

Working to improve
science and
mathematics
education for all
Maine students
since 1992



Maine
MATHEMATICS
and **SCIENCE**
Alliance



ANNUAL REPORT 2001-2002

Ten Years and Looking Ahead

Executive Director's Perspective



In the last ten years, the Maine Mathematics and Science Alliance (MMSA) has learned a great deal about working with Maine educators. The time has gone by quickly. The MMSA has worked hard to be consistent and coherent in its support for teachers and schools through visiting schools, coordinating trainings and institutes, developing materials and providing funds to districts for implementing strategies to improve mathematics and science education. This has helped us to look ahead with confidence that strong progress is being made to insure that all Maine's children receive a high quality mathematics and science education.

This Annual Report reviews two of the last ten years. I am pleased to report the MMSA has positive evidence of improvement. The extensive professional development by MMSA

staff has highlighted several indicators which help teachers to focus on their practice in mathematics and science, and to increase student achievement. They are:

1) the quality of the curriculum; 2) the content and duration of professional development; and 3) the extent to which teachers make the connection between content, instruction, curriculum and their beliefs about student learning. These three indicators are now incorporated in all of the MMSA's professional development.

I am also pleased to report that the MMSA has been helping to address the need for supporting the increasing numbers of new teachers of mathematics and science. Up to 24% of the teachers of mathematics and science lack proper qualifications for those positions. Programs such as the Northern New England Co-Mentoring Network (NNECN), the Governor's Academy for Leadership in Science and Mathematics Education, and the Science and Mathematics Academies with the Maine Department of Education are helping to increase the knowledge and skills of those educators new to teaching mathematics and science. Also, several research and development efforts in curriculum and assessment are underway at MMSA. These projects are contributing to the high quality of mathematics and science materials available to teachers and schools.

I am proud to be able to share this report with you, though knowing that without the teachers of mathematics and science and administrators in Maine, this would not be possible. I know the next ten years will bring new challenges and successes.

A handwritten signature in black ink that reads "Francis Eberle". To the right of the signature is the logo of the Maine Mathematics and Science Alliance, which consists of a stylized black square with a white geometric shape inside.

Francis Eberle,
Executive Director

Mission Statement

The MMSA endeavors to create, sustain, and extend an effective learning environment that supports increased aspirations and improved student performance in mathematics and science so that all students will meet or exceed state and national standards.

These goals represent critical focus areas of the MMSA. The organization's strategies and subsequent programs and projects strive to accomplish the goal areas.

- 1 Maine school and school district reform of mathematics and science.
- 2 Full implementation of standards-based mathematics and science curriculum, instruction and assessment.
- 3 Sufficient number of well-qualified mathematics and science educators.

PROGRAMS AND ACTIVITIES

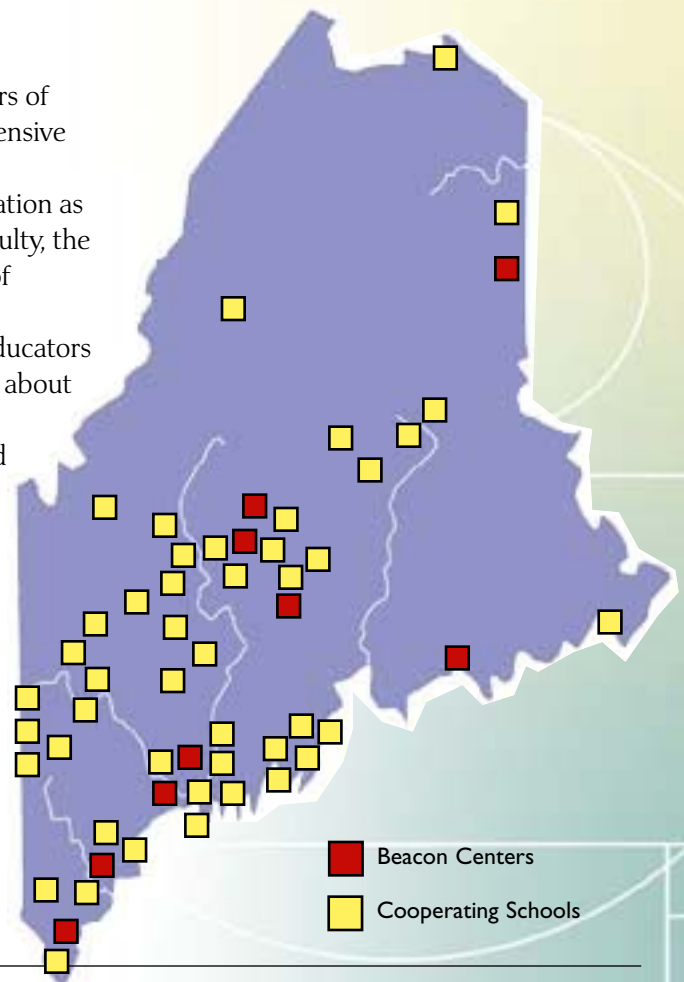
The MMSA has three ambitious goal areas. Reaching the indicators of success for those goals means that the MMSA administers a comprehensive and varied repertoire of programs.

