



# MSC UPDATE

Math & Science Collaborative

May/June 2008

## Networks Becoming Credit Bearing Academies in 2008-09

The MSC Materials Academies (formerly called Educator Networks) have been re-structured to become credit-bearing academies. The Materials Academies will now consist of 2 or 3 days in the summer, with the remaining days during the school year. Those participants who attend all 5 days will earn 2 Act 48 credits. The MSC offers Materials Academies for 2 exemplary curricula: *Everyday Mathematics* and *Investigations in Number, Data and Space*. A common goal of both academies is increasing pedagogical content knowledge of teachers in preparation for using the materials. This will, in turn, lead to more effective instruction and ultimately, higher achievement of students. The schedule for the academies is as follows:

**Everyday Math**- August 14 & 15 at IU 27, plus 3 school year follow up dates

**Investigations**- August 11, 12, & 13 at Charleroi School District, plus 2 school year follow up dates

**Math Coach** Academy will meet 5 times during the school year for participants to earn 2 credits.

**Quarterly Academies** for Teacher Leaders- see page 3 for details.

All academies meet from 8:30 am to 3:30 pm. Dates for the school year sessions are to be determined. There is no cost. For further information, contact Barbara Ash at 412-394-4600.

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## MSC Honors Teacher Leaders

On May 1, the MSC held a reception at the Carnegie Science Center recognizing all teacher leaders (those who have attended Teacher Leadership Academies). The Teacher Leader model demonstrates that teachers can engage in professional development featuring tools and strategies designed to bolster pedagogical and content knowledge, and then share these tools and approaches with colleagues in their district. These professional learning communities work to provide the best possible instruction for all students. Since 2004, over 600 K-12 math and science teachers in the region have participated in these academies. The MSC honors these educators for their dedication, and look forward to another year of collaboration through the Teacher Leadership Academies.



The MSC Math Team recognizes the work of Academy participants.

More information on all MSC opportunities can be found at [www.aiu3.net/msc](http://www.aiu3.net/msc).

## Standards-Aligned System

The Pennsylvania Standards Aligned System is a collaborative product of research and good practice that identifies six distinct elements (*Clear Standards, Fair Assessments, Curriculum Framework, Instruction Aligned, Materials and resources, and Interventions*) which, if integrated, will provide schools and districts with a common framework for continuous school and district enhancement and improvement. The SAS is designed to 1) Support districts with curriculum, assessment, and instruction, 2) Provide professional development, 3) Promote an ongoing learning community, and 4) Help all students to meet and, when possible, exceed the PA Academic Standards.

Currently, the MSC science staff is involved in the development of the Science Standards Aligned System. The MSC mathematics coordinators are currently collaborating with a state-wide team to revise the *Big Ideas, Concepts, and Competencies* for the SAS for mathematics which will be utilized at the Governor's Institute, July 13-18, 2008.

## PSSA Science

In accordance with the NCLB requirement, an operational science assessment was administered this spring, aligned to the PA Science Assessment Anchors, Content Standards and Eligible Content. The science test is designed to measure and report results in four major categories: the Nature of Science, Biological Sciences, Physical Sciences, and Earth and Space Sciences. This is the first year in which district science data will be available from the Science PSSA. Performance level cut points will be set for science in August 2008.

The Math & Science Collaborative assists districts in the interpretation and analysis of the Science PSSA. School Improvement Planning workshops and fall Leadership Action Academies help district teams analyze root causes. The first school year session of all Teacher Leadership Academies prepares teacher leaders to work with their colleagues to analyze this data as well as the math PSSA data.

## MSC to Present at Governor's Institute

Research-based professional development materials and tools are used in Teacher Leadership Academies (TLAs) and *Lenses on Learning* for Administrators seminars. These materials will be featured at the 2008 Governor's Institute in Hershey, PA on July 13-18, 2008. Coordinators from the MSC will co-facilitate with teacher leaders to present two courses focusing on mathematics, as well as *Lenses on Learning*, a nationally recognized professional learning curricula. The professional development at the Governor's Institute will be the content that is taken back to districts by Teacher Leaders from the first years of the Elementary and Secondary Math TLAs. This is an additional opportunity for regional and state-wide educators to participate in MSC academies. For more information, contact the PaTAN website ([www.pattan.net](http://www.pattan.net)) for registration information.

## Data Alert– Course Completion Data

Course completion data is known as the "District Profile for Math and Science Indicators." In this report, each district provides data about graduating seniors that have successfully completed (passed) courses in Algebra I, Geometry, Algebra II, Biology, Chemistry, and Physics. The district provides annual enrollment and course completion data for these challenging courses. The Math & Science Collaborative is also tracking long-term progress on all students having access to challenging coursework.

