdue University (IN), University of California—Berkeley, Washington University (St. Louis).

CURRICULUM SUPPORT

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.
- Project PRIME and SaM^3 are statewide projects impacting hundreds of Michigan teachers and thousands of middle and high school students. The projects ensure teachers in Michigan are "speaking a common language" and have access to research-based, current professional development.

CURRICULUM SUPPORT FOR 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 (underachieving, disadvantaged, or extremely rural) to teach curricula aligned with the GLCEs and High School Content Expectations.

SUPPORT OF MICHIGAN'S GRADE LEVEL CONTENT EXPECTATIONS (GLCEs), HIGH SCHOOL CONTENT EXPECTATIONS, AND NEXT GENERATION SCIENCE STANDARDS

- Multiple professional development sessions were provided to assist teachers in their understanding of Michigan's GLCEs.
- In addition, many Centers facilitated Next Generation Science Standards (NGSS) public review sessions for teachers and administrators.

PROFESSIONAL DEVELOPMENT SUPPORTING COMMON CORE STATE STANDARDS

Centers around Michigan are helping teachers navigate the Common Core State Standards (CCSS). Centers held professional development sessions for K-12 teachers, curriculum specialists, and administrators. The primary outcomes were to:

- Investigate the CCSS at specific grade levels for deeper understanding.
- Interact with the CCSS document and support materials in order to become familiar with the standards.
- Explore the processes and proficiencies of the CCSS Mathematical and Science Practices and their implications for classroom instruction.
- Investigate the Literacy in Science Standards in order to make decisions concerning curriculum, assessment and instructional practices.
- Identify appropriate next steps at the district level.

COMMUNITY AND PARENT ENGAGEMENT

Partnerships with Other Institutions and Organizations

- Centers have collaborated with over 32 Michigan and 8 out of state universities and colleges to plan teacher and student programming, write grants, and share resources.
- Over 13 museums and planetariums have shared programming with Centers.
- Centers have provided programming and consultation to environmental/outdoor education centers across the state.
- The Huron M/S Center, for example, has partnered with:
  - Michigan Department of Natural Resources (DNR), Port Crescent State Park and the Huron County Nature Center for *Mother Nature's Classroom*
  - Square One Education Network and Purdue University for the *Innovative Vehicle Design Program*
  - Smithsonian National Air and Space Museum for the *Student Spaceflight Experiments Program*

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

EXAMPLES OF ENGAGING PARENTS AND OTHER COMMUNITY MEMBERS

Many Centers organize Family Math, Science, and Engineering 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.

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

- "Teacher in Industry" internship experiences
- Student internships in technical fields such as food science, medicine, information technology, website design, engineering, architecture, aviation, pharmacy, dentistry, veterinary medicine, and forensic science
- "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
- Career talks by business professionals

Examples of Partnerships with Foundations

- Partnership with the Kalamazoo Community Foundation has allowed KAMSC to provide college scholarships to KAMSC seniors, and has identified local philanthropists who support some of KAMSC's enrichment programs for students, most notably and recently, the providing of needs-based scholarship support for children attending KAMSC's Sizzlin' Summer Math and Science Program.
- The St. Clair Community Foundation has partnered with St. Clair County RESA M/S Center on many projects. In the past, the Foundation has funded technology in the classroom for middle and high schools and professional development for teachers. Currently, they are a major contributor to the Center's college access efforts.
- Seaborg M/S Center is continuing to work with Northern Michigan University's Foundation to raise donations for the Center and its programs like the Upper Peninsula *FIRST* LEGO® League Tournament.

RESOURCE CLEARINGHOUSE

Examples of how Center resources are used to support best practices in science, technology, engineering and mathematics 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 to develop capacity to support teachers' abilities to use technology to improve instruction. *

*Detailed numbers of hours, enrollments, and technology-focused sessions can be found in the Appendix, pages 28-30.

Maintenance and expansion of resources for local school districts

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

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

Many Mathematics and Science Centers use new technology platforms such as: social networking sites, MOODLE, Learnport and other online sources for delivering professional development.