The MMSA focuses on improving science and mathematics education as the core, and works with teachers, schools, districts and university faculty, the Maine Department of Education and other organizations supportive of improving education in Maine to accomplish the goals.

Our current efforts respond both to immediate needs of Maine educators and to the long-term benchmarks through building a knowledge base about high quality mathematics and science education.

The MMSA is celebrating 10 years of supporting mathematics and science education in Maine. The steadfast focus on Maine educators has allowed a unique relationship to be built over time with those educators. The MMSA goal areas and the corresponding programs are described on the following pages.

Over the past ten years, Beacon Centers and then Cooperating Schools have been funded all across the state of Maine. The Cooperating Schools program is especially popular because of the freedom and flexibility it allows participating schools in setting and implementing goals for their science and mathematics programs.



encouraging creativity



GOAL AREA I

Maine school and school district reform of mathematics and science

This goal area is met by supporting a systemic approach to improvements in mathematics and science education.

The programs in this goal area help districts examine their K-12 mathematics or science education program.

Districts engage in a process of data analysis, goal setting and professional development to develop a coordinated and coherent K-12 mathematics and/or science education program.

BEAMM (Broaden Educational Access to Mathematics in Maine)

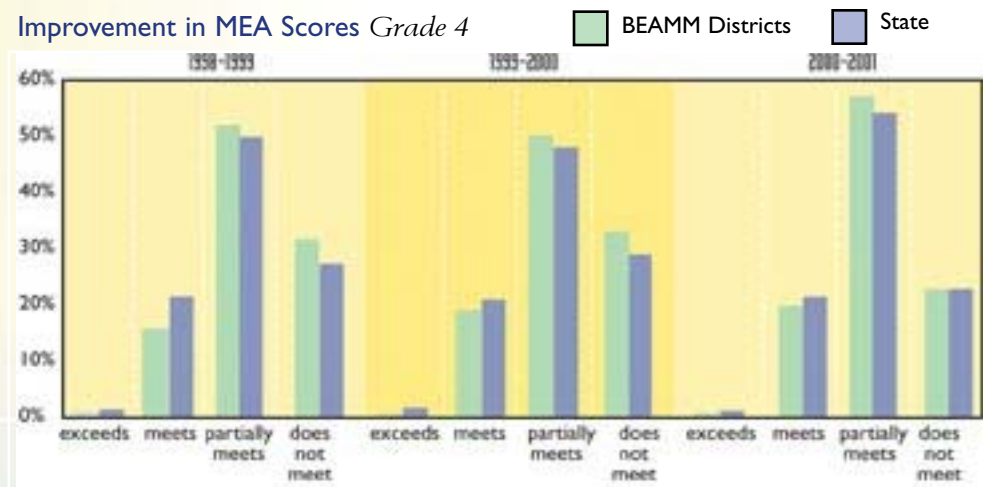
Program Director: Cheryl Rose, MMSA

Meeting the goal of “All students achieving the state’s Learning Results” is challenging for any district but when a school is identified as a low performing school by the Maine Department of Education, the task is even more difficult. BEAMM, in its fourth year of five, supports grades K-8 mathematics improvement in seven districts, with schools that were identified as low performing.

