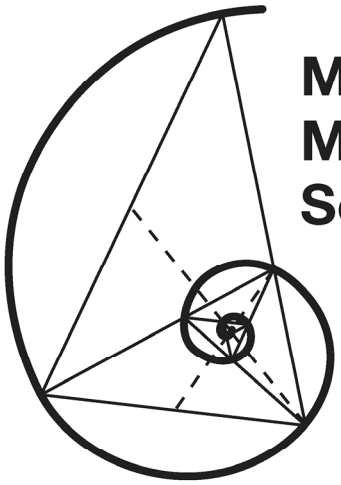

Michigan Mathematics and Science Centers Network

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

2005-2006 Annual Report

Prepared by

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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.

Mathematics and Science Centers are a primary infrastructure supporting the improvement of mathematics, science, and technology education in Michigan. Programs and services of the thirty-three Mathematics and Science Centers (MS Centers) are made available to all Michigan public and private schools in their service areas. ***This report summarizes the work across all Centers during the 2005-06 school year. Each Center also produces an annual report of accomplishments available through each Center.***

FUNDING CHANGES

The Mathematics and Science Centers Program was created by legislation in 1988, providing $1 million in grant funds to establish Centers in cooperation with school districts, higher education institutions, science museums, and professional associations. Since that time, the program has undergone significant changes, including development of a Master Plan for funding and operating Centers. Today, all school districts across the state have access in their region to one of 33 Mathematics and Science Centers in Michigan.

2005-2006
REPORT FOCUS:

This report will focus on MS Centers' highest priorities (supporting high priority schools and providing high quality professional development to teachers). It will also give a picture of the MS Center Network which provides a conduit of communication between MDE, MS Centers, schools, and other educational institutions across the state of Michigan.

Base funding for MS centers is now part of the annual State Aid Act-Section 99 and totaled $2.55 million for the 2005-2006 school year. This is a **75%** reduction in state funding from three years ago**. Future mathematics and science programming for schools is in jeopardy as Centers search for the financial resources to support schools, teachers, and students. In 2005-2006, state funding cuts resulted in 30% fewer professional development hours for teachers and 85% fewer program hours for students as compared to 2003. In addition, one accelerated high school program has been eliminated due to lack of funds.**

SIX BASIC SERVICES. *MS Centers provide programs and services in these areas:*

Leadership—to reflect national and state standards, research, and a shared vision for improving mathematics and science education **See Page 9 & 10**	**Student Services—**to improve and enhance mathematics and science learning for all *287,047 enrollments in student activities 2005-2006* **See Page 6—8**	**Community Involvement**—to increase awareness, nurture ownership, and identify resources for innovative and bold educational programming **See Page 13 & 14**
Professional Development— to strengthen and update teaching practices based on current research and local needs 1,725 Professional Development sessions were offered; 26,484 Teachers participated. **See Page 4 & 5**	**Curriculum Support—**to help develop curricula in local districts, incorporating research in teaching and learning, as well as state and national standards **See Page 11 & 12**	**Resource Clearinghouse—**to collect and transfer information; identify, acquire and distribute materials; and to locate and effectively utilize human resources **See Page 15 & 16**

MEETING STATE AND NATIONAL GOALS

MS Centers serve as catalysts and resources for improvement in the teaching and learning of mathematics and science. They 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 the goals of No Child Left Behind (NCLB).

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

State Board of Education Strategic Goals	**No Child Left Behind** (major goals)	**Michigan Mathematics and Science Center Network Goals**
Ensuring excellent educators	Preparing high quality teachers	Provide professional development opportunities that enable and sustain effective teaching in mathematics and science, by keeping teachers current in the field and able to develop positive learning environments for all students.
Elevating educational leadership	Preparing high quality principals	Provide Teacher Leader programs to develop expertise at a building level in content, pedagogy, assessment and other essential components to teaching high standards.
Embracing the information age		Facilitate and model the integration of technology into the mathematics and science curriculum.
Ensuring early childhood literacy	Requiring schools to use research-based instructional programs	Facilitate the integration of literacy instruction into the content areas of mathematics and science. Assist schools in identifying research-based programs.
Integrating communities	Partnering with parents and communities	Engage businesses, universities, museums, governmental agencies, and parents in supporting and providing quality mathematics and science education and experiences.

SUPPORTING MICHIGAN DEPARTMENT OF EDUCATION PRIORITIES

A major focus of Michigan's Mathematics and Science Centers in 2005-2006 has been to support the development and dissemination of Michigan's new Grade Level Content Expectations (GLCEs) in both mathematics and science as well as supporting schools' high school reform efforts. Support has ranged from serving on advisory teams, reviewing GLCEs, and providing workshops for teachers and administrators to become familiar with the GLCEs. Work with teachers has begun in developing mathematics lessons and assessments that are aligned with the GLCEs. Centers are now focusing attention on familiarizing teachers and students with the ACT and MME student assessments through a series of teacher professional development sessions.

Michigan's Mathematics and Science Centers also support the Michigan Department of Education's priorities in the following ways:

Michigan Department of Education Priorities	**No Child Left Behind** (major goals)	**Michigan Mathematics and Science Center Network Goals**
Helping low performing schools	Improving accountability Providing evidence of effectiveness Planning evaluation	Support principals in identifying the professional development needs of teachers, analyzing MEAP data to identify instructional needs of students, and working with school improvement and curriculum development teams to align programming and instruction with state and national standards.
Closing the achievement gap	Improving the academic achievement of the disadvantaged	Provide opportunities to underrepresented students to explore mathematics and science careers.
High expectations	Promoting innovative programs	Provide accelerated mathematics and science programming to motivated math and science students (with a focus on recruiting under-represented students).

PROFESSIONAL DEVELOPMENT

State Board of Education Strategic Goal: *"Ensuring excellent educators"*

NCLB goal: *"Preparing high quality teachers"*

Mathematics and Science Centers Network Goal: *"Provide professional development opportunities that enable and sustain effective teaching in mathematics and science, by keeping teachers current in the field and able to develop positive learning environments for all students."*

12,460 teachers and administrators enrolled in one or more professional development sessions facilitated by MS Centers. These participating teachers and administrators averaged 14 hours of professional development offered by MS Centers in 2005-2006.* This 38% decrease from the previous year is the result of reduced funding.

*Detail numbers of hours, enrollments, and content of professional development sessions can be found on

There is on-going work to evaluate professional development initiatives statewide. The Mathematics and Science Network has the infra-structure to use this information for continuous improvement.

