



ALLEGAN COUNTY M/S CENTER Spotlight on Professional Development

In an effort to create a seamless level of support for middle school math teachers, the Center again provided workshops for 5th, 6th, and 7th grade teachers with a focus on best practices in the classroom to help teachers gain a better understanding of middle school math GLCEs. The emphasis was on specific, hard-to-teach GLCEs and topics identified by the previous year's participants. Increases in teachers' understanding of the GLCEs as well as students' growth as demonstrated on pre- and post-assessments, it was important to continue to support this effort. MEAP test results for 7th and 8th grade showed improvement on average in the Allegan RESA districts. For 8th grade, average MEAP scores jumped from 69% to 75% proficiency and for 7th grade, average MEAP scores increased from 68% to 75%. The average MEAP scores for 6th grade declined slightly from 79% to 77%. All increases cannot be attributed to the Center programs. However, the professional development provided by the Centers has increased teachers' understanding of the GLCEs and associated best practices for addressing them in the classroom. The trend seems to be increasing math MEAP scores for 7th and 8th grade students.

Other changes that are beginning to occur as a result of Center programming have been based on comments from participants but seem to reflect a change in classroom practice and in teachers' content knowledge. For example, teachers have said:

- I have learned how to use more complex substitution with symbols.
- I have begun to improve my use of math language when teaching fractions.
- I now work more on ratios by teaching ratios with letters.
- I started using more nonlinguistic activities in my classroom.
- I learned how to integrate manipulatives into lessons better.
- I am being challenged to think about numbers and math in different ways.
- I am teaching students to model, applying symbols to story problems.
- I finally understand how to explain division of fractions and what it means!

The Center will continue to support middle school math teachers this year by offering grade level workshops on the M-GLAnCE (Mathematics – Grade Level Assessments and Content Expectations) modules and the St. Clair Math Toolboxes.

For more information, contact Amy Oliver, aoliver@alleganisd.org



AMA/IOSCO M/S CENTER

Spotlight on Professional Development

Teachers in northeastern Michigan were offered numerous opportunities for professional development during the 2006/07 school year. All teachers and administrators completed end-of-session evaluations.

Multimedia Showcase

- Teachers received software, hardware, and training to make short science-related films with their students.

Summer Science

- A workshop series for K-8 teachers provided a background in both teaching methods and content instruction.

Middle School Math.

- Western Michigan University held a series of workshops targeted at middle and high school math teachers.

Professional Development for Administrators

- Professional development specifically targeted building administrators through a series of monthly meetings.

For more information, contact Tracy D'Augustino, daugustt@amaesd.k12.mi.us

BATTLE CREEK AREA M/S CENTER

Spotlight on Professional Development

Professional Development opportunities abound through the Battle Creek Area Mathematics and Science Center. The 2006-07 workshop and PD session topics included Unit/Kit in-services, classroom management, assessment, Administrator's Workshop, constructed response, curriculum design, MEAP analysis, and literacy integration. With funding and time for professional development limited in most schools, PD was designed to meet the specific needs of each audience. The most significant and most sought after Professional Development beyond the Unit/Kit in-services was the "Literacy Integration in Science" workshops.

Center staff selected one series of workshops for further evaluation during this year--the science kit workshops. These have the highest number of participants, although only sessions held at the Center were evaluated. Also, there were several outside consultants hired to do the workshops and Center staff wanted data to support consistent PD from all consultants.

Science kit workshop evaluation data was collected and submitted to an outside evaluator for analysis and reporting. The evaluator also disaggregated data from high needs districts for a separate analysis. Following is an excerpt from one section of the report.

"In the Fall of 2006, 332 teachers from 61 buildings participated in science kit workshops. At the beginning and conclusion of each workshop the participants were asked to respond to a seven-item assessment instrument. First they rated themselves on the items according to their level at the beginning of the workshop. Then they responded to the same items according to their current perception at the end of the workshop. This procedure of responding to the pre/post items during the same sitting may yield a measure of their perceptions of changes in themselves in their knowledge, understanding and familiarity rather than independent assessments at each time point. The participants' average change scores appear to be greater than zero for each item at a high level of significance." The table below presents the averages for each item ordered according increasing "Before" average scores from left to right.

Overall Changes from Pre-program to Post-program

In general, the lower the initial rating, the greater the increase in the rating from "before" to "after", so that all but one item was rated between 4.2 and 4.4 on the average at the end.

Average Rating (1=low, 5=high)	Understand Kit's Activities	Familiarity with Reading/Writing Integration	Cognizance of Depth of Knowledge Required	Familiarity with Benchmarks	Understand Skills Students Need	Familiarity with Instructional Strategies	Level of Content Knowledge
Before	1.8	2.0	2.0	2.2	2.2	2.3	2.5
After	4.4	4.2	4.3	4.0	4.4	4.4	4.3
Change	2.5	2.2	2.3	1.8	2.2	2.1	1.7

Center staff were pleased with the outcome, but puzzled with the low score for "Familiarity with Benchmarks", given the fact that a great deal of time is spent on benchmarks at each workshop. Discussions with teachers following summer 2007 workshops identified that while a significant amount of workshop time is spent on benchmarks, it is still a one-day workshop and teachers really need much more assistance to fully understand both the benchmarks as well some content.

For more information, contact Connie Duncan, connie.duncan@bcmssc.k12.mi.us



BERRIEN COUNTY M/S CENTER

Spotlight on Professional Development

While the Center continues to support a number of professional development and curriculum efforts, there were four efforts in 2006-07.

County-wide Mathematics and Science Curriculum

First, the countywide mathematics and science curriculum was completed. The mathematics curriculum was piloted and the science curriculum was made ready for a pilot. Teams of teachers and curriculum directors took part in the development of the curriculum and continue to assist as necessary.

Michigan's Mathematics Grade Level Content Expectations

The second major effort involved the high school grade level course expectations. A series of sessions took place with the Center's consultants and groups of educators. The consultants also worked with individual schools to prepare for the new requirements.

Mathematics and Science Partnership Grant

Work continued through the Mathematics and Science Partnership grant with underachieving middle schools. Professional development was conducted in grades 4-8 with teachers and administrators.

Statewide Projects

Finally, the Center was actively involved in several statewide projects. Center staff assisted in the planning and delivery of the new High School Mathematics and Science Content Expectations.

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Capital Area Science/Math Center (CASM) Spotlight on Professional Development

HS-MASS

CASM participated in the statewide program to assist secondary math and science teachers understand and prepare students for taking the first Michigan Merit Exam (MME).

K-7 Science Grade Level Content Expectations Reviews

CASM organized and facilitated four review sessions of the newly released draft K-7 Science Grade Level Content Expectations (GLCE) in the CASM service area counties. Participants received explanations and review of the GLCE documents and were guided through the online survey process. CASM also provided materials for a fifth review in Ingham County.

Localized Professional Development and Assistance

The Center assisted local districts through participation in and presentations at science and math group work sessions, particularly in Ionia County. CASM continued to respond to needs of our constituencies by providing information and guidance at various local venues, including curriculum council meetings and local schools/districts (examples: Eaton ISD Instructional Leadership Team, Corunna Middle school science teachers, DeWitt High School math and science teachers).

Michigan Mathematics Leadership Academy (MMLA)

CASM sponsored a team of teachers, coordinators, and administrators to participate in MMLA training at fall and spring sessions. These were coordinated by the statewide MMLA program. Materials and information were then brought back and used/disseminated through various local venues as appropriate by team members.