- Detroit M/S Center updated their website, provided an online inventory, added the contact information to all publications and agendas, and announced it at every science professional development that was offered through the Office of Science professional development sessions.
- Genesee Area M/S Center produced a LiveBinder (online clearinghouse) to aid in distribution of resources to local schools.
- Through Jackson County M/S Center's online system, resource clearinghouse equipment is available for loan free to constituent districts.
- At the Northwoods M/S Center, popular events were reinforced with posting notes and resources online for educators to revisit ideas and explore events that they were unable to attend.

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. For example, the STARLAB at the Lapeer M/S Center continues to be the most popular piece of equipment for check out. Approximately 1,976 students were taught lessons in the STARLAB this year. Centers involved with the STARLAB program include CMU, Dickinson-Iron-Menominee, Lapeer, Macomb, Northwoods and Wayne RESA.

LEVERAGED RESOURCES

Severe Funding Cuts: For the tenth 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

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

In the past year, Michigan Mathematics and Science Centers have leveraged an additional $5,601,509 from grants and community contributions.

Intermediate School Districts and Universities have contributed approximately $2,339,670 toward salaries and $569,006 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

The Allegan/Van Buren M/S Center partnered with the Perrigo Company to allow each district in Allegan AESA to be eligible to receive $2,000-$5,000 annually in education funds and $1,000-$3,000 annually in scholarships for math/science.

The Western Upper Peninsula Center partnered with the Lake Superior Stewardship Initiative which impacted 14 local communities through stewardship projects and provided $58,000 in funding. The Lake Superior Youth Symposium is an excellent example of how the partnership helped bring a high quality event to teachers and students in their service area and in the Great Lakes area.

The Mason County Community Foundation and Occidental Chemical Corporation financially supported Mason-Lake-Oceana M/S Center's Hands-On Science program. WalMart made a donation to support the High School Chemistry Corporation. The Dow Chemical Corporation donated prizes for You Be The Chemist Regional Competition. West Shore Community College donated scholarships to students and Nordlund and Associates and Harsco Track Technologies provided prizes and plaques for the MATHCOUNTS Competition.

APPENDIX

MEETING STATE AND NATIONAL GOALS

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

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

Michigan Department of Education School Improvement Framework Performance Indicators	U.S. Department of Education Goals	Michigan Mathematics and Science Centers Network Goals
Highly qualified personnel who continually acquire and use skills, knowledge, attitudes, and beliefs necessary to create a culture with high levels of learning for all.	Preparing high quality teachers.	Provide professional learning for STEM educators, in support of MDE initiatives, that assist them in providing curriculum and instruction aligned to the current Michigan standards for Michigan 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 leadership development in STEM areas, both within the Center and within targeted K-12 Local Education Agencies (LEAs), with focus on Priority 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 and engineering 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 professional learning programming to attain best instructional practices for all students in the classroom, including instructional practices for remediation to give students the extra support needed.
The school and community work collaboratively and share resources in order to strengthen student, family, and community learning.	Partnering with parents and communities.	Collaborate with community groups to co-sponsor STEM programs and services.

Michigan Mathematics and Science Centers Network
Data Tables 2012-2013

PROFESSIONAL DEVELOPMENT

Table 1: Professional Development Participants

			Reported Gender**		Position					
Partici-pants	Different No. of Indiv.	Total Hours	Males	Females	Admin.	Math Tchrs.	Science Tchrs.	Tech Tchrs.	Com-bined Subject	Other or Un-known*
Pre-K	105	1,349.5	1	104	2	0	0	0	71	32
Elemen-tary	5,188	77,494.3	518	4,613	123	166	122	6	4,277	494
Middle/ Jr. High	1,572	29,108.3	427	1,118	42	580	552	14	95	289
High School	2,228	50,283.8	905	1,292	46	916	654	19	93	500
Mixed Levels	1,118	18,069	309	781	173	167	139	17	184	438
Other*	1,456	16,672.3	271	928	27	23	46	0	24	1,336
Total	11,667	192,977	2,431	8,836	413	1,852	1,513	56	4,744	3,089

*Other includes persons who are not teachers or administrators, or did not indicate position.
** 3.43% of individuals did not indicate gender.