How are MS Centers supporting teachers in meeting NCLB challenges?

- Centers implemented "Trainer of Trainer" professional development models that engage highly qualified teachers in planning and delivering PD at local schools

1,725 professional development sessions were offered by MS Centers in 2005-2006.

11,109 hours of professional development programming were offered by MS Centers in 2005-2006.

- Center directors provide support to administrators and teachers through phone, email, and direct contact in regards to "highly qualified issues."
- Centers facilitate and support teachers in developing teacher portfolios with records and certificates of completed professional development.

Examples of Professional Development Targeted at High-Priority Schools

- The M-GLAnCE project has exposed the neediest schools in Macomb County to quality grade-level assessment and the GLCEs.
- In the Alpena area, teachers in underachieving schools attend workshops on MEAP analysis using Test Wiz software to identify areas where instructional improvement, resources or curriculum revision are needed.
- Several of the Math-Science Partnership (MSP) Grants provide support for "Lesson Studies" in high priority schools. This process engages communities of teachers in studying their own instruction through team observations and reflection.

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 integration**
- **Lesson studies**
- **Learning communities**

EXAMPLES OF IMPACTS OF MS CENTERS' PROFESSIONAL DEVELOPMENT SERVICES

Teachers are developing content knowledge and skills in conducting research.

- Participation in content specific work groups provided real learning communities to even the most geographically remote schools in the Eastern Upper Peninsula.
- As a result of an inquiry and research in science workshop, five teachers in the Grand Rapids area involved students in science research in their high schools (GVSU Annual Report).

Teachers are gaining experience with professional development that offers real-world applications and new perspectives.

- Science, technology, engineering, and mathematics (STEM) faculty involved in the MSP grant provided teachers with new perspectives (faculty were from Germany, Russia, Yugoslavia, Iran, and Saudi Arabia) and also helped teachers to create rich interactive lessons (Genesee Annual Report).

Teachers are supported in developing an understanding of Michigan's new Grade Level Content Expectations (GLCEs) through MS Centers' workshops.

- Through the Michigan Mathematics Leadership Academy (a MS Center Network initiative) there is an infrastructure of trained teacher leaders to disseminate information about the GLCEs at a school building level.
- Teachers have gained comprehensive knowledge about GLCEs.
- Teachers are assisted in understanding the changes in curriculum that parallel the high school reform and the adoptions of new course standards.
- Teachers are learning to develop assessments that support the GLCEs.

Teachers are receiving support in meeting NCLB "Highly Qualified" teacher requirements.

- Teachers have access to graduate-level courses in their own community due to collaborations between Centers and Universities.

Teachers are learning strategies for improving instruction.

- A Center is working closely with Special Education leaders to develop professional development modules for general education teachers (Lapeer Annual Report).
- Observations of lessons that teachers prepared at professional development sessions indicate that teachers are changing their teaching practice (Genesee Annual Report).
- Teachers are trained in the use of "lesson study" through Math/Science Partnership Grants.
- Teachers are supported by MMLA and MS Center staff to develop learning communities in their own buildings.
- At a Literacy Integration Workshop, teachers are learning to teach the GLCEs in Language Arts within an inquiry-based science classroom using trade books and student journals (BCAMSC Annual Report).

Principals of schools participating in the Building Mathematics Leader Program have indicated by their comments that they have seen student progress in their buildings. *"Yes, we scored our highest math scores ever on the MEAP this year. All our subgroups made AYP!!" (GVSU Regional Center Annual Report)*

Teachers have access to technical training.

- Teachers learn to use technology tools and materials that can be borrowed from Centers. Through a Dart Foundation grant, teachers in a five county region are receiving training on using Lab Pros and graphing calculators. Teacher are assisted in integrating this technology into their lessons and are able to borrow this equipment from the CASM MS Center.

STUDENT SERVICES

Michigan Dept. of Education Priority:
"*Closing the achievement gap."*

NCLB goal:
"*Improving the academic achievement of the disadvantaged."*

NCLB goals:
"Promoting innovative programs"

Michigan Dept. of education priority: *"High expectations"*

Programs for Under-represented Students

- Active recruitment of under-represented students for accelerated and special programs such as summer camps.
- MS Centers provide strategies for teachers to work with special needs students such as differentiated instruction, lessons for multiple intelligences, and methods for teaching writing and literacy.

Support for Students Attending <u>High Priority</u> Schools

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

Accelerated High School Programs

Eight Centers provide advanced mathematics and science courses through half-day H. S. pull-out programs in collaboration with local districts. Recruitment of minorities is a priority. See page 8 for reported outcomes of these programs.

Centers save Michigan families money by providing Advanced Placement Courses and Dual Enrollment opportunities with local colleges (MSTC Center students on average, earned 19 college credits per student before high school graduation).

What types of outreach services are provided to students by MS 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**

CUTS TO STUDENT PROGRAMMING

Due to the 75% cut in funding to MS Centers in 2003, student programming hours have been drastically reduced. In the past year, there were 85% fewer programming hours than three years ago. In addition, one accelerated high school program has been closed and others are in jeopardy.

IMPACTS OF MATHEMATICS AND SCIENCE CENTERS' PROGRAMMING ON STUDENTS

Test Scores

- Common on-line mathematics assessments are being used region-wide. Analysis of this on-line testing (made possible by Centers) has allowed teachers to improve instruction, and identify needed resources. (Five Upper Peninsula Centers and Manistee/Wexford Center Annual Reports).
- Proficiency levels increased by 12% in 12 elementary schools that actively participated in a Center's after-school science programs, ecology field trips, family science nights, science fairs, and teacher professional development (Western Upper Peninsula Center Annual Report).

Increased Interest in Mathematics and Science

- In a longitudinal study to determine the long-term influence of a girls' Science, Technology, and Engineering Summer Camp, University of Wisconsin researchers found a positive correlation between the Camp experience and a student's college major/career choices in science, mathematics, and engineering later in life (GVSU Regional Center Annual Report).
- Over 185 middle school students, in a region of the Upper Peninsula, completed projects for the Invention Convention. (Dickinson-Iron-Menominee Annual Report).

Increased student access to quality student mathematics and science programming

- Support for completing Michigan Virtual High School Courses is provided (see Detroit and Northwoods Annual Report).
- Students across the state have access to Star Lab and Science Olympiad programs.
- Students have opportunities to attend and present at events such as "Ecology Day," regional "Mathematics, Engineering, and Science Symposiums," and other academic competitive events.