The BEAMM program provides professional development for 500 teachers in mathematics content, curriculum implementation, teacher leadership, study groups, mentoring, special education issues and principal observational techniques.

Student achievement progress is now being demonstrated in each district. The following chart illustrates the improvement for students as reported by the Maine Educational Assessment (MEA). Percentages of students in the BEAMM sites meeting the standards in 2001 is similar to the state’s average. The percent of the lowest performing students has reached the same level as the state. While the schools do not post “complete success” at this stage, they are demonstrating progress at a much faster rate than the state. The National Science Foundation supports the BEAMM project.

Improvement in MEA Scores Grade 4



JAPANESE LESSON STUDY

NEW *Program Director: Francis Eberle, MMSA*

Japanese lesson study provides a mechanism of continuous professional learning by teachers, which has a rich 50-year history in Japan. The goal of lesson study in Maine is to improve the effectiveness of the learning experiences that teachers provide to their students. During the 2001-2002 school year, three schools in Maine piloted this process as a new way to continue the professional learning of their teachers. Japanese lesson study is a professional development process in which Japanese teachers engage in a systematic examination of their instructional practice. More Maine schools have expressed an interest in using lesson study in the coming year.



in teaching

COOPERATING SCHOOLS

Program Director: Henrietta List, MMSA

The Cooperating School System Grant Program (COOP) is an annual, competitive funding opportunity open to all districts in Maine. Each year 8-12 school systems are provided with financial support and MMSA consulting services. Sites appoint a K-12 Leadership Team that works with MMSA staff to examine data and set goals for their science and/or mathematics program. A professional development plan for the Leadership Team and all instructional staff is created and implemented, matching the content and format to the needs of the schools. Annual work plans include activities addressing data analysis, curriculum development, knowledge building, examination of research, exploration of instruction and assessment materials, review of pertinent policies and communication with the community. The Cooperating School System Grant Program is a long-term initiative supported by both the districts and the MMSA. It has helped school systems create K-12 dialogue on the sequencing and instruction of science and mathematics in order to support students in developing a sophisticated understanding of complex concepts.



GLOBE

NEW

Program Director: Henrietta List, MMSA

The MMSA will be assisting the GLOBE project over the next three and a half years by writing two middle school and high school instructional units, aligning existing GLOBE materials to national standards, and developing a tool to assist teachers in creating customized instructional units. The project goal is to improve student skills in collecting, visualizing and interpreting data in concert with supporting their achievement of national standards.

GLOBE is a cooperative effort of schools, led in the United States by a Federal interagency program sponsored by NOAA, NASA, NSF, and EPA, in partnership with over 140 colleges and universities, state and local school systems, and non-government organizations. Internationally, GLOBE is a partnership between the United States and 95 other countries. Over a million primary and secondary students in more than 10,000 schools have taken part in the program. The MMSA envisions the use of GLOBE to support Maine classrooms in broadening student's interest in science while they gain a more advanced understanding of the complex world around them. The MMSA is excited to be undertaking this project.

www.globe.org

COOPERATING SCHOOLS FUNDING SITES

2000-2001

MSAD 44	Bethel
Portland School Department	
MSAD 41	Penquis Valley
MSAD 17	Oxford
MSAD 43	Rumford
MSAD 48	Newport
Union 7	Saco
MSAD 23	Carmel
MSAD 77	Cutler

2001-2002

MSAD 44	Bethel
Madawaska School Department	
Portland School Department	
Wiscasset School Department	
Winthrop School Department	
MSAD 5	Rockland
MSAD 43	Rumford
MSAD 48	Newport
Union 7	Saco
Union 47	West Bath
MSAD 23	Carmel



providing opportunities

GOAL AREA 2

Full Implementation of Standards-Based Mathematics and Science Curriculum, Instruction and Assessment.

Assisting schools with specific approaches to effect improvement of student learning, this goal targets the plans and curriculum guides already developed within the individual school or district.

The programs within this goal area provide a catalyst for schools to implement high quality curriculum and assessments, along with professional development tied to the content and materials selected.