In previous years, the request for these data has come from the University of Pittsburgh. As of 2007, however, the Allegheny Intermediate Unit will be gathering these data. Your district should soon receive notice from the AIU during to **submit your course completion data after the end of the school year.**



## Teacher Leadership Academies

Teacher Leadership Academies (TLAs) provide professional development for teacher leaders to support the building of professional learning communities within local school districts. District-appointed teacher leaders obtain content-based leadership skills and inquiry-based methods to guide collegial professional development in their districts using a variety of research-based tools, then return to their districts to facilitate “on-site” academies with their colleagues. All the academies are staffed by Math & Science Collaborative Coordinators and faculty from partner Institutions of Higher Education. Opportunities in 2008-2009 include:

- **K-8 Science TLA, year 1**– Teacher leaders will develop a deeper understanding of inquiry-based science through the application of the 5 Essential Features of Inquiry (5-E) Model and research on *How People Learn*.
- **Secondary Science TLA, year 1**– Teachers will apply tools developed by the SciCenter of BSCS to gain pedagogical content knowledge through an immersion into inquiry and to build district capacity through effective leadership practices.
- **Elementary Math TLA, year 1**– Participants will deepen understanding of big ideas of mathematics through examining student learning, including exploring what student work looks like when students demonstrate deep conceptual understanding of mathematics.
- **Elementary Math TLA, year 2**– Teacher leaders think through the major ideas of the base-ten system and operations.
- **Secondary Math TLA, year 1**– Participants will focus on conceptualizing and representing linear relationships, as well as digging into mathematical reasoning about these ideas.
- **Secondary Math TLA, year 2**– Teacher leaders think through the major ideas of mathematics, as they utilize the Mathematics Curriculum Framework, Thinking Through the Lesson Protocol, and other techniques.
- **Year 3 Lesson Study Academies**– These acad-

emies focus on facilitating Lesson Study in the district as professional development that sustains professional learning communities.

- **Quarterly Academies for Teacher Leaders- years 4 & 5**- Teacher Leaders who have completed years 1, 2, and 3 in Elementary Math, Secondary Math or Secondary Science will participate in a quarterly academy experience featuring the latest research and emerging resources to strengthen math and science teaching and learning. It features 4 school year sessions.
- **Learning Laboratory**– Responding to requests for a summer experience for experienced leaders, the Learning Laboratory incorporates a “fishbowl” approach, which is an opportunity to observe and hear the math and science learning of students. During a 3-day session in a local school district, teachers observe student thinking during math and science lessons, then engage in constructive discussion about the student learning.

The full listing of summer academy dates can be found on page 4 of this *Update*. Registration forms for the year 1 academies may be found in the MSC *Coordi-net* as well as on the MSC web site at [www.iau3.net/msc](http://www.iau3.net/msc).

*“The Academy made me “revamp” and “revise” my way of thinking of teaching math and science to make it more productive for the students and myself. My perspective toward teaching a lesson has also changed – I (and my colleagues) now view developing our lessons from student perspective and needs.”*

*“Lesson study is not only a way for teacher to improve content knowledge, but a process that can build capacity and strengthen effective communication skills to better understand how students learn and acquire math skills.”*



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## MSC Events

June 16-18	Learning Laboratory Experience
June 16-19	Elementary Mathematics TLA year 1 @ Chatham
June 18-20	Lesson Study (Year 3) TLA @ AIU
June 18-20	Lesson Study (Year 3) TLA @ Robert Morris
June 23-25	Learning Laboratory Experience
June 23-26	Secondary Mathematics TLA year 1 @ AIU
June 25-27	Lesson Study (Year 3) TLA @ AIU
June 30-July 2	Data Analysis Content Short Course @ IU 1
July 8-10	Lesson Study (Year 3) TLA @ Saint Vincent
July 8-11	K-8 Science TLA year 1 @ Chatham
July 9-11	Geometry Content Short Course @ AIU
July 13-18	Governor's Institute for Data Driven Practices for School Improvement
July 14-18	Secondary Science TLA year 1 @ Chatham
July 22-24	Lesson Study (Year 3) TLA @ Saint Vincent
July 28-Aug. 1	STEM Governor's Institute
July 29-31	Lesson Study (Year 3) TLA @ Chatham
July 29-31	Functions Content Short Course @ IU 7
August 11-13	<i>Investigations</i> Materials Academy @ Charleroi S.D.
August 14-15	<i>Everyday Mathematics</i> Materials Academy @ IU 27
November 20	Fall Network Connections Conference @ Marriott City Center
February 12	Winter Network Connections Conference @ Marriott City Center

## Math & Science Collaborative (MSC)

The Math & Science Collaborative of Southwestern PA convenes representatives of teachers, administrators, non-profit organizations, institutions of higher education, and other committed stakeholders to strengthen the teaching and learning of mathematics and science. Originally established with foundation support within the Carnegie Museums, the Collaborative moved to the Allegheny Intermediate Unit in September 2002.

The Math & Science Collaborative was formed in 1994 at a regional "congress" of *stakeholders*, people with a stake in the quality of math & science education - teachers, school administrators, students, parents, school board members, corporations, foundations, universities, museums, and others.

## Math Science Partnership (MSP)

The Southwest Pennsylvania Math Science Partnership is a collaboration which unites the collective experience and expertise of 53 school districts, 4 intermediate units, 4 colleges and universities, and experts in K-16 education designed to improve student learning in mathematics and science. The Partnership is based on the belief that the level of student achievement in mathematics and science can be strengthened by administrators and classroom teachers who are themselves willing to become learners and deepen their own conceptual understanding of the big ideas in mathematics and science.

The goal of the Partnership is for all students to attain the skills necessary for success in the 21<sup>st</sup> century, develop an understanding of how the "big ideas" are connected coherently in the disciplines of mathematics and science, make the connections of those "big ideas" to their everyday world, and develop problem-solvers who are prepared to be discerning citizens and productive employees.



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