ANECDOTES: The following quote is from a parent of a student attending one Center's summer camp: *"Our daughter, (name), had a great experience! She was really excited to go every day to see what new adventures and new things she would learn that day, and she always came home full of information and excitement. It truly was and amazing camp! She is smart and eager to learn and I think that through all your efforts you made her very excited about science, math, and engineering."*

The principal from one school that received an "A" on the Michigan School Report Card attributed their success to participation in Pro-Solve (made possible by the M/S Centers). (Grand Rapids Press).

Win-Win Collaborations

An MS Center, a local high school, and Texas Instruments collaborated on a project that involved students in identifying and monitoring pollutants in a stream running through the school property.

Outcomes: 1)The students experienced a real-life application of mathematics and science skills, 2) the school received Texas Instruments' equipment, and 3)Texas Instruments had a unit in environmental studies (developed with M/S Center Staff) aligned with state and national standards that could be used in other venues and regions.

IMPACTS OF MATHEMATICS AND SCIENCE CENTERS' PROGRAMMING ON STUDENTS (continued)

Real World Applications

- 2006 Tri-County Science & Technology Fair Winning projects included, "Your Car Runs on What? The Ratio of Biofuels to its Heat Capacity," "Disco Inferno - The Flammability of Common Fabrics," and "The Effects of Aspartame on Sleep Patterns, H2O Intake, Movement, and the Survival of Mice". These topics reveal a focus on application of science content knowledge to current real-world issues (Hillsdale-Lenawee-Monroe Annual Report).
- Students have access to water study aboard Great Lake Ships (Hillsdale-Lenawee-Monroe Annual Report).
- Through the JASON Expedition program, students interact with real scientists (Genesee and Huron Annual Reports).
- Students collected data, identified and solved problems related to freshwater resources through DTE Freshwater Institutes, Water Watch Programs, and the Student River Congress (SEE-North and Grand Traverse Annual Report). These water quality programs have brought greater awareness to students of the importance of natural resources to Michigan's economy and awareness of career opportunities in science, math, engineering, and natural resources.

Opportunity for Students to Participate in Academic Competitions

- In the Upper Peninsula, participation in the Region 1 Science Olympiad has increased 44% in the high school and 18% in the middle school from the previous year.
- LEGO Robotics tournaments prepare students across the state for high technology jobs requiring innovative thinking and teamwork.

Engaging Special Needs Students

The Battle Creek Area Center (BCAMSC) provided 30 special education students work-experiences by involving them in the BCAMSC Science Kit Distribution Center.

EXAMPLES OF OUTCOMES IN ACCELERATED HIGH SCHOOL PROGRAMS

Students' Opportunities to Attend College is Enhanced (99%-100% of students in accelerated programs matriculate to college).

- Of students completing accelerated HS programs, over $53.3 millionin scholarships and grants were awarded to graduating seniors in Detroit Public Schools, $2.4 million in the Kalamazoo area, $1.4 million in Mecosta/Osceola, and .6 million in Oakland County.
- Seniors in the Mecosta/Osceola Center graduated with an average ACT score of 28, and an average GPA of 3.7. Twenty graduating seniors from the Berrien County Center scored an average of 29.6 on the ACT.
- All graduates of OSMTech Academy have completed AP courses and scored above the proficiency level on the MEAP test.

LEADERSHIP

State Board of Education Strategic Goal: *"Elevating Educational Leadership"*

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

STATEWIDE INITIATIVES

The Michigan MS Center Network has a leadership role in the development of two major statewide initiatives to improve mathematics and science:

Michigan Mathematics Leadership Academy (MMLA) provides teacher leaders with skills to advance the quality of teaching and learning in their own school districts. MMLA teacher teams have been facilitating PD in their home districts to develop understanding of Grade Level Content Expectations (GLCEs).

Building a Presence in Science Collaboration with MSTA in the Building a Presence in Science Program has enabled Centers to groom science teachers to take science leadership roles in their buildings.

NETWORK LEADERSHIP ACTIVITIES

At each quarterly meeting, Center directors are involved in activities and presentations that enhance their abilities to support schools in understanding: assessment strategies, new resources and educational programs, grant opportunities, and MDE initiatives.

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

Regional Mathematics and Science Conferences

MS Centers take a leading role in collaborating with universities to develop regional conferences that are accessible to teachers across the state. (example: The GVSU Regional Center sponsored "*Mathematics in Action*" and "*Fall Science Update Seminar.*")

LEADERSHIP Focus on High Priority Schools

- Center Staff serve on school improvement teams.
- Centers work with schools and Intermediate School Districts to facilitate strategic planning.
- Center staff serve on school districts' curriculum and textbook review committees to share expertise on aligning with state standards and grade level content expectations.
- Many of the Centers facilitate Trainer of Trainer programs to build leadership capacity at the district and building level. For example, using the Trainer of Trainer model, the Detroit Center is able to provide opportunities for teachers to solve authentic problems of practice generated from data garnered through the district's "Measuring Instructional Progress Test" (MIP) as well as using student MEAP data.

EXAMPLES OF IMPACTS OF MS CENTER NETWORK'S LEADERSHIP

Teacher Leader Networks are Developed

- The GVSU Regional Center has fostered the development of a network of science and mathematics teachers in the region. In the past year, 35 teachers developed teacher leadership skills in mathematics as a result of participating and graduating from the Building Mathematics Leader Program.
- Michigan Mathematics Leadership Academy (MMLA) was initiated by the Michigan Mathematics and Science Center Network. In collaboration with MCTM, it has become a statewide infrastructure to develop teacher leaders who have the capacity to provide standards-based professional development in local districts. It has also been a primary vehicle for transmitting information and implementing Michigan's Grade Level Content Expectations.

Supporting Districts to Meet Special Education Challenges

The Eastern U.P. Center provided specific training in TOUCHMATH, a program with proven success for special needs students. In addition, the Center has begun meeting with special education directors to determine possible strategies for raising mathematics scores of special education students.

Centers Support Quality Teaching Experiences and Professional Development for Pre-Service Teachers By collaborating with colleges and universities, Centers take a leadership role in assuring that new teachers entering the field have relevant experiences and are well-prepared to meet Michigan's standards for teaching as well as the Grade-Level Content Expectations and High School Course Expectations.