Hands-On Science/Math Equipment Grant from Dart Foundation

CASM was awarded a grant from The Dart Foundation to increase the use of specialized hands-on equipment in science and mathematics instruction in CASM's service area. In 2006-07, Phase 2 of this grant was completed. A third and final group of upper elementary teachers participated in a two-day training on how to incorporate robotics technology into their instruction using Lego Mindstorm RIS systems. Teachers signed up to borrow CASM's classroom set of the Lego kits and lap top computers in 2-week periods. As in the previous year, the entire 2006-07 school year was booked for borrowing this equipment. Remaining funds from the grant went to support hands-on equipment in five local districts, including purchasing the equipment and providing funding for professional development to ensure proper use of the materials in classrooms.

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CENTRAL MICHIGAN S/M/T CENTER

Spotlight on Professional Development

Mathematics

- The SMTC partnered with MDE and 4 RESDs in project called Central Michigan Middle School Mathematics Academy to train 30 mathematics teachers in the 4 RESDs.
- The Central Michigan Middle School Mathematics Academy held follow-up mathematics workshops in the 4 RESDs including topics such as: Lenses on Learning, GLCE Math Clarification, Getting Ready for Algebra, Fraction Works, and Geometry in Focus.
- The SMTC informed and coordinated representatives from our two RESDs, which we service, to attend meetings sponsored by MMLA, and financial support provided for RESD's to offer local workshops.

Science

- NASA educational resources workshops provided in-service and pre-service teachers access to NASA resources and offered strategies for integrating mathematics, technology, and social studies with science.

Other

- The SMTC sponsored workshops for pre-service teachers and in-service teachers in academic areas of high interest such as writing, space, differentiated teaching in mathematics and Mission geography.

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DETROIT M/S CENTER

Spotlight on Professional Development

Goals: In Detroit, the focus of all professional development activities is on the use of data-driven decision making reflected by the needs of the learner. The Detroit Math and Science Center has management system elements in place that allow for the provision of professional development at the point of need. Through the use of the trainer of trainers' model, the Center is able to provide opportunities for teachers to solve authentic problems of practice generated from data garnered through the TerraNova norm-referenced test as well as MEAP data.

Planning process: All professional development is influenced by Michigan P.A. 25, including School Improvement Planning, the national and state standards in mathematics and science, MEAP, and state standards for Professional Development. Using these inputs, the District develops its PD programs and coordinates its PD plan through a district-wide committee. The development and design of the program is ongoing.

Types of professional development opportunities: The District has assembled an array of experiences that work in congruence to educate classroom teachers in effective mathematics and science education. Opportunities include university courses, district in-service training, statewide in-service networks, peer coaching, study groups, networking, mentoring, and the use of educative curriculum materials. In the past year, DPS provided course work to allow teachers to achieve the status of highly qualified.

Strategies:

1. The Center provided comprehensive ongoing professional development that was based on current research and incorporated teacher follow-up and support in order to improve student learning.
2. Data driven strategies were pervasive in professional development, instructional practice, and assessment including the collection, disaggregation, and analysis of student data so that patterns related to student achievement are in evidence.
3. Survey data were utilized to design district-wide sessions with incentives including stipends, continuing education units, kits, supplies, etc.
4. Mandatory professional development was enabled by state statute with an allowance for released time. The District developed protocols for use by each school to plan sessions in context.
5. Instructional Specialists were utilized to provide in-depth professional development in classrooms.
6. The Center focused on Collaborative Cultures where teachers work and learn together (e.g. grade level meetings, smaller learning communities, houses and clusters).

For more information, contact Nancy Varner, nancy.varner@detroitk12.org



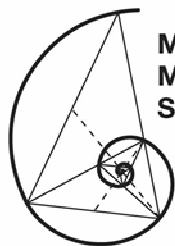
DICKINSON-IRON-MENOMINEE M/S/T CENTER Spotlight on Professional Development

The Center continues to serve as the primary source of professional development in the areas of mathematics, science and technology in the three counties served. There is no university in the service area. The teachers participated in the Michigan Mathematics Leadership Academy (MMLA) with the “Teacher of Teacher” model and Building a Presence in Science state and national initiatives.

Focus: The focus in 2006–2007 was mathematics. The web site and newsletters were used to distribute information. Workshops were spread over the course of the year. Testwiz was used to analyze strand and student data to pinpoint weak areas in curriculum alignment, assessment, and teaching practices as well as concepts most challenging to area students. Mathematics for Middle School Math Teachers (four days) covered assessment strategies, problem solving in algebra, and using manipulatives to cover the GLCE for 5th -9th grades. The two day AIMS workshop focused on hands-on activities to address the difficult concepts in the upper elementary and middle school grades in math.

Professional development also focused on curriculum alignment. Through a Federal Title II Part B Mathematics and Science Partnership Grant (second year), twenty area teachers also completed a Summer Institute conducted by STEM faculty at one of the three universities located in the Upper Peninsula.

For more information, contact Dee Benjamin, dbenjamin@diisd.org



**Michigan
Mathematics and
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EASTERN U.P. CENTER

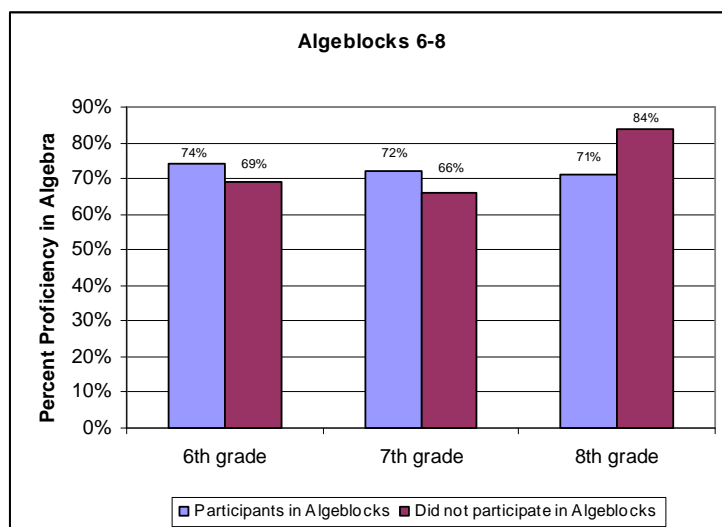
Spotlight on Professional Development

Regional math and science curriculum review team meetings. The establishment of teams has been key to systematically addressing regional concerns around curriculum, instruction, and assessment. Team members are lead teachers within their representative districts around math or science and have established a K-12 presence at the district level. Districts have at least one representative on each team with several districts appointing members at each grade span.

Three day Balanced Assessment Training. These sessions used Stiggin's balanced assessment model to introduce a group of 35 teachers to the comprehensive use of classroom, district, regional, and state mandated assessment pieces to improve student learning. A portion of the third day of training provided specific training on facilitation to better prepare participants to work at the district level with K-12 staff in each building/district. Data on the success of the program will be collected throughout the 2007/2008 academic year.

Manipulatives in the Mathematics Classroom grades 3-8. This training was a combined effort of the EUP Intermediate School District Special Education Dept and the MS Center. Teachers that participated first considered student expectations (GLCE's) and then found supporting, manipulative-rich lessons to support mathematical concepts that could be used at the individual, small group, or classroom level to address weaknesses. This training was provided in 2006/2007 and attendee's student performance data has been monitored for two years. Elementary and middle school teachers were invited to participate in the trainings. Given the success of the program, these trainings will be continued and expanded in 2007/2008.