Teachers averaged 16.5 hours of participation in Center programming during the 2012-13 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) a series of sessions with a single focus, conducted periodically over a several week/month period.

Table 2: Professional Development Activities

		Math	Science	Technology	Integrated M/S/T	Other	Total
Pre-K	Events	2	0	1	0	0	3
	Hours	15	0	1	0	0	16
	Participants*	25	0	1	0	0	26
Elementary	Events	331	305	5	0	38	679
	Hours	1,971	1,473	29.25	0	71.75	3,545
	Participants*	4,885	3,621	72	0	486	9,064
Elementary & Middle/Jr. High	Events	91	45	7	0	9	152
	Hours	814	230	39.5	0	14.25	1,097.75
	Participants*	1,576	654	188	0	185	2,603
Middle/Jr. High	Events	71	49	2	0	12	134
	Hours	618.25	212.5	11	0	36.5	878.25
	Participants*	1,418	348	14	0	112	1,892
Middle/Jr. High & High School	Events	158	75	5	0	28	266
	Hours	944.5	365.5	17.5	0	107	1,434.5
	Participants*	2,618	893	41	0	398	3,950
High School	Events	113	90	21	0	58	282
	Hours	948.75	644.25	62.25	0	317.75	1,973
	Participants*	1,826	816	228	0	634	3,504
Other (includes K-12 Mixed Levels and non-responses)	Events	102	111	54	0	116	383
	Hours	536.75	715	248.5	0	425.75	1,926
	Participants*	2,230	2,241	1,165	0	3,185	8,821
Total	Events	868	675	95	0	261	1,899
	Hours	5,848.25	3,640.25	409	0	973	10,870.5
	Participants*	14,578	8,573	1,709	0	5,000	29,860

*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	6	12	0	0	0	18
	Hours	37	51.5	0	0	0	88.5
	Participants	91	330	0	0	0	421
Elementary	Events	18	391	8	0	14	431
	Hours	139	1,756.75	94	0	69.5	2,059.25
	Participants	1,160	25,830	141	0	1,450	28,581
Elementary & Middle/Jr. High	Events	24	47	5	0	7	83
	Hours	447.25	570.8	64.5	0	101	1,183.55
	Participants	7,994	6,739	359	0	211	15,303
Middle/Jr. High	Events	12	107	19	0	40	178
	Hours	135	885.5	284	0	155.75	1,460.25
	Participants	852	5,064	247	0	776	6,939
Middle/Jr. High & High School	Events	4	11	3	0	1	19
	Hours	29.5	66	205	0	3	303.5
	Participants	416	2,297	49	0	40	2,802
High School	Events	19	72	12	0	8	111
	Hours	63.5	621.5	599	0	104.5	1,388.5
	Participants	659	3,079	313	0	428	4,479
Other Mixed Levels	Events	2	14	0	0	4	20
	Hours	7.5	78	0	0	9.5	95
	Participants	1,296	5,609	0	0	290	7,195
Total	Events	85	654	47	0	74	860
	Hours	858.75	4,030.05	1,246.5	0	443.25	6,578.55
	Participants	12,468	48,948	1,109	0	3,195	65,720

For more descriptive information regarding individual Center programming, see individual Center Reports. These can be obtained by contacting individual Center Directors (see page 31). The Network website also gives additional information: www.mimathandscience.org.