- 60 SVSU undergraduates had opportunities to act as mentors to area students and in return be mentored by Master teachers in the area of mathematics and science.
- SVSU, Seaborg, and GVSU Centers are involved in content knowledge courses for pre-service teachers.
- Baker College students earned credits by helping elementary students conduct experiments at the Michigan Aerospace Challenge and Muskegon Mayfest Celebration.

Supporting Districts and ISDs in Grant Planning

Many Centers have facilitated the planning and implementation of the Section 99b—Middle School Mathematics Initiative (Allegan, CASM, DIISD, Grand Traverse, Huron, LAWMASC, Mason-Lake Oceana, Mecosta-Osceola, Muskegon, Sanilac, St. Clair, and Wayne Annual Reports).

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

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

CURRICULUM SUPPORT

Michigan Dept. of Education Priority:
"Helping low performing schools"

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

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

- Multiple sessions were provided to assist teachers in their understanding and knowledge of Michigan's GLCEs.
- Centers in four regions in Northern Michigan collaborated to host a two day High School Redesign Forum to provide information and facilitate action planning in relation to the Michigan Merit Curriculum and Michigan Merit Exam (Grand Traverse Annual Report).

PROFESSIONAL DEVELOPMENT SUPPORTING CURRICULUM ALIGNMENT WITH STATE STANDARDS

- MS Centers are involved with a Michigan Department of Environmental Quality Grant to develop environmental curriculum units for the Clean Michigan Initiative. The Michigan M/S Center Network is also involved in the professional development to train teachers to use the developed curriculum units. This project has engaged more than 1,300 teachers across the state.
- The Macomb County Math/Science Center developed the M-GLAnCE modules (Michigan Grade Level Assessment and Content Expectations) and provided training to teachers in the region. These modules are being disseminated statewide through funding and support from the Dow Foundation and the Michigan Mathematics Leadership Academy (a Michigan MS Center Network initiative).

CURRICULUM SUPPORT FOR HIGH-PRIORITY SCHOOLS

Almost 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 or socio-economically disadvantaged) to teach curricula aligned with the GLCEs and High School Course Expectations.

USING ASSESSMENT TO IMPROVE INSTRUCTION

In some regions, Centers have formed math leadership teams to implement assessment projects designed to increase student achievement. Team members analyzed MEAP data to identify specific learning targets, designed assessments for each target, and developed a common problem-solving rubric for analyzing student work. The teams utilize the peer reviewed bank of assessment items developed by the Michigan Mathematics Leadership Academy, an initiative of the Michigan Mathematics and Science Center Network. After assessing students' prior knowledge of the target GLCEs, members analyzed student work and designed instructional interventions. Students were assessed a second time following classroom implementation of instructional interventions (MAISD Regional M/S Center Annual Report).

EXAMPLES OF MS CENTERS CURRICULUM SUPPORT TO LOCAL SCHOOL DISTRICTS

Teachers have opportunities to become involved in statewide curriculum development projects. The MS Center Network has coordinated and developed statewide environmental education institutes in collaboration with Central Michigan SMTC and the Department of Environmental Quality. Environmental Ed. Curriculum Units were developed at the Western Upper Peninsula Center, Western Michigan University, and Grand Valley State University. Over 1300 teachers have attended.

Curriculum Revisions

- Due to Center interventions (Locally Organized Teacher Seminars in Science and Everyday Mathematics Users' Conference in Math), the majority of districts in one region have implemented inquiry-based science and mathematics (COOR Annual Report).
- High School Teachers offered feedback for both the mathematics and science High School Course Expectations and began discussions (facilitated by Centers) across districts about the changes that must occur in local curricula (Manistee/Wexford Annual Report).
- Center staff serve on school districts' curriculum and textbook review committees.
- The Livingston/Washtenaw MS Center conducted a randomly assigned controlled study to investigate the merits of the Vaughn Cube methodology for teaching multiplication. Two hundred and fifty students were involved.
- Pacing guides have been developed at some Centers to assure curriculum consistency across schools in a region. This is particularly important in areas with a highly transient population (Detroit and Manistee/Wexford Annual Reports)

Using assessment to improve teaching and learning

- Through the work of Centers, school districts are committed to using county-wide common mathematics assessments and using the results to drive instruction as well as to communicate across districts about strategies that work (Manistee/Wexford, Muskegon, and Eastern Upper Peninsula Annual Report).
- Centers are facilitating needs assessments in districts to determine instructional and resource needs (SVSU Annual Report).
- 125 school districts across the state use the K-6 Science Curriculum/Kit program developed by the Battle Creek Area Mathematics and Science Center (BCAMSC). Currently BCAMSC is working on the development of on-line assessments to use with the 28 different science kits.

Integration of mathematics and science across the curriculum

- Teacher Leaders were trained on writing across the curriculum, including mathematics and science (Northwoods Annual Report).

Use of Data

- Improved data analysis and collection services are available through regional initiatives. This includes MEAP gap analysis, instructional planning, and curriculum revisions (AMA, EUP Annual Reports).
- At the regional level, data has begun to drive professional development offerings as well as give insight into grade span issues associated with the integration of Michigan's GLCEs and high school course expectations.

COMMUNITY AND PARENT ENGAGEMENT

NCLB goal:
"Partnering with parents and communities"

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

Business and Industry have collaborated with Centers to provide:

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

Examples of Partnerships with Foundations

- Centers are partnering with the DTE Foundation to support innovative teaching through the issuance of mini-grants for teachers.
- Each summer the GVSU Center (with the financial support of foundations) directs a four day camp for girls to have an engineering design and manufacturing experience. Major supporters include: the Society of Manufacturing Engineers Educational Foundation, Alcoa Foundation, Nokomis Foundations, Loosemore Foundation, Grand Haven Area Community Foundation, and the Sebastian Foundation.
- The Dart Foundation has supported environmental education programs, GLOBE training, professional development supporting integration of technology into lessons, and equipment for Center Resource Centers.

Partnerships With Other Institutions and Organizations

- Centers have collaborated with over 30 Michigan universities and colleges to plan teacher and student programming, write grants, and share resources.
- Over 14 museums and planetariums have shared programming with Centers.
- Centers have provided programming and consultation to environmental/outdoor education centers across the state.
- Centers have involved the public libraries, National Park Service, Pictured Rocks National Lakeshore, Dept. of Natural Resources, U. S. Fish and Wildlife Agency, U.S. Forest Service, Conservation Districts, and Watershed Councils in MS Center programs to benefit Michigan families and schools.