In addition to the more broad manipulative trainings, the MS Center has provided training and materials in support of ETA's ALGEBLOCKS. Data to the right depicts classroom level student achievement data from teachers that participated in the trainings and those that did not. Given the evidence that use of ALGEBLOCKS increased student achievement at the 6th and 7th grade levels, these trainings will be



continued and greater participation among 8th grade and high school teachers will be encouraged.

Eastern U.P. Center continued...

Additional Professional Development Offerings:

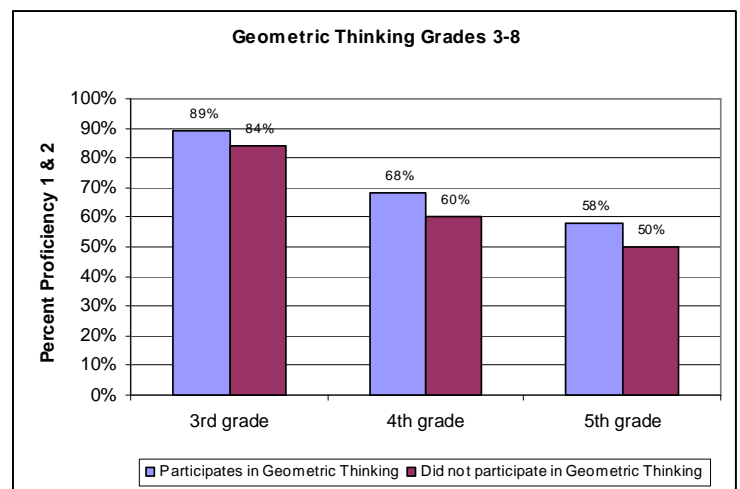
- Regional and district level data analysis sessions
- HS-MASS sessions for math and science teachers (four days each for math and science)
- Lesson study training with follow-up small group work (UP MSP project)
- District level work with K-7 science teachers on alignment of science curriculum
- Monthly meetings with principals and superintendents in region on issues related to improving math and science education.

Additional Outcome Data Provided:

Follow up data from Geometric Thinking

Training in 2005/2006 is provided in the graph on the right.

For more information, contact Michelle Ribant, mrribant@eup.k12.mi.us





GENESSEE AREA M/S/T CENTER

Spotlight on Professional Development

Helping teachers with the new GLCEs in math and science

GAMSC provided three separate workshops for teachers in Genesee County to roll-out the grade level expectations and help teachers implement them in their schools. We also teamed via technology to offer this roll-out to teachers in Saginaw, Shiawassee, Lapeer, St Clair, and Bay/Arenac counties.

Mathematics and Science Partnerships (MSP) Grants

GAMSC currently has two MSP initiatives, a lesson study grant and the Michigan Mathematics and Science Teacher Leadership Collaborative (MMSTLC). The lesson study grant is just finishing a successful year—valuable collaboration among teachers and STEM faculty, outstanding “in class” sessions for students, and a superior accumulation of units for all to use that have been successfully classroom tested. The MMSTLC grant is just beginning – GAMSC has trained four teachers and three STEM professors at three separate sessions of professional development and spent many planning hours (with more forthcoming) constructing a workable plan of action for Flint Schools. GAMSC has engaged in conversation with two teacher prep institutions in the area to try and arrange for student teachers as part of the program.

On-site and Ligon Outdoor Center (LOC) professional development

GAMSC offered a variety of professional development sessions for individual buildings either during a staff day for them or by taking them off site to LOC. These sessions were planned to cover specific content needs and better prepare teachers to help students perform on the MEAP. Writing in math and science was also a common topic of “discussion” during the sessions as most students do poorly on questions that require constructed response.

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GRAND TRAVERSE REGIONAL M/S/T CENTER

Spotlight on Professional Development

Professional Development:

- **M-GLAnCE Training:** 107 K-6 teachers learned research-based instructional strategies and activities aligned to GLCEs in mathematics, focusing primarily on the measurement strand.
- **Overview of Science HSCEs:** “Roll-out” of the High School Content Expectations in science; teachers studied the HSCEs, explored course configurations to meet the MMC graduation requirements, compared instructional materials and began or continued alignment of their current science curricula. Roll-Outs were also conducted for COOR M/S Center in Grayling, Char-Em ISD in Charlevoix, and Wexford-Missaukee ISD in Cadillac.
- **FractionWorks:** 25 upper elementary and middle school teachers were trained to use manipulatives from ETA/Cuisenaire to improve their students’ understanding of fractions.
- **AlgeBlocks:** 25 upper elementary and middle school teachers were trained to use manipulatives from ETA/Cuisenaire to improve their students’ understanding of algebra.
- **Regional Algebra I Trainings:** 5 county-wide sessions to discuss the Michigan Merit Curriculum requirements in mathematics, especially in terms of curricular alignment for districts offering HS algebra credit for their 8th grade algebra courses.
- **Pre-K “Making Math Fun”:** 44 pre-K teachers and daycare providers were trained in a variety of engaging mathematics activities.
- **Previewing the DRAFT K-7 Science GLCEs:** 30 teachers studied and discussed the GLCEs and provided MDE with specific feedback during the Web Review.
- **Leelanau County-wide Professional Development:** Coordinated collaborative work on course configurations, curriculum alignment, and interpretation of MEAP Assessment Item Analysis data for teachers from Suttons Bay, Glen Lake, Leland, and Northport.
- **Water Watch Teacher Training:** Teachers trained to use materials and methods to evaluate chemical and biological parameters in freshwater ecosystems.
- **HS-MASS:** 32 teachers were trained in “data analysis” to help their students taking the ACT portion of the Michigan Merit Exam. Also provided HS-MASS training for COOR ISD at Kirtland Community College in Roscommon.

For more information, contact Tom Wessels, TWessels@tbaisd.k12.mi.us

REGIONAL M/S CENTER (GVSU)

Spotlight on Professional Development

Science: In a year when the environmental status of our planet is under intense scrutiny and public discussion, the RMSC offered a wide range of teacher professional development around environmental education, ecological issues, and how to engage students in field research.

- Ninety-four teachers attended the Michigan Environmental Education Curriculum Support (MEECS) workshops that were held during the 2006-2007 school year. The Center personnel lead the workshops and helped disseminate the materials that were part of a program developed by the Michigan Department of Environmental Quality. The combination of targeted professional development and well-developed hands-on activities for students motivated teachers to incorporate more environmental education in their classrooms. One teacher wrote, "I plan to start the new school year with the environmental issues."
- An intensive one-week workshop trained 25 teachers in GLOBE protocols and inquiry-based classroom materials. The GLOBE program enables teachers and students to collect environmental data using uniform instrumentation and report it to a world-wide database that is accessible for global environmental research. Teacher comments included:
 - "Thanks for giving me hands-on applications through GLOBE to use with my students-- will make them feel like they are working for a greater purpose."
 - "I am planning to have my students use more inquiry and more activities. I would like to see them take more ownership in their own learning."
- A three day JOI Ocean Core Workshop was hosted this June on the GVSU campus for fourteen teachers. The teachers from around the state were given the opportunity to spend time exploring a multidisciplinary approach to earth science education using real ocean core data and participating in science field work with one of the GVSU Geology professors. Overall, participants indicated a 36% increase in their confidence to develop a field experience that involves having students collect, record data, analyze, and interpret data from local sediments.