Table 4: Fourteen Year Summary Data

SUMMARY OF PROFESSIONAL DEVELOPMENT ACTIVITIES 1999-2013

School Year	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007*	2007-2008*	2008-2009*	2009-2010	2010-2011	2011-2012	2012-2013
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	1,748	1,868	1,899
Total PD Program Hours	14,059	13,067	14,757	14,563	10,507	11,057	11,109	11,933	10,254	12,049	12,592	10,825	9,845	10,871
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	25,085	28,413	29,860
Percent PD Math-Focused	17%	21%	23%	27%	30%	41%	45%	45%	42%	36%	54%	40%	42%	46%
Percent PD Science-Focused Programs	42%	40%	43%	36%	41%	31%	41%	40%	36%	49%	35%	47%	40%	36%
Percent PD Technology -Focused	9%	11%	7%	8%	15%	7%	4%	5%	6%	3%	4%	6%	7%	5%
Percent PD Integrated M/S/T	19%	18%	15%	13%	1%	0%	1%	1%	1%	1%	0%	0%	0%	0%
Percent PD Other	13%	11%	12%	15%	14%	21%	9%	9%	15%	11%	7%	7%	11%	14%

*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 1999-2013

School Year	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
Outreach Sessions	6,763	6,514	6,990	5,024	1,252	1,579	1,112	1,119	960	1,296	1,205	1,085	1,076	860
Outreach Hours	46,403	52,879	159,952	109,816	37,893	19,151	15,983	17,940	13,877	11,282	7,683	7,358	9,304	6,579
Outreach Partici-pants	251,251	263,292	309,716	374,813	239,984	206,906	287,047	160,220	108,875	176,421	103,310	62,169	61,720	65,720

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, Math and Science 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 25% since 2002-03 despite the 75% cut in core funding. **Unfortunately, the number of DIRECT student programming hours since 2002-03 have been reduced by 94% due to funding cuts. In collaboration with the Michigan Department of Education, the Centers decided to focus their primary efforts on providing professional development to improve teacher knowledge, skills, and instructional practices, with the intent of improving student learning.**

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	Mary Lindow	(269) 965-9440
Berrien County M/S Center	Kevin Clark	(269) 471-7725
Capital Area Sci/Math Center	Denise Brady	(989) 743-3471
Central Michigan SMTC	Janis Voege	(989) 774-4387
COOR S/M Center	Don Mick	(989) 275-9555
Detroit M/S Centers	Alycia Meriweather	(313) 873-4519
Dickinson-Iron-Menominee M/S/T Center	Tara Hartman	(906) 776-8136
EUP M/S Center	Valerie Masuga	(906) 632-3373
Genesee Area M/S/T Center	James Emmerling	(810) 591-4470
Grand Traverse Regional M/S/T Center	Tom Wessels	(231) 922-7875
Great Lakes M/S Center	Christy Cloud-Webb	(231) 547-9947
Hillsdale-Lenawee-Monroe M/S Center	Pam Bunch	(517) 265-6691
Huron M/S/T Center	Scott Whipple/Jennifer Trusock	(989) 269-6406
Jackson County M/S Center	Kristie Morris	(517) 768-5151
Kalamazoo Area M/S Center	Michael Tanoff	(269) 337-0004
Lapeer County M/S Center	Dale Moore	(810) 667-6068
Livingston/Washtenaw M/S Center	Andrea Pisani	(734) 994-8100
Macomb County M/S/T Center	Mike Klein	(586) 228-3466
MAISD Regional M/S Center	David Krebs	(231) 767-7317
Manistee, Wexford-Missaukee M/S Center	Jodi Redman	(231) 876-2265
Mason-Lake-Oceana M/S Center	Kathy Surd	(231) 843-5959
Mecosta-Osceola M/S/T Center	Larry Wyn	(231) 709-1770
Northwoods M/S/T Center	Vic Bugni	(906) 786-9300
Oakland Schools S/M/T Center	Dana Gosen	(248) 209-2328
Regional M/S Center (GVSU)	Karen Meyers	(616) 331-2267
Saginaw Valley State Univ. Regional M/S Center	Tamara Barrientos	(989) 964-4114
Sanilac County S/M Center	Nick Miu	(810) 648-4700
Glenn T. Seaborg Center-NMU	Chris Standerford	(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) 482-0331