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

EXAMPLES OF ENGAGING PARENTS AND OTHER COMMUNITY MEMBERS

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

EXAMPLES OF IMPACTS OF MATHEMATICS AND SCIENCE CENTERS' EFFORTS TO ENGAGE PARENTS AND COMMUNITIES

School —Community Relationships are Strengthened

- Centers partner with other local and regional agencies to provide math and science programming for "at-risk" populations. The Seaborg Center has partnered with Northern Michigan University to provide mathematics and science programming for the Upward Bound Regional Program and the Native American Studies Program.

- Examples of agencies that have partnered with MS Centers are: Allegan County Children's Museum, Cadillac Area Industrial Association, Center for Disease Control, Detroit Metro Parks, Flint Cultural Center, Flint Children's Museum, Friends of the Rouge Education Project, Genesee County Boy/Girl Scouts of America, Girls and Boys Clubs, Grand Traverse Conservation District, Inland Seas Education Association, Longway Planetarium, Mercy Hospital-Cadillac, Michigan Department of Community Health, Mott Farms Applewood Estate, Northern Area Health Education Agency, U.P. Children's Museum, The Watershed Center-Grand Traverse Bay, Wayne County Rouge River Water Festival Planning Committee, YMCA Camp Copneconic, the Zonta Club of Traverse City, and WE Energy Corporation.

Parents are More Engaged in School Activities

- In Battle Creek, the Partnership for Renewing Involvement in Science and Mathematics (PRISM) is the high school accelerated programs parent group. In addition to supporting high school program events, families receive extensive guidance to meet the unique needs of advanced and accelerated students as they prepare to enter the post-secondary system.

- In Jackson, the Center maintains the observatory at Camp MacGregor and the local astronomy club volunteers time to run star-gazing nights for classrooms and community members.

Centers' Advisory Boards Bring Community Perspective into MS Center Planning

- Advisory boards of Centers bring human and financial resources to Centers in addition to many opportunities for collaboration. Members come from higher education, informal science institutions, K-12 schools, business, civic organizations, medical institutions, and industry. Not only do they share messages about mathematics and science education with their organizations, they brainstorm ideas, network, and exchange resources.

Statewide Impact

- The Western Upper Peninsula created and published "Looks Great" (a middle school community design curriculum) and another document "Design Guidelines: to enhance Community Appearance and Protect Natural Resources." These were distributed throughout the State of Michigan.

Special Events Sponsored by Business and Industry

Because of the 75% funding decrease three years ago to Mathematics and Science Centers, it would be virtually impossible for Centers to provide some of the direct programming to the state's most needy children if it were not for the support of business and industry. These programs include mathematics and science camps, festivals, after-school programs, and competitions. Some examples of these special events are below.

- Mecosta-Osceola Water Festival sponsored by Annis Water Institute and Nestle Waters
- Abitibi Recycling Challenge
- PVS Nolwood Chemistry Challenge
- Science Olympiads and LEGO Robotics competitions
- Science, Technology, and Engineering camps for Girls, Outdoor Education Camps for Inner-City Youth

RESOURCE CLEARINGHOUSE

In what ways are Center resources being used to support best practices in mathematics, science, and technology education?

MS Centers support schools in the use of technology by:

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

*Detail numbers of hours, enrollments, and technology-focused sessions can be found in the Appendix, pages 24-27.

Maintaining and expansion of resources for local school districts

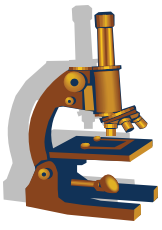
- MS Centers are a dissemination point for several organizations including MCTM, MSTA, and MDSTA.
- Resource libraries are maintained by Centers, many accessible through MS Center websites.
- MS Centers play an active role in the development, distribution, and maintenance of inquiry-based mathematics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

Centers actively recruit businesses and industries to support mathematics, science, and technology education through donation of equipment, facilities, and supplies. Some of these are used in Center programming but a major focus is the loaning and distribution of these materials and equipment to area schools. Financial resources are often used to support special events such as science fairs, academic competitions, and mathematics and science camps. Some examples of the businesses and industries that have supported Centers in the past year include:* Abitibi, Blue Granite, Delphi Automotive, Howmet Castings, International Paper Company, Juss LLP., Kellogg Company, Nestle Waters, Pfizer, Smith's Aerospace, PVS Nolwood, and Warner Norcross.

* Not a complete list.





EXAMPLES OF IMPACTS OF RESOURCE CLEARINGHOUSES MAINTAINED AND COORDINATED BY MS CENTERS

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

- Centers provide technology resources (along with training) and other materials to supplement and enhance lessons. Online access to resource inventories is available on many Centers' websites. Teachers are now integrating technology across the curriculum.
- NASA Resources are available through several Centers (e.g. CMU, DIISD, Genesee, Seaborg, SVSU).
- Centers have facilitated the donation (and dissemination) of lab equipment and supplies to districts from other agencies and industry.
- 125 school districts across the state use the K-6 Science Curriculum/Kit program developed by the Battle Creek Area Mathematics and Science Center.
- Science kit use is facilitated and supported by MS Centers (Battle Creek, GVSU, Lapeer, Mason-Lake-Oceana, Sanilac, SEE-North 2005 Annual Reports). The Battle Creek Center has facilitated 150 science kit trainings across the state.

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

- Families have access to high quality accelerated mathematics and science programs for students that often are only available in wealthy areas. There are eight accelerated high school programs facilitated by Centers across the state (Battle Creek, Berrien County, Detroit, Kalamazoo, Macomb, Mecosta, Oakland, and Sanilac 2005 Annual Reports)
- Communities have access to outdoor education Centers (e.g. Sprinkler Lake, Huron Nature Center, Clear Lake Education Center, Ligon Outdoor Education Center) as well as MS Centers' Resource Centers.

MATHEMATICS AND SCIENCE PARTNERSHIP (MSP) GRANTS

HISTORY: The MSP Program (Title 11B of the NCLB Act) provides funds to states for competitive projects that improve the content knowledge of teachers and increase student learning. The projects described below were in the 1st or 2nd year of funding in 2005-2006. Detailed information about outcomes of these projects can be obtained from Centers as data becomes available.