Mathematics / Technology: Professional development offered in mathematics at the high school level focused on providing teachers with the content knowledge and teaching strategies to meet the HSCEs in Probability and Statistics. As a result of the TI-84+ training provided by collaboration between the Network and Texas Instruments, Grand Rapids Public School teachers received professional development on ways to teach students how to use new TI-84 calculators (purchased by the district for all juniors) on the MME. At the elementary level, the RMSC connected Sherwood Park K-8 school with faculty in both mathematics and technology to assist in the implementation of Everyday Math.

Teacher Leadership: The major thrust of our work around teacher leadership this year is taking the program that we have run for the past 6 years to the state level through a collaborative grant with Saginaw Valley State University and the University of Michigan. The Michigan Mathematics and Science Teacher Leadership Collaborative is in its pilot year.

For more information, contact Karen Meyers, meyersk@gvsu.edu

HILLSDALE-LENAWEE-MONROE M/S CENTER

Spotlight on Professional Development

Professional Development programs aligned with Michigan Curriculum Framework and Grade Level Content Expectations have been an important focus for HLM M/S Center in 2006-2007. Many were supported by grants and partnerships.

- **High School Math and Science Success workshop series:** Funded by the Section 99.6 grant from the School Aid Act of 2006, this workshop series of four half-days was offered in Hillsdale, Lenawee, and Monroe counties. With a goal of helping teachers to prepare students for the Michigan Merit Exam, this series helped to familiarize teachers with the new High School Science Content Expectations and the Michigan Merit Exam in sessions one and two. Session three and four focused on strategies to teach data analysis and interpretation as well as implementation and assessment of a teacher-designed instructional intervention aimed at improved student achievement.
- **Department of Environmental Quality “Michigan Environmental Education Curriculum Support” (MEECS) Training Series:** Continuing for the 2006-2007 school year, HLM MST offered three MEECS Curriculum Unit workshops: 1) Land Use – August 10, 2006, 13 participants, 2) Energy Resources – November 9, 2006, 19 participants, 3) Ecosystems and Biodiversity - December 5, 2006, 26 participants.

Each MEECS curriculum unit consists of lesson plans focusing on hands-on student participation, aligned with Science and Social Studies content standards and MEAP assessment. Each workshop participant received a Curriculum Kit that included a binder of lesson plans, background information for teachers, materials for hands-on activities and experiments, pre- and post-tests, colorful posters and worksheets, CD-ROM with electronic versions of the unit (including extension lessons), supplemental resources, and PowerPoint presentations.

- **Biotechnology on a Shoestring:** In partnership with the Lenawee Intermediate School District, this program helped secondary teachers bring biotechnology into their classrooms with very a low budget. There were 7 participants.
- **K-7 Science Content Expectations Draft Review:** Offered at sites in all three counties, this half day workshop provided a forum for discussion with colleagues in their grade span, followed by an opportunity to complete the MDE survey. 24 teachers participated.
- **5 Content Standard Strands of Math for Middle School:** A series of three six hour workshops conducted by Kathy Berry of Monroe Intermediate School District - 97 teachers participated.
- **Leaping the MEAP in Middle School Mathematics (5th-8th):** Workshop in late August to help teachers kick-off the school year by imparting an enthusiasm for learning math while providing review for the assessment tests - 13 teachers participated.

Powerful Strategies for Teaching Mathematics: Using research-based best practices for teaching math to middle school students, this three half-day series gave teachers more tools for improving student achievement. This program had 11 participants.

For more information, contact Pam Bunch, Pam.Bunch@lisd.us

HURON M/S/T CENTER

Spotlight on Professional Development

Student Achievement Model. Thirty-two Teacher Leaders engaged in 14 days of intensive training on instructional best practice, leadership, and mathematics content. Participants studied topics including:

- Michigan Teaching and Learning Standards
- Positive Behavior Support
- 90-90-90 Schools Program
- Classroom Instruction That Works
- Change Theory and Systems Thinking
- Adult Learning Theory
- Implementation—Roles and Responsibilities
- Facilitating Teams
- State and National Standards
- NCTM Focal Points
- Effective Instructional Sequence
- Universal Screenings and Progress Monitoring
- Local and Standardized Assessments (NWEA, Terra Nova, Etc.)
- Classroom Assessment

Superintendents and principals from the 15 participating districts also participated in multiple training sessions.

Curriculum Academy. Hosted a four-day summer Curriculum Academy for K-12 teachers across the county. Teachers developed instructional plans in core content areas including math and science; HMSC staff delivered grade-specific pull-out sessions on content topics and instructional strategies specifically targeted to low-performance benchmarks. Participants also explored the Michigan Merit Curriculum and requirements of the Michigan Merit Exam.

MEECS/Leopold Project. Sponsored MEECS and Leopold Project training for teachers across the county. The 3.5-day training was well received, and feedback was very positive.

NASA. Hosted a day-long training for teachers with NASA's Educational Outreach program. Teachers were updated on NASA and its many ongoing and new missions/programs. Participants experienced hands-on activities pertaining to Earth and Space sciences.

JASON Expedition. Hosted an after-school training to update past JASON teachers and introduce new teachers to the JASON project's new format. Sample activities were modeled and discussed as teachers experienced the 2006 JASON curriculum while also learning and navigating JASON's vast website.

For more information, contact Scott Whipple, swhipple@hisd.k12.mi.us

JACKSON COUNTY M/S CENTER

Spotlight on Professional Development

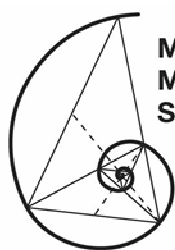
Elementary Science Improving Teacher Quality (ITQ) Grant (2004-2006): In June of 2006, the Center concluded a two-year, three-phase elementary science program with Jackson Public Schools (some of which have high priority status), and five other districts. The program included curriculum alignment, production and use of effective assessments, strengthening teachers' science content knowledge, and ongoing support within classrooms for teacher collaboration and implementation of new curricula and instructional practices.

Grades 6-10 Math ITQ Grant (2004-2006): In June of 2006, the Center completed the final phase of a sustained professional development program for grades 6-10 mathematics teachers. This two-year project included curriculum alignment, strengthening teachers' pedagogical content knowledge, production and use of effective assessments, and on-going support within classrooms for teacher collaboration and implementation of new curricula and instructional approaches.

JPS Grades 5 – 12 Science ITQ Grant (2005-2007): The Center concluded a two-year, three-phase middle school/high school professional development program for 5th through 12th grade science teachers and administrators in the Jackson Public School District, a high priority district. The program included the alignment and articulation of elementary science curriculum with the state benchmarks, production of effective assessments, strengthening teachers' science content knowledge, and ongoing support within classrooms for teacher collaboration and implementation of new curricula and instructional practices.

T³ Teacher Leader Cadre (2006-2007): The Center was a regional training site for the Texas Instruments Teachers Teaching with Technology (T³) Teacher Leader Cadre. Teachers learned how to use the graphing calculators and data collection devices to enhance student learning of algebra (June-December 2006). The Center supported teachers from local districts to participate in this program, and three of these teachers were from the Middle School at Parkside, Jackson Public Schools (a high priority school). In turn, these same teachers have now become teacher leaders in Jackson County, designing and presenting a 4-day series of graphing calculator professional development sessions for middle school mathematics teachers (June - August 2007). Two of these teacher leaders from Jackson Public Schools have also led graphing calculator professional development for teachers in their own district.