INGRID STRESSINGER, CURRICULUM TRAINER, CAPE ELIZABETH

“As a Curriculum Trainer, I teach Full Option Science System workshops. I can help others see the value in a standards-based program that is hands-on, engaging, and very supportive of teachers. I also help colleagues to learn how these materials can be adapted and supplemented to meet Maine’s Learning Results.”



for change



NASA IN MAINE

Program Director: Page Keeley, MMSA

The Maine NASA K-12 Program, a collaboration between the Maine Department of Education and MMSA, is in its fifth year. The goal of this program is to develop, support, and sustain statewide efforts to build a NASA education presence in Maine that will provide structure, innovative resources, and teacher enhancement opportunities for improving standards-based science, mathematics and technology teaching and learning. Various NASA activities, coordinated by the MMSA, are designed to bring NASA's unique resources and content into the classroom. A centerpiece of the program is the annual Earth and Space Science Institute, held at the NASA Goddard Flight Center. Between twelve and fifteen teachers are selected for a one-week content immersion with NASA scientists. These teachers implement new learnings in their classrooms and school and share aspects of their trip to NASA Goddard at conferences and with other districts. This year focused on 13 high school teachers teaching integrated science, accompanied by an atmospheric scientist from the Boston Museum of Science who is working with the teachers in Maine to use remote sensing with the Global Systems Science curriculum. These teachers will be working throughout the year to develop Maine-based applications of NASA's remote sensing technology.

Another teacher's contribution is evidenced by the development and piloting of a program at the Children's Museum of Maine and the Bangor Children's Museum called Frogs in Space. This K-2 elementary research program culminated in a student-led inquiry conference at each of the museums. Six districts participated as teams in this project. Each year up to four NASA grade K-12 educational material awareness workshops are provided around the state as well as content seminars such as the X-Ray Universe and the Toys in Space Workshops. This year MMSA is working with MSTA to feature a full NASA content strand at the state science teacher's conference. To date, over 200 Maine K-12 teachers have been involved with the Maine NASA Program.

A web site, www.nasalearn.org, has been developed as a virtual curriculum resource center for materials and instructional support. Posted on the web site are Learning Results aligned NASA educational materials, cross-referenced by standard, engaging performance tasks/projects for classroom assessment, and a variety of instructional support resources.

www.nasalearn.org

MAINE IMPACT

Director: Christine Anderson, MMSA

School districts regularly make choices about what curriculum materials they will purchase and implement. With the introduction of state and national standards, a reexamination of the selection and implementation process is needed to include these standards in the selection process.

Maine IMPACT has introduced strategies for assisting districts in this curriculum selection and implementation process. Curriculum showcases or awareness sessions have been held highlighting research-based mathematics and science materials, with 187 Maine school districts attending over a two-year period. Curriculum materials are available in various areas around the state for educators to browse. There were a total of 143 visits to borrow or examine the materials. IMPACT also provides training for educators in a comprehensive process for implementing research-based mathematics and science curriculum programs. Another 56 districts have attended these sessions.

The final strategy within IMPACT includes the identification, training and brokering services of curriculum trainers. Curriculum trainers are teachers who are available to districts for ongoing support of their staff. A total of 35 teachers have been trained as curriculum trainers. This program is funded by the CESAME Center at Northeastern University.



PDMAIP FUNDING 2000-2001

Cape Elizabeth School Department
• Middle School

York School Department
• York Middle School

MSAD 3 • Mt. View High School

MSAD 4 • Guilford 5 – schools

MSAD 14 • Weston – East Grand Elementary

MSAD 42 • Mars Hill – 2 schools

MSAD 46 • Brewer – 3 schools

MSAD 50 • Georges Valley High School

MSAD 55 • Cornish – 2 schools

MSAD 60 • Berwick – 3 schools

MSAD 72 • Fryeburg – 4 schools

MSAD 75 • Topsham – 8 Schools

Union 104 • Eastport – 4 schools

Union 92 • Surry – Surry School

2001-2002

Auburn School Department
• Edward Little High School

Old Town School Department
• 4 elementary schools

South Portland School Department
• 8 schools

Yarmouth School Department
• Yarmouth High School

MSAD 67 • Lincoln – all schools

MSAD 47 • Oakland – 3 schools

MSAD 68 • Dover-Foxcroft – Sedomocha Middle School

Union 42 • Readfield – Maranacook Middle School

Union 92 • Ellsworth – 3 schools



PDMAIP (Professional Development and Materials or Assessment Implementation Program)

Program Director: Kim Schroeter, MMSA

Often in the past, the implementation of new mathematics and science instructional and assessment materials has been conducted without additional time for teachers to learn about the materials. With the institution of standards, new curricula have been developed with revised scope, sequence and in some cases instructional practices.