EXAMPLES OF ACTIVITIES AND OUTCOMES

M³IP—MAISD MS Center

- Teachers showed statistically significant improvements in their knowledge of patterns, functions, and algebra content AND in their total scores on teacher assessments at the end of the two year project.
- 25% more teachers scored between 80% and 100% on the content knowledge test at end of the 2005 Summer Institute compared to the beginning of the institute.
- **Muskegon Heights showed an increase of 21.7% of students scoring proficient after teachers participated 2 years in the M/S Partnership professional development.**

M²RI See-North, COOR and AMA M/S Centers are collaborating with Western Michigan University to develop professional learning communities of mathematics teachers. A focus is placed on examining student work by teams of teachers with the purpose of improving instruction.

Project Jugkyukenku—Genesee Area M/S Center This project involved teachers from nine high priority schools in an intensive study of their teaching practice. Teachers are working with professors from the University of Michigan-Flint and Kettering University to increase content knowledge and to develop high quality lessons based on standards.

Sustained Professional Development = Student Achievement—Livingston/ Washtenaw M/S Center This project involved 12 teachers from a high priority district in a 30 hour summer institute focused on numbers and operations. Four middle school mathematics teachers also participated in a lesson study process in which the teachers designed, implemented, and then revised lessons based on their observations, reflections, and student outcomes.

M³P—Capital Area Science and Math Center In addition to increasing teacher's math content knowledge and understanding, M³P participants received training in the Classroom Performance System (CPS) instructional technology and use.

UPMSP A five center consortium in the Upper Peninsula is collaborating in an MSP grant to improve student achievement by supporting teachers in using the Surveys of Enacted Curriculum and the Lesson Study Process for studying their teaching. Teachers are also given support to attend graduate level courses to improve their content knowledge. Evaluation of this project includes pre/post online student tests, pre/post teacher content knowledge tests, pre/post observation of lessons, and interviews of teach-

Visions—Oakland Science Math Technology Center In this project, OSMTech provided in-depth science content knowledge and understanding in the physical and earth sciences to all underachieving schools in Oakland County (22). OSMTech also worked on class management skills and provided trained coaches to assist the 50 participating teachers in implementing new skills and knowledge into their classrooms.

PM³—Wayne County MS Center This project has been evaluating the impact of their MSP project through a series of lesson observations and focus groups. 54% of teachers involved in the project reported an increase in their use of multiple problem-solving strategies. 88% self-report they have deeper understanding of mathematics.

SVSU-MSP Grant This project provided 100 teachers in grades 5-9 (across 14 districts) with science professional development. Comprehensive needs assessments, teacher content knowledge assessments, and disaggregated student MEAP data were used to plan content for professional development workshops.

LEVERAGED RESOURCES

Funding Crisis: In 2003, the Michigan Mathematics and Science Centers experienced a major set-back. The foundation grant from the State of Michigan was cut 75% by the state legislature. Never before has the leverage of funds from other sources been so important. To compound the problems, grant acquisition became more challenging with reduced staff and lack of available matching funds required by many funding agencies. In addition, local school districts had fewer funds available to support teachers to attend professional development or support other services of the Centers.

Examples of Resources Leveraged Through Collaborations with Universities and Colleges

- Collaborations with state universities to sponsor full day regional mathematics and science conferences
- Partnership with universities and school districts in writing proposals for the Federal Mathematics and Science Partnership Grant program (Title II, Part b)
- Inclusion of pre-service teachers in science, mathematics and technology content professional development courses offered to districts
- Partnership with University of Wisconsin to conduct a longitudinal study of the impact of summer Math, Science, and Technology Camp for Girls (see GVSU Annual Report)
- Partnership with Spring Harbor to obtain Teacher Quality Grants in mathematics and science

In the past year, Michigan Mathematics and Science Centers have leveraged an additional $4,435,108 from grants and community contributions.

Intermediate School Districts and Universities have contributed $2,521,183 toward salaries and $696,433 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

- Northwoods MST Center has engaged the New Page Corporation in improving mathematics and science education by providing funds for teachers' professional development.
- DTE Foundation provides $3,000 mini-grants to teachers for projects that enhance students awareness of energy conversation strategies (Oakland Co. Annual Report).
- In one region, local businesses provided $5,000 for a Science Olympiad Tournament (Seaborg Annual Report).
- Over a period of 5 years, $360,000 was contributed to support a Girls' science and engineering camp (GVSU Annual Report).
- Collaboration between Jackson and Battle Creek Centers to obtain a Nick Smith Grant to buy earth and physical science equipment that can be loaned to schools.
- The Detroit Center received an Title II D Grant: Enhancing Instruction Through Technology. The grant provides laptops and digital learning tools for students to use in project-based learning. One school participating in the grant met AYP this past year after failing to do so in the previous four years.

FOCUS ON
"HIGH PRIORITY" SCHOOLS

Providing services to high priority schools continues to be a major focus of Michigan's MS Centers. As high priority schools are identified by the Michigan Department of Education, Centers make a variety of programs and services available to help improve teaching and learning of mathematics and science at the identified schools. Needs assessments are conducted to target services to the specific needs of underachieving school buildings and districts. Examples of the types of services offered are described below.

Examples of Services to High-Priority Schools

- Centers target high priority schools each year for intensive assistance that includes building-wide professional development. Much of the PD occurs at the classroom level and includes (1) classroom observations to determine areas of need, (2) modeling science lessons, (3) small group PD designed to meet the needs identified by classroom observations, (4) content integration assistance, (5) assessment assistance, and (6) gap analysis.
- MS Centers work with teachers from high priority schools to develop professional development plans that will assist teachers in becoming "highly qualified."
- Partnering with citywide, privately funded "New Level Sports" to provide academic and athletic enrichment opportunities to students from high priority schools. BCAMSC provides bi-weekly inquiry-based activities that support the science curriculum in their schools. The ethnic distribution of students was (95% African-American, 4% Hispanic, 1% Caucasian). (Battle Creek Area Math/Science Center Annual Report)
- Working with LEAs and using the Section 99b funds, the Allegan Center developed a middle school math initiative with a pre and post student assessment component. There was an average of 19.4% point gain in 5th grade, 14.5% point gain in 6th grade, and 8.7% point gain for 7th grade. Percentage points represent total percent correct on assessments.
- The Alpena-Montmorency-Alcona Center is using MEAP analysis with schools not meeting AYP with the purpose of targeting specific professional development needs.
- BCAMSC has targeted a group of underachieving schools for intensive interventions for the past five years. Prior to their interventions, the percent of students reaching proficiency levels was 51% of the state average. Percent proficient is now 91% of the state average.
- In the Saginaw area, the SVSU Center has partnered with the Saginaw Chippewa Tribe to provide science kits (along with associated training) to underachieving schools.