For more information, contact Jen Nimitz, jen.nimitz@jcisd.org



**Michigan
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KALAMAZOO AREA M/S CENTER Spotlight on Professional Development

The professional development focus for the 2006-2007 school year was centered around Michigan Mathematics Leadership Academy and the implementation of the content expectations in science and mathematics. A cadre of teachers was trained on MGLanCE (Michigan Grade Level and Content Expectations.) Teachers from the KAMSC service area were involved in professional development in mathematics and high school science related to the grade level content expectations and course sequencing.

For more information, contact Brenda Earhart, bearhart@kamsc.k12.mi.us

LAPEER COUNTY M/S CENTER Spotlight on Professional Development

With a new director in place at the end of August, and no previously scheduled professional development sessions, the Center focused on state-level projects, state math and science HSCE rollouts, and facilitating 7th and 8th grade math workshops to utilize the 99b grant money. During the 7th and 8th grade math in-services, teachers analyzed MEAP data and focused on algebra concepts, and how to use graphing calculators in the classroom.

For more information, contact Laura Chambless, lcambless@lcisd.k12.mi.us



LIVINGSTON/WASHTENAW M/S CENTER Spotlight on Professional Development

Michigan Oil and Gas Producers Education Foundation (MOGPEF), Livingston/Washtenaw Mathematics and Science Center, and the National Energy Education Development (NEED) Project sponsored the Mid-Michigan Energy Education Workshop where K-12 teachers learned about energy in a fun, exciting, and resource-rich setting through activities that were correlated to Michigan science objectives. Participating teachers were able to use NEED Science of Energy Kits as well as kits that taught the concepts of force, motion, light, sound, heat, electricity, magnetism, and energy transformations through hands-on activities. In addition, teachers had an opportunity to hear an experienced field petroleum geologist speak on oil and gas exploration in Michigan and the environmental safeguards that are employed.

LAWMASC again partnered with WISD, Ann Arbor Public Schools, Howell Public Schools, Lincoln Consolidated Schools, Manchester Community Schools, Milan Area Schools, and the publishers of the Everyday Math Program to provide the Everyday Math Conference in August, 2006. Over 120 teachers participated in the three day conference.

LAWMASC provided the "Animal Classifications" workshop (aka Classroom Critters) to 26 teachers from schools in Livingston and Washtenaw Counties.

Eighteen middle school teachers participated in the "Middle School Math Institute – Improving Instruction in Geometry and Algebra." A study completed with a core group of teachers from a Washtenaw County school, in conjunction with Wayne RESA and supported by the Michigan Department of Education, showed content knowledge improvement in teachers participating in math institutes. In addition, Washtenaw Intermediate School District provided lesson study for this core group. Initial examination of data collected shows that the combination of lesson study and math institutes improved instruction.

For more information, contact Nicole Garcia, ngarcia@wash.k12.mi.us



MACOMB COUNTY M/S/T CENTER Spotlight on Professional Development

The Macomb ISD Mathematics, Science and Technology Center serves 21 school districts encompassing well over 200 schools with almost 8,000 teachers and over 2,500 non-professional building staff. Until recent years, the approach to science and mathematics curricula has varied widely from district to district. As a result, professional development was often undertaken with a shotgun approach, with limited coordination in terms of what was taught at particular grade levels. With the implementation of the recommended County Core Curriculum and work with each district in aligning their mathematics and science instruction to the Michigan Curriculum Framework's Standards and Benchmarks, professional development activities are now focused on specific grade level benchmarks. Staff development activities are designed to train teachers in the use of leading edge educational materials and implementation of innovative instructional practices linked to the required benchmark content.

Technology for teachers was a big part of the Center's professional development efforts this year. We conducted sessions on using GPS (Global Positioning Systems), Lego Robotics, mathematics software, graphing calculators and computer data collection hardware. In all these training sessions materials are either given to teachers or made available for loan.

The completion and continued implementation of the M-GLAnCE program was another major undertaking embraced at the Macomb Center. The Mathematics Grade Level Assessment and Content Expectation program provides professional development for K-8 teachers focused on development of grade level assessment and the Content Expectations. Along with this project the mathematics consultants completed the Macomb County Mathematics Curriculum Guide. This K-12 curriculum guide encompasses Grade Level Content Expectations and is meant to be used in conjunction with the M-GLAnCE project. School districts align to the countywide curriculum and then participate in M-GLAnCE to provide the necessary professional development for instruction and assessment of the Grade Level Content Expectations.

For more information, contact Paul Drummond, pdrummond@misd.net or Mike Klein, mklein@misd.net



MANISTEE, WEXFORD-MISSAUKEE M/S CENTER Spotlight on Professional Development

This year the Manistee, Wexford-Missaukee Regional Math/Science Center has been digging deeper into Grade Level Content Expectations and Data Driven Decision Making. Projects that started in 2004 are now being fully implemented and into effective school practice.

Manistee, Wexford-Missaukee Regional Math/Science Center continues to change professional development past practice into best practice. We continue to move from stand alone, center-based professional development to professional development that more closely aligns with effective professional development research. We are developing ongoing research-based professional development for our Math Teachers. We are very excited about our Math Network groups that continue in both Manistee and Wexford-Missaukee ISD. We are aware and believe in professional development being within the context and process of classroom instruction. We bring together math lead teachers from each district and building at least five times per year. During our Math Network groups we review and analyze data. We align, pace, and then set priorities, conduct research on scientifically based best practice, schedule professional development, implement, and then go back to review and analyze data.

The lead Math teachers are expected to go back to their local districts and buildings and share information, provide leadership and instruction for implementation. We are building capacity for support within the buildings and modeling effective continuous school improvement through this model. Our facilitators have received training in Professional Learning Communities and effective school practice. We will continue to work with Strategies That Work training for both Math and Science network teams this year.

We continue to provide the data packet to analyze Math and Science progress. Manistee Regional Math/Science Center has provided the content and strand data analysis for both Math and Science. This information has been brought to the Math Network Teams and taken into each building to share and analyze. This was our third year in providing this service. We are now seeing utilization of the charts and monitoring the adjustments being made to achieve higher student success. The local districts have extended their appreciation for the service.

We are seeing positive results and successful outcomes; assessment data analyzed; using a team approach to research and understanding of scientifically based research. We predict growth in student achievement because of the ongoing work with the leadership group.

For more information, contact Karen Mlcek, kmlck@wmisd.org

MASON-LAKE OCEANA M/S CENTER

Spotlight on Professional Development

With all the changes in the state graduation requirements and the new High School Content Expectations, a heavy emphasis was placed on professional development at the high school level. Many teachers commented on the quality of the professional development offerings this year and the vast number of different opportunities for learning. The assessment writing process that was performed in conjunction with the Northern Michigan Learning Consortium proved to be especially beneficial to teachers. The Community of Learners workshops have generated more cross-district dialogue.