The PDMAIP program is an annual competitive program open to all districts. It is designed to provide support to districts so they provide sufficient time and professional development for their teachers as they begin to use these new materials. This program has supported 26 districts in their efforts to improve student achievement through materials implementation in the last two years.

RESULTS (School Improvement Results in COOP and PDMAIP sites)

The following chart shows the percent rate of change of student achievement of 43 districts that have all worked with the MMSA. The ratio of change of students out of “does not meet” and students into “meets” the standards is much better than the state.

Mathematics Grades 4, 8, 11			Science Grades 4, 8, 11		
	DISTRICT	STATE		DISTRICT	STATE
Change in students in the Does Not Meet the Standards category			Change in students in the Does Not Meet the Standards category		
Percent Change	-32%	-11%	Percent Change	-12%	-4%
Change in students in the Meets the Standards category			Change in students in the Meets the Standards category		
Percent Change	+38%	3%	Percent Change	+7%	-1%

28,849 Students in 43 Grant-Supported Districts

www.maptasks.org

MAP (Maine Assessment Portfolio - science and mathematics)

Program Director: Jill Rosenblum, MMSA

The Maine Assessment Portfolio (MAP) project provides a model for standards-based assessment that measures the content standards and performance indicators of Maine's Learning Results. The MMSA and the Maine Department of Education work together on this project. MAP has involved more than 600 teachers statewide in the development of tasks and rubrics in four content areas. The tasks have been piloted in classrooms throughout the state, and the student work has been scored and indexed for future use. Field-testing of the best performance tasks, identifying benchmarks, compiling necessary scoring training materials, and establishing the technical qualities of the tasks and of the portfolio model has begun and will be complete in spring of 2003. MAP materials and supporting data will be available to districts for inclusion in their local comprehensive assessment systems.

A MAP web site, www.maptasks.org, has been developed and is an excellent resource for educators as it contains the current set of materials. Online practice scoring using the analytic, task-specific rubrics and scoring guides are being produced for each MAP task. Teachers can review samples of student work previously scored by Maine teachers, assign their own scores and get instant feedback on their inter-rater agreement. These online training exercises are designed to develop scoring accuracy and consistency and to illuminate the particular evidence required to meet the standards of Maine's Learning Results as defined within each MAP task.

MMSA CONSULTING SERVICES

Increasingly Maine districts are requesting specific support in mathematics and science education. The MMSA has responded with custom designed opportunities in mathematics and science for those requests. These programs might include helping teachers gain a deeper understanding of what Maine's Learning Results mean, science or mathematics content, assessment development as a part of a local comprehensive assessment system, specific curriculum support, training in the use of data, instructional approaches in mathematics and science and online, web-based professional development book study seminars. This past year, approximately 30 teachers were involved in professional reading and online discussions of "The New Science Literacy" and "The Teaching Gap." New online seminars are being designed for this school year and will be co-facilitated by teacher leaders. These opportunities can be provided on site, regionally or through the ATM system or the web.



It is one thing to have adopted learning standards, but without accurate assessment tools, standards alone become meaningless. The Maine Assessment Portfolio (MAP) project provides a model for standards-based assessment that measures the content standards and performance indicators of Maine's Learning Results. The MAP web site has been developed and is an excellent resource for educators. Teachers can review samples of student work previously scored by Maine teachers, assign their own scores and get instant feedback on their inter-rater agreement.





www.jasonproject.org

"It was a pleasure to work with MMSA to make something important happen for Maine students. The partnership between Maine PBS and MMSA also allowed Maine PBS to experiment with how it might use some of its new digital television channel capacity in the future to serve Maine schools."