Center plays role in an National Science Foundation M/S Partnership Grant. The St. Clair RESA MS Center is a partner in PROM/SE, a comprehensive research and development effort to improve mathematics and science teaching and learning in grades K-12, based on the assessment of students and teachers, improvement of standards and frameworks, and capacity building with teachers and administrators. Other partners are Michigan State University, Ingham and Calhoun Intermediate School Districts, and a consortium of school districts in Ohio.

MICHIGAN MATHEMATICS AND SCIENCE CENTER COMMITTEE ACTIVITIES

The structure of the Michigan Mathematics and Science Center Network is framed by a Master Plan approved by the state legislature. Every three years the MS Network develops a Strategic Plan to specify objectives and outline MS Network activities to support the improvement of mathematics and science education in Michigan. The committee goals and activities completed in 2005-2006 are described below.

EXECUTIVE COMMITTEE THREE-YEAR GOALS:

- support the MS Centers in their work as the infrastructure for math/science/technology reform
- ensure that Network meetings are designed to build a common vision for mathematics and science education excellence
- develop leadership capacity to assist MS Center directors to deliver the six basic services within the context of the shared vision
- develop/implement the Master Plan in collaboration with the Michigan Department of Education
- monitor MS Center funding cycle and facilitate Network management and budgetary procedures and processes
- act as the conduit through which existing and future partners collaborate with the MS Centers
- improve the financial status of MS Centers

FINANCE COMMITTEE

Goals: Maintain a consistent budget process for the MS Network including reviewing and prioritizing the budget allocations within the spending categories.

Activities:

- budget reports presented at each quarterly meeting (including executive board meetings)
- reviewed past budgets, analyzed expenditures and patterns, made budget projections
- solicited input from Network committees about projected expenditures for 2006-2007
- prepared 2006-07 budget and presented for Network approval
- reviewed all Network contracts and approved payment for services
- billed Centers for annual membership and technical assistance fees

EVALUATION COMMITTEE

Goals: Provide reliable and valid information about the effectiveness of MS Centers, recommend methods of evaluation and data collection, and provide technical assistance to Centers.

Activities:

- communicated with technical assistance providers to facilitate the collection and reporting of Center-level activity data
- reviewed Annual Network Report developed by technical assistance provider. One hundred copies were disseminated.
- explored the feasibility of possible network-wide evaluation methods
- Centers were an important mechanism for providing feedback to MDE on the Draft High School Course Expectations for mathematics and science.
- Centers have been encouraged to share successful instructional and assessment strategies at MS Center Network meetings.

COMMUNICATION COMMITTEE

Goal: To communicate function, leadership, and accomplishments of Michigan's MS Centers and to access and share information within the Network of MS Centers.

Activities:

- represented the Network at statewide meetings (MSDC, MAISA, MASA, MCTM, MSTA, REMCAN, MSELA)
- facilitated website upgrades
- MS Network membership roster (including contact information updated and disseminated
- development of quarterly newsletters
- coordinated and set-up displays regarding MS Center Network programming at state mathematics and science conferences

POLICY AND PROCEDURE COMMITTEE

Goal: Provide oversight services to assist the Network in governance and conducting business in compliance with its by-laws.

Activities:

- annual review of by-laws
- provided expert advice on policy issues at quarterly MS Network meetings or executive board meetings
- began working on the development of a new Master Plan proposal for the Network

LEADERSHIP COMMITTEE

Goals: Promote Center Directors focus on initiative and activities at the state and national level, facilitate collaboration among Center Directors, develop professional development programs to meet the needs of Network members in their delivery of a common set of services, and articulate a shared vision of improved teaching and learning of mathematics and science.

Activities:

- mentors assigned to new directors
- network listserv used to share resources
- MMLA and BaPS statewide initiatives supported to build capacity of mathematics and science leaders

LEGISLATIVE COMMITTEE

Goal: To improve Center director's relationships with local legislators and to establish communications between key Network representative and key legislative/executive contacts.

Activities:

- legislature contact list updated
- Current legislation pertaining to Centers is monitored and disseminated to Center Directors.
- continuing to share impact and results of MS Centers with legislators
- working to develop positive relationships with key policy makers

APPENDIX

Michigan Mathematics and Science Center Network
Data Tables 2005-2006

PROFESSIONAL DEVELOPMENT

Table 1: Professional Development Participants

			Reported Gender**		Position					
Patici-pants	# of Indiv.	Total Hours	Males	Females	Admin	Math Tchrs.	Science Tchrs.	Tech Tchrs.	Com-bined Subject	Other or Un-known*
Pre-K	239	3,036.55	16	222	1	4	1	1	189	43
Elemen-tary	4,821	62,403.2	570	4,203	105	160	150	29	3,501	876
Middle/ Jr. High	2,520	48,158.7	664	1,820	43	1055	699	30	174	519
High School	2,179	28,468.95	931	1233	55	715	714	64	87	544
Others*	2,701	32,985	737	1829	261	329	203	42	385	1481
Total	12,460	175,052.4	2,918	9,307	465	2,263	1,767	166	4336	3,463

*Other includes persons who work across levels, are not teachers or administrators, or did not indicate position.
** 1.9% of individuals did not indicate Gender.

Teachers averaged 14 hours of participation in Center programming during the 2005-2006 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, focused on a particular topic, skill, or issue, and (2) series— a series of sessions with a single focus, one building on the previous one, 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		1			3
	Hours	8		36			44
	Participants	9		5			14
Elementary	Events	230	259	5	1	20	515
	Hours	1,331.75	1,480	9	48	97.5	2,966.25
	Participants	3,315	2,686	53	13	252	6,319
Elementary & Mid/Jr. High	Events	139	104	3	3	30	279
	Hours	748.25	627.5	26	45	179.75	1,626.5
	Participants	2,505	1,319	35	77	323	4,259
Mid/Jr. High	Events	176	97	2		3	278
	Hours	1,669.75	628.1	8		17	2,322.85
	Participants	2892	1140	27		137	4,196
Mid/Jr. High & High School	Events	103	81	4	1	24	213
	Hours	697.75	540.75	48	4	162.25	1452.75
	Participants	1,504	1,083	69	45	494	3,195
High School	Events	56	78	2	3	6	145
	Hours	261.5	483.15	9.5	15	22.5	791.65
	Participants	736	792	31	300	76	1,935
K-12 Mixed Levels	Events	81	94	45	3	69	292
	Hours	677.45	650.25	209	76	292.5	1,905.2
	Participants	2,085	1,986	766	67	1,662	6,566
Total	Events	787	713	62	11	152	1,725
	Hours	5,394.45	4,409.75	345.5	188	771.5	11109.2
	Participants	13,046	9,006	986	502	2,944	26,484