Mathematics

- Community of Learners (K – 2, Middle School and High School)
- M-GLAnCE Training (K – 8)
- CPS Training (K – 8)
- AlgeBlocks (Middle School)
- Hands-On Geometry (Middle School)
- Using the Internet to Teach Mathematics (Middle School and High School)
- Using the TI-84+ Silver to Teach Algebra and Geometry Expectations (Middle School and High School)
- Common Assessment Item Writing Training (Middle School and High School)
- Northern Michigan Learning Consortium (Algebra II Focus Area)
- Probability and Statistics for the High School Content Expectations (High School)
- Updates on the Michigan Merit Examination and High School Graduation Requirements (High School)
- Curriculum Mapping, Scope and Sequence of Courses, and Unit Development with an Underachieving District (Middle School and High School)
- Incorporating General Education Concepts into Career and Technical Education (High School)
- Analyzing NMLC Assessment Data (High School)
- Participation in MMLA Workshops (Elementary, Middle School, and High School)

Science

- Web Review (K – 7)
- Community of Learners (Middle School & High School)
- Updates on the Michigan Merit Examination and High School Graduation Requirements (High School)
- Summer Science Institute (High School)
- Curriculum Mapping, Scope and Sequence of Courses, and Unit Development with an Underachieving District (Middle School and High School)

Leadership Professional Development for Administrators

- Using NovaNet and Education 2020 to Keep Students on Track to Graduate
- High School Reform: From Theory into Practice, Meeting the Needs of 21st Century Learners
- West Shore Academy Update to Superintendents and High School Principals
- Deal or No Deal with Middle School Mathematics

For more information, contact Kathy Surd, ksurd@mlisd.k12.mi.us



MECOSTA-OSCEOLA M/S/T CENTER Spotlight on Professional Development

Math/Science Center Outreach Coordinator Sharrie Parke continued to work with the staff of our ISD's US-10 Corridor Schools. These three schools, Ashmun School at Eagle Village, Muskegon River Youth Home and Pineview Homes, serve a statewide population of juvenile delinquent youth, some under strict lock-up. Sharrie spends several days a week working with these teachers and their students doing "embedded professional development" and working side-by-side with the staff to involve students in new ways to use technology in the core subjects. This type of professional development has enhanced her effectiveness when she works with teacher-only groups as she has maintained a REAL connection to the classroom and has amazing success stories to share. "If I can do **this** with delinquent youth, imagine what **you** can do in your classroom!" Through some federal grant monies, the schools' computer labs were upgraded, and some additional resources such as Smart Boards, digital cameras, scanners and Electronic Response Units were added.

In addition to the project-based technology PD activities, Sharrie has been actively involved in trainings through our REMC, specifically serving as our regional "Video Streaming" expert. Her background in Library/Media makes her a great asset to area educators as she has the ability to help teachers find resources to "liven up" their presentations to make them more RELEVANT. She was also the primary contact/resource person for our ISD staff technology requirement. (All professional staff was required to create a PowerPoint Presentation about their work with the organization).

Additionally, mathematics coordinator Laurie Tomczyk, continued her work with the MMLA. She is involved in the planning committee as well as conducting the workshops the committee creates. She also assisted with the ISD-wide DATA Project which helped schools see areas of weakness' in mathematics that guided our professional development activities.

For more information, contact Mary Ann Robinson, mrobinson@moisd.net

MAISD REGIONAL M/S CENTER

Spotlight on Professional Development

The following example demonstrates the commitment of the MAISD Regional Mathematics/Science Center (MRMSC) to provide extended opportunities for teachers to engage in content-based, practice-based, and research or evidence-based professional development.

The DTE Energy Freshwater Institute is a collaboration between the Great Lakes Water Studies Institute at Northwestern Michigan College, MAISD Regional Mathematics & Science Center, and Muskegon Conservation District.

The Institute features rich content, hands-on learning, collaboration, and community-based projects about water resources. The program has three main components:

1) Summer Academy

Teachers participate in a 4-day summer academy at the MAISD Regional Math/Science Center (MRMSC) and at a variety of local field locations. The academy combines classroom, laboratory, and content-rich field activities and has three areas of focus:

- Water resources and watershed management: Teachers learn about local water resources and science principles that apply to the study of water and watersheds. Visits to community environmental project sites and dialog with experts in the field are features of the Institute.
- Place-based education (PBE): Teachers learn to use PBE to increase student engagement and achievement. Teachers work with key community stakeholders to forge productive partnerships. As a tangible product of the Institute, teachers design a community-based project to implement with their students.
- Inquiry-based teaching and learning: Teachers examine resources provided at the Institute and explore ways to incorporate inquiry into instruction.

2) Place-Based Education Project

During the 2006-2007 school year, teachers and their students further developed and implemented place-based projects that have special relevance in their communities. Place-based projects achieve curricular goals, while increasing student engagement and achievement through authentic field experiences, school-community partnerships, and community service.

3) Dinner & Dialogue Sessions

Four Dinner & Dialogue follow-up sessions during the academic school year provide on-going support for Institute participants and their community partners. Teachers refine their PBE practices and strengthen their connections with support providers in the community.

Teachers from seven districts completed the 2006-2007 Institute. A second cadre of teachers began the 2007-2008 Institute by completing the June 2007 Summer Academy.

For more information, contact David Krebs, dkrebs@muskegonisd.org

NORTHWOODS M/S/T CENTER

Spotlight on Professional Development

Educators in the Delta-Schoolcraft Intermediate School District's (DSISD) twenty five schools engage in content knowledge professional development each year sponsored by the Northwoods M/S/T Center (NMSTC) in a coordinated effort with other General Education staff. Educators are faced with the task of preparing students for a future in an information age. More than ever, students need to develop their higher-level thinking and problem-solving skills. One hundred percent of K-12 teachers in the service area participate in at least two full days of training each year. NMSTC is in its seventh year of offering these types of teacher workshops. Workshops are held in three main areas to limit the amount of travel and complexity of large group logistics. The workshops also include time for teachers to work on curriculum projects together as a school staff. The workshops are lead by teams of teachers and are funded in part through a collaborative effort of general education grants (including the Michigan Mathematics Science and Technology Centers Program grant, NewPage corporation grant, Safe Schools & Healthy Students grant, Teaching American History Grant, Carol M. White Physical Education Program grant, and LEA grants from our school districts).

The Teacher Leader Model of Professional Development. Through our professional development process, 100% of the teachers, plus support staff, are offered professional development tailored to grade level and content needs. The bulk of the training is provided by a cadre of teacher leaders who receive additional training in curriculum, technology, and leadership. These teachers represent all of our schools, core subject areas, and grade levels. They travel to conferences and workshops, develop units and lessons, try them in their classrooms, and then present their ideas to the other teachers. The professional development NMSTC offers builds this core of teachers' skills in adapting their own professional learning to their teaching needs and in turn offering what they have learned to others. They prepare training specific to grade and content levels. The "teachers teaching teachers" model provides professional development to large numbers of teachers in a cost-effective manner. In addition to training, schools receive materials to support the lessons.

The workshop series begins in the fall. In the winter, the groups participate in another professional development series. The theme for the two workshops is based on needs identified by the schools in the previous year. The workshops were lead by teacher leaders who were trained in a series of leader training sessions provided to administrators and teachers in the winter and summer. Follow-up sessions on curriculum work sessions with stipends for the curriculum work provided through the grants mentioned above.

The NMSTC staff coordinates and supports these professional development days each year. The teachers also receive in-depth training by attending workshops and conferences. Follow-up sessions for working with the online curriculum tool were offered after the workshops as after-school sessions or with stipend and substitute monies provided. Our staff is involved in the coordination of the workshops and follow-up sessions, training the teacher-leaders who lead the grade-level sessions, and coordinating with schools and districts. NMSTC organizes aspects of the coordination by participating in frequent planning meetings, problem-solving challenges that arise in workshop sessions, processing management of the workshops, and monitoring team timeline tasks. School personnel involved in coordinating these workshops with our Center include technology coordinators, superintendents, principals, and teachers. Clerical support for workshop organization is provided by assistants sending memos and correspondence, developing workshop packets, and organizing materials. Accounting services include teacher leader reimbursements and workshop purchases. Costs of the workshops are provided through grants and involve travel and stipend costs for the teacher leaders, material costs, mailing costs and costs of staff time. The staff must also pursue grant-funding and monies to support the training.