KATE ARNO
VICE PRESIDENT FOR TELEVISION SERVICES,
MAINE PBS

THE JASON PROJECT

NEW

Program Directors: Pamela Ford-Taylor and Francis Eberle, MMSA

The JASON PROJECT is an interdisciplinary multi media curriculum program supported by the JASON Foundation for Education. The MMSA in cooperation with the Maine Department of Education conducted an analysis and alignment study of JASON to Maine's Learning Results. The results of the study indicated strong alignment. Subsequently eight middle schools were supported to use the curriculum program in their classrooms. Maine Public Broadcasting Corporation aired the television programs so all educators would be able to use the broadcasts. The goal of the Jason Foundation is to inspire students to have a lifelong passion to pursue learning in science, mathematics, and technology through exploration and discovery. A 2001 national evaluation found JASON students measurably increased their abilities to manipulate scientific data, build arguments, increase critical thinking skills, understand scientific concepts, heighten communication skills as well as consistently scored above average and outperformed non-Jason students on national standardized tests. Interest is growing in Maine particularly for teachers who will have computers in their classrooms.



MAINE'S LOCAL COMPREHENSIVE ASSESSMENT SYSTEM DEVELOPMENT

NEW

Program Director: Jill Rosenblum, MMSA

The Maine Department of Education has contracted with the MMSA, the National Center for the Improvement of Educational Assessment, and the University of Maine to work on the State's Local Comprehensive Assessment System. MMSA's anticipated two-year project will produce assessments in mathematics and science that will be made available to districts through the Maine Department of Education.

The assessments will be aligned with Maine's Learning Results and will meet all technical requirements for inclusion in a local assessment system. This initiative, through the Maine Department of Education, will support the local assessment of student knowledge and skills to provide teachers with immediate data to inform their instruction and curriculum, to provide districts with comprehensive information to monitor programs, and to generate adequate statistics for certifying achievement of Maine's Learning Results as a condition for graduation.

providing





10
YEARS
of Excellence

THE JASON ACADEMY

NEW Program Director: Page Keeley, MMSA

The JASON ACADEMY for Science Teaching and Learning is an innovative national online approach to professional development for science teachers. Approximately 40 Maine teachers, supported by the MMSA and their districts, took several courses including Structure of the Earth, Transfer of Energy, Earth in the Solar System, and Aquatic Ecology. MMSA staff and Maine teacher leaders facilitated connections to the Maine Learning Results on a special online discussion set up for Maine by the JASON ACADEMY. This state-based approach to connecting course content with state initiatives was a first for the JASON ACADEMY. MMSA also conducted national online facilitation training for the JASON ACADEMY in Washington, DC this June, based on the Maine LabNet model. The JASON ACADEMY is using the MMSA online facilitation guide for their national facilitators. The goal of the JASON ACADEMY is to enhance teachers' science content background and provide them with the tools to help students learn more effectively. Maine alumni of the course are presenting their JASON ACADEMY projects at the Fall 2002 MSTA Conference.

“ In physical terms, the Maine Mathematics and Science Alliance has provided activation energy, been a catalyst, and produced energy for improving the science and mathematics education for the children of Maine. The MMSA is a vital force, leading systemic change for the betterment of Maine students, from prekindergarten to high school graduation and beyond.”

THOMAS E. KELLER, Ed.D
DEPARTMENT OF EDUCATION

QUEST: INVESTIGATING OUR WORLD

NEW Program Directors: Christine Anderson and Henrietta List, MMSA

The Maine Public Broadcasting Corporation is developing a new set of 12 television programs for a new series of QUEST: Investigating Our World. The MMSA is providing support for the series by developing the companion educational curriculum for middle level and high school science teachers. The educational companion curriculum is aligned to standards and provides instructional access for teachers to use the broadcasts with their students. QUEST will begin on the air in the fall of 2002 and will have six new programs each year for 3 years.



opportunities for change



building for the long-

GOAL AREA 3

Sufficient numbers of well qualified mathematics and science educators.

This goal area represents teacher leadership and support for new mathematics and science teachers.

The programs in this goal area are broad-based as they are working toward building the long-term capacity of educators to maintain and continue the improvement of mathematics and science education.

Over time the increasing demand and challenge of reaching all teachers in a district is becoming difficult. New strategies have to be implemented at the district level.