Table 4: Student Services Activities

		Math	Science	Technology	Integrated M/S/T	Other	Total
Pre-K	Events	3	8				11
	Hours	13	22				35
	Participants	50	136				186
Elementary	Events	31	540	17	2	13	603
	Hours	297	2,291.35	184	5	83	2,860.35
	Participants	1,067	31,657	345	106	417	33,592
Elementary & Mid/Jr. High	Events	23	71	8	4	2	108
	Hours	233.5	780.25	95	8	11	1,127.75
	Participants	154,795	11,352	287	151	258	166,843
Mid/Jr. High	Events	11	92	9	3	19	134
	Hours	183.5	703.5	1,098	12	114.9	2,111.9
	Participants	999	16,530	619	291	1,390	19,829
Mid/Jr. High & High School	Events	12	27	1	3	6	49
	Hours	4,254.25	2727	198	240	25.5	7,444.75
	Participants	8,594	26,089	99	48	373	35,203
High School	Events	22	119	4	5	17	167
	Hours	457	1,225.5	165	14	282	2,143.5
	Participants	7,238	11,347	28	52	849	19,514
Other Mixed Levels	Events	5	30			5	40
	Hours	43.25	196.5			20.5	260.25
	Participants	1,864	9,635			381	11,880
Total	Events	107	887	39	17	62	1,112
	Hours	5,481.5	7,946.1	1,740	279	536.9	15,983.5
	Participants	174,607	106,746	1,378	648	3668	287,047

For more descriptive information regarding individual Center programming, see individual Center Reports. These can be obtained by contacting the Center Director (see page 28). The Network website also gives further information: www.mscenters.org

Appendix B

TEN YEAR SUMMARY DATA

SUMMARY OF PROFESSIONAL DEVELOPMENT ACTIVITIES 1996-2006

School Year	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Total PD Programs Offered	2,102	2,396	2,186	2,549	2,765	3,436	3,239	1,705	1,928	1,725
Total PD Program Hours	12,423	18,862	16,158	14,059	13,067	14,757	14,563	10,507	11,057	11,109
Total PD Enrollments	44,113	47,068	40,160	43,655	47,210	21,904	51,527	28,540	34,237	26,484
Percent PD science-focused Programs	29%	40%	32%	42%	40%	43%	36%	41%	31%	41%
Percent PD Math-Focused	19%	19%	18%	17%	21%	23%	27%	30%	41%	45%
Percent PD Technology-Focused	15%	4%	1%	9%	11%	7%	8%	15%	7%	4%
Percent PD Integrated M/S/T	20%	34%	47%	19%	18%	15%	13%	1%	0%	1%
Percent PD Other	17%	3%	2%	13%	11%	12%	15%	14%	21%	9%

SUMMARY OF STUDENT ACTIVITIES 1996-2006

School Year	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Outreach -- Sessions	3,930	2,825	5,110	6,763	6,514	6,990	5,024	1,252	1,579	1,112
Outreach -- Hours	83,844	41,662	49,171	46,403	52,879.3	159,952	109,815.5	37,893.5	19,151.3	15,983
Outreach -- Participants	190,655	156,949	250,817	251,251	263,292	309,716	374,813	239,984	206,906	287,047

The program data above represent a significant decline in the amount of activities offered to teachers and students, the number of programming hours offered, and the number of enrollments in programs. **This clearly suggests that the reduction in state funding of Michigan's Mathematics and Science Centers has significantly impacted the quantity and accessibility of mathematics and science programming for Michigan's students and teachers.**

However, MS 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, professional development programming hours have only been reduced by 30% despite the 75% cut in funding.** Unfortunately, the number of student programming hours have been reduced by 85% due to funding cuts.

DIRECTORY OF MICHIGAN MATHEMATICS AND SCIENCE CENTERS

Center Name	Contact Person	Telephone
Allegan County M/S Center	Amy Oliver	269.686.5087
AMA/IOSCO M/S Center	Gary Goren	989.354.3101
Battle Creek Area M/S Center	Connie Duncan	616.965.9440
Berrien County M/S Center	Dennis Lundgren	269.471.7725
Capital Area Sci/Math Center	Julie Fick	989.224.6831
Central Michigan SMTC	Ade Baumgardner	989.774.3573
COOR S/M Center	Jim Haf	989.275.9562
Detroit M/S Centers	Ellen Daniel Jones	313.596.0758
Dickinson-Iron Area M/S Center	Dee Benjamin	906.776.8137
EUP M/S Center	Michelle Ribant	906.632.3373
Genesee Area M/S/T Center	Larry Casler	810.591.4470
Grand Traverse Regional M/S/T	Karen Szcodronski	231.922.6378
Hillsdale-Lenawee-Monroe M/S/T	Pam Bunch	517.265.6691
Huron M/S/T Center	Peggy Randall	989.269.3473
Jackson County M/S Center	Jennifer Nimtz	517.768.5151
Kalamazoo Area M/S Center	Brenda Earhart	616.337.0004
Lapeer County M/S Center	Laura Chambless	810.667.6495
Livingston/Washtenaw M/S	Jim Reese	517.546.5550
Macomb County M/S/T Center	Paul Drummond	586.228.3467
Manistee Regional M/S Center	Karen Mlcek	231.876.2263
Mason-Lake-Oceana M/S	Kathy Surd	231.757.4934
Mecosta-Osceola M/S/T Center	Mary Ann Robinson	231.796.3543
Muskegon M/S Center	David Krebs	231.767.7317
Northwoods M/S/T Center	Debra Homeier	906.786.9300
Oakland Schools S/M/T Center	LaMoine Motz	248.209.2378
Regional M/S Center (GVSU)	Mary Ann Sheline	616.331.2265
Saginaw Valley State Univ. Regional M/S Center	Walter Rathkamp	989.964.4114
Sanilac County S/M Center	Deborah Wild	810.648.4700
Seaborg Center- NMU	Ann Joyal	906.227.2002
SEE-North	Mary Whitmore	231.348.9700
St. Clair ISD M/S Center	Terry Parks	810.364.8990
Wayne County M/S Center	Libby Trenkle	734.334.1375
Western UP M/S Center	Shawn Oppliger	906.482.4520