For more information, contact Tom Abramson, tabramson@dsisd.k12.mi.us



OAKLAND SCHOOLS S/M/T CENTER

Spotlight on Professional Development

Science Education

- Utilizing the nationally developed program model for Operation Physics that addresses 13 concept areas in physical science, the OSMTech Center offered a series of 11 professional development workshops for 4th -10th grade teachers.
- Following a similar format as the Operation Physics PD series, OSMTech Center Staff developed and implemented a Life Science and Earth Science (Operation Life Science, Operation Earth Science) series based on the content (standards and benchmarks) of the MCF for Science.

Mathematics Education

- By leveraging partnerships and focusing on resources, the Oakland Schools Mathematics Education Resource Center (OS MERC) provided a comprehensive selection of high-quality professional development programs with greater range and depth to K-12 teachers working to improve mathematics achievement. The Formative Assessment PD targeted grade 3-8 teachers and was designed with high priority schools in mind. Teachers from each of these districts attended regularly and used the quarterly common assessments throughout the year. The common assessment development took over 200 hours and the expertise of nearly 50 people across the county. The assessments are now on-line and available to every teacher in the county free of charge.
- The mathematics content courses were the result of a partnership with the University of Michigan-Dearborn. OS MERC staff collaborated on the curriculum development and facilitation. University of Michigan-Dearborn provided some tuition discount incentives for participants.

Highly Qualified Teachers

- The OSMTech Center offered professional development hours and SB-CEU's to assist teachers in addressing their highly qualified status.

For more information, contact LaMoine Motz, lamoine.motz@oakland.k12.mi.us



SANILAC COUNTY SCIENCE AND MATHEMATICS CENTER

Spotlight on Professional Development

Developing leaders in mathematics and science

- For the seventh year, the Sanilac County Science and Mathematics Center hosted a Science Teacher Leader Academy where representatives of each K-12 building in the county participated in a series of sessions focused on inquiry-based science and data analysis.
- Likewise, Mathematics Teacher Leader Academy, in its sixth year, offered teachers an opportunity to attend sessions designed to develop math leadership and improve mathematics instruction. This group also addressed alignment with Michigan's Grade Level Content Expectations for mathematics, and incorporated Michigan Math Leadership Academy information in each session.

We hosted four sessions of HS MASS during which Sanilac County teachers participated in reviewing draft Michigan High School Content Expectations for mathematics and science and developed strategies for student success.

For more information, contact Deborah Wild, dwild@sanilac.k12.mi.us



GLENN T. SEABORG M/S CENTER

Spotlight on Professional Development

Mathematics-Science Partnership (MSP) Grant "Building Bridges": Middle and High School Mathematics:

This was the second year of this grant for Upper Peninsula middle and high school mathematics teachers. The grant is a regional effort with participation from approximately 100 teachers, all five U.P. mathematics and science centers, and the area's three universities. Only one teacher of the Seaborg Center's original group of 22 declined to participate in year two of the grant, while two others were laid off due to staff reductions. The remaining 19 teachers continued to explore "best practices" through lesson study and increase their content-knowledge through summer workshops or courses. Due to the new high school course content expectations for mathematics, teachers expressed increased concern about Algebra instruction for all students. This was a major focus of lesson study, as well as the topic of Northern Michigan University's summer institute.

Although the grant ended in August 2007, most of the participating teachers would like to continue their involvement with lesson study activities. The grant has helped to form leadership alliances and learning communities that will last into the future. Participating teachers have presented their lesson study activities at the 2006 Fall Conference for Educators, as well as at other workshops, and they have attended other professional development conferences, such as the Michigan Council of Teachers of Mathematics (MCTM).

Michigan Environmental Education Supplements (MEECS):

Local teachers have been extremely enthusiastic about the quality of materials provided by these curriculum supplements. Due to their popularity, the Seaborg Center sponsored a final set of workshops in the fall of 2006 on each of the units: Water Quality, Air Quality, Ecosystems and Biodiversity, Land Use, and Energy. Sixty teachers attended these five sessions, as well as an additional nine teachers who attended a two-day Ecosystems course this summer. Environmental education is a strong point of our local districts, as well as an area of emphasis at the Seaborg Center and Marquette-Alger RESA.

For more information, contact Debra Homeier, dhomeier@nmu.edu



SEE-NORTH

Spotlight on Professional Development

The Michigan Mathematics and Science Teacher Leadership Collaborative has received most of SEE-North's attention and effort in professional development during the past year. This project, which is funded with federal dollars, provides support on several levels to improve middle school math and science teaching and learning.

Two teachers, Brandon Inglehart (a science teacher from Boyne Falls) and Judith Falk (a mathematics teacher from Gaylord), are the initial beneficiaries of this project, but the impact of MMSTLC will be felt far beyond their two classrooms. Both Brandon and Judy participated actively in MMSTLC Institutes and have developed ambitious plans for their own professional development, which will be supported by grant dollars and by SEE-North's Mathematics and Science Centers Program grant. Brandon and Judy will take a sabbatical leave in Winter 2008. During that time, they will work with colleagues in their own and each other's schools and will also collaborate with SEE-North to develop ways to expand the impact of their work to SEE-North's five-county service area.

Inglehart teaches in Boyne Falls — he IS the middle school science department there! He plans to work with SEE-North and its constituent ISDs to convene a professional learning community of middle school science teachers. He will also attend at least one nationally-known institute on inquiry-based teaching (most likely at the Exploratorium in San Francisco) and will then share what he has learned with others in the region.

Falk plans to spend time observing "master teachers" in mathematics, and will also work intensively with educators in both middle and elementary schools to promote rigorous, relevant teaching and learning in mathematics.

As part of MMSTLC, SEE-North was required to convene a team that included the two Teacher Leaders, their administrators, representatives from intermediate entities, and STEM faculty. This collaboration has been very positive and powerful, and has already resulted in several parallel efforts, including: a) a HSCE workshop offered during Char-Em's Summer Institute for teachers; b) additional HS-MASS workshops offered in Fall 2007 in local school districts; and c) collaboration in advertising an unexpected vacancy for a science teacher in Boyne Falls.

For more information, contact Marty Samson, martys@seenorth.org



ST. CLAIR RESA M/S CENTER

Spotlight on Professional Development

Professional development was a major priority during 2006-07. A large effort was conducted with high school mathematics and science teachers on both county-wide professional development days. The HSCE's were visited in depth and the structure of the MME was shared with all teachers as well as effective techniques for teaching the mathematics and science content they call for.

At the middle school level, graphing calculators were given to teachers and they were trained in their use during both county-wide professional development days. A county-wide bid was submitted to vendors for the purchase of graphing calculators and all districts purchased calculators for use in the middle schools. We feel this helped with the MEAP performance because, in the process of learning to use the calculators, the teachers were exposed to content, especially algebraic, they need to teach as called for in the GLCE.

During the county-wide professional development days middle school science teachers were given MEECS materials along with the professional development they needed to put the units into practice in their classrooms.

At the elementary level, mathematics sessions by grade level were provided on the first day by experts from around the State. Teachers received materials and ideas they could take back to their classroom the next day. The second day for elementary was focused entirely on ELA rather than mathematics or science.

St. Clair County RESA employs an elementary mathematics consultant and an elementary science consultant. These two individuals spend 80% of their time in schools with teachers presenting model lessons, one-on-one and small group professional development. All of the combined professional development from county-wide efforts, local district efforts and Project PROM/SE have had an impact on MEAP scores in both mathematics 3rd-8th grades and science 5th and 8th grades with all districts at or above the state average for the past two years.

We also conducted three different professional development sessions for teachers to review and discuss the new Science GLCE as well as complete the survey from MDE for input.

For more information, contact Terry Parks, tparks@sccresa.org

SVSU REGIONAL M/S CENTER

Spotlight on Professional Development

Strategies to continue to offer high quality PD: The M/S Center has developed a PD model for teacher and student support for high-need, low achieving districts through a Title IIA grant. Three years of support for Bridgeport-Spaulding School District and two years of support to Saginaw Public School District have resulted in significant PD growth of their teachers and improved student performance in mathematics and science. This model is now being expanded to include the Buena Vista School District in Year Three. The Title IIB Grant is a partnership with Saginaw, Bridgeport-Spaulding, Carrollton and Bay City School Districts in mathematics education that will impact more than 100 3rd-5th and 6th-8th mathematics teachers in those districts continued.

The Title IIB Science Grant impacted about 90 science teachers from 14 districts in the five counties (four ISD's) surrounding the Mathematics and Science Center with significant PD delivered by University STEM faculty. This support will continue through the summer of 2007. This grant also has a major impact of hands-on science delivered to the students of the teachers trained in this program. (Akron-Fairgrove, Bay City, Bridgeport-Spaulding, Buena Vista, Bullock Creek, Caro, Cass City, Mayville, Millington, Pinconning, Standish-Sterling, Unionville-Sebewaing and Vassar School Districts)

Continuing Programs: We continue to support the Michigan Mathematics Leadership Academy (MMLA) with a trained team and local dissemination efforts. Modules are still available for check out on a cost basis, as well as provision of mathematics and science night programs (for parents, teachers, and students) to area schools at reasonable fees.

Graduate and Undergraduate Teaching Programs: The Center continues to provide summer PD workshops that lead to a Master of Arts in Teaching Natural Science Degree program with the emphasis on content. This past year, the Center had over 397 teachers participate in 27 content workshops for which they could obtain graduate credit. There are over 100 graduates of this program teaching in our area with over 100 actively involved in the program. There is also an undergraduate program to enrich the hands on experience of future teachers in mathematics and science with alignment to Michigan Science and Mathematics Benchmarks sponsored by the Center.

Staff Reductions: Professional Development (PD) Services at the Center have been severely impacted by the reduced funding. The mathematics and science educators are available for Center services only 10% of their time. The Teacher Specialist Program was resurrected because of successful grant funding and has continued to be a major PD activity that prepares teacher leaders to assist their home districts.

For more information, contact Walter Rathkamp, rathkamp@svsu.edu

WAYNE RESA, M/S CENTER

Spotlight on Professional Development

The Wayne Mathematics and Science Center's school districts' have an overwhelming interest in the "Algebra for All" initiative, which began in the fall of 2006. We had participants from 28 of our 34 districts and from several public school academies in five separate options, 30 hours each. We applied for a \$200,000 grant with Toyota, they looked at our project, recognized the benefit for Wayne county, and awarded us the grant to continue the program. As a result, we will be able to provide sustained professional development for these high school and middle school teachers involved in working with algebra for all students! We will be able to continue to have programming for teachers who have already participated as well as for teachers who were unable to attend the sessions the first time.

We reflected on some positive changes we saw for mathematics instruction in Wayne County high schools. When we tried to consider what led to these changes, we identified a number of possible factors. The first thing that came to mind was the experience working with this large group of mathematics teachers in "Algebra for All." We felt it was extremely positive that these teachers came in district teams and had the opportunity to talk and work with their own colleagues as well as those from other districts. Another factor was the previous work with middle school teachers and the middle school to high school transitions project. In one of our districts, a fairly large cadre of middle school teachers had done a great deal of mathematics institute work in previous courses with our higher education partner, the University of Michigan – Dearborn, (UM-D). We have worked for three years with grades 4 - 8 teachers in Highland Park and Hamtramck through a MSP grant using UM-D institute courses and coaching. We gathered teams (2 middle school teachers and 2 high school teachers) from three of our districts for the transitions (middle school to high school) project to do modified lesson study. The middle school teachers working in this project had used a reform curriculum and were confident in their mathematics and their instruction. This led to a strong, positive exchange of thoughts between the two levels, as opposed to a discussion during which the middle school teachers defer to what the high school teachers say should be done or in which they get blamed for failing to prepare the students. Throughout this process the mathematics team continued to meet with districts to work on their mathematics curriculum and talk about the impact of the grade level GLCEs and the HSCEs. We shared national and local research about text materials and student performance.

We are observing many districts utilizing a more constructivist/inquiry-based approach to mathematics instruction as a result of our approach to professional learning. A number of districts have expressed interest in using Carnegie Learning's software for the new challenge of algebra for all. Wayne RESA purchased a county-wide license for Carnegie Learning and is making that available to all of our school districts. We are certainly not there yet, but it is gratifying to hear people talking about the increased engagement and interest of students in learning mathematics.

For more information, contact Libby Trenkle, trenkll@resa.net

WESTERN U.P. CENTER

Spotlight on Professional Development

Building Bridges Mathematics- The Building Bridges project is in the final year of a two-year program continued to provide comprehensive professional development to secondary math teachers. Teachers participated in a comprehensive series of workshops focusing on lesson study and summer institutes aimed at improving content knowledge and instructional practice. This project was funded by a Mathematics and Science Partnership Grant.

Educator's Professional Development Institute Series –Developing Algebraic Thinking- This two-year professional development program focuses on helping middle school mathematics teachers implement the Grade Level Content Expectations in algebra and engage students in meaningful problem solving activities. Teachers participate in school year workshops focused on building knowledge of the grade level content expectations and strategies to engage all students in learning. During the summer, teachers participated in an intensive one-week institute to strengthen their knowledge of linear functions and learned how to engage students in relevant mathematical tasks.

Educator's Professional Development Institute Series -Statistics and Probability- This two-year professional development program focuses on helping high school mathematics teachers implement the High School Content Expectations in Algebra I and Algebra 2 pertaining to statistics and probability. Teachers participate in school year workshops that build knowledge of the high school content expectations and strategies to engage all students in learning. During the summer, teachers participated in an intensive two-week institute to strengthen their mathematics content knowledge of statistics and probability.

Using Manipulatives to Teach Algebra- This program consisted of two workshops focusing on how to use manipulatives such as Algeblocks and algebra tiles to address Grade Level Content Expectations in grades 6-8 and teach basic algebraic concepts. Participating teachers received classroom sets of Algeblocks and algebra tiles to implement what they learned.

Summer Institutes- The Western UP Center provided high quality teacher institutes that allowed teachers to improve the teaching and learning that occurs in their classroom. Participants received graduate credit from MTU at greatly reduced rates due to various grants. The institutes were funded with grants from Great Lakes Maritime Research Institute, National Science Foundation and U.S. Environmental Protection Agency.

Institutes conducted: Winter Ecology Institute- February 2-4, 2006; Global Change-July 17-21, 2006 and June 25-29, 2007; Great Lakes Maritime Transportation-July 24-28, 2006 and July 30-August 4, 2006

For more information, contact Shawn Oppliger, shawn@copperisd.org