SCIENCE AND MATHEMATICS ACADEMIES

Program Director: Eleanor Dickens, MMSA

The Science and Mathematics Academies have a ten-year collaborative history between the MMSA and Maine Department of Education. The Academy model was refocused in the last two years to address the growing need for support for new K-8 teachers of mathematics and science. The intent of this revised Academy model is to increase student achievement in science and mathematics by increasing the knowledge and skills of new science and mathematics teachers in content, assessment and instruction. MMSA helps districts with large numbers of new teachers with a summer academy and mentors to support the teachers during the academic year. In the last two years seven district/university partnerships across the state have supported 105 new teachers and 12 mentors for those new teachers.

TEACHER LEADERSHIP

Program Directors: Cynthia Hillman-Forbush, Christine Anderson, MMSA

Teachers are increasingly important to administrators and schools as resources with expertise in science and mathematics education. These teachers can provide professional development for other educators, expertise for curriculum selection and implementation, assessment development, and district K-12 coordination of content. To respond to this increase in responsibility being asked of teachers, the MMSA has been providing various opportunities for teacher leadership development.

There are three levels of leadership development offered by the MMSA. The levels include curriculum trainers, curriculum trainers 2, and reform leaders. Each level is important as teachers provide district level support.

The curriculum trainer helps teachers focus on the knowledge and content within a curriculum program. These teachers lead professional development for other teachers in a specific curriculum program such as JASON, Core Plus, NASA or FOSS. The curriculum trainer 2 provides teachers with a broader range of knowledge and skills so they can examine issues in a district and are aware of larger scale implementation concerns. The MMSA programs with training for these teachers are MAP, BEAMM, or specific curricula such as Everyday Mathematics. The reform leader is a teacher whose depth of knowledge and understanding about reform is extensive and who is already recognized as providing leadership in their districts. Programs such as the Governor's Academy, Northern New England Co-Mentoring Network and BEAMM provide a wide range of knowledge and skills for teachers.

The MMSA sponsors an annual summer Teacher Leadership Institute, as well as ongoing, in-state training and support for Maine teachers receiving out-of-state training by curriculum developers. Approximately 85 teachers have participated in a leadership program each year over the last two years.



term capacity

THE GOVERNOR'S ACADEMY FOR MATHEMATICS AND SCIENCE EDUCATION LEADERSHIP

NEW

Program Director: Page Keeley, MMSA

The Governor's Academy is a two year highly focused Academy for developing and supporting accomplished mathematics and science teacher leaders. The first cohort of teachers in the Governor's Academy was made up of science teachers. The Academy is partially supported with funding from the Regional Alliance and MBNA. The leadership curriculum focuses on understanding the application of standards in a system, inquiry-based teaching and learning, designing and facilitating effective professional development, individual and organizational change, facilitation skills, education policy, leadership development, and data strategies and evaluation skills. In Year 2, Academy Fellows develop and implement a plan for science education improvement in their district. The first cohort of 25 teacher fellows is entering year two and will complete a total of 180 hours of professional development.



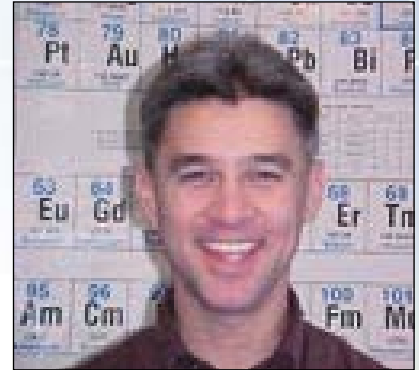
NORTHERN NEW ENGLAND CO-MENTORING NETWORK

NEW

Program Director: Page Keeley, MMSA

The Northern New England Co-Mentoring Network (NNECN) is a three state initiative (ME, NH, VT) funded by the National Science Foundation to increase the capacity for middle and high school mentor teachers to support new teachers of science and mathematics through content-focused mentoring.

Over the three years of this program 120 mentor teachers will build their expertise in standards and research-based teaching and learning, formal mentoring and coaching, and professional development theory and practice to improve the knowledge and skills of 320 new teachers in their districts, as well as veteran teachers. Encouraging more science and mathematics teachers to stay in the profession is a key goal of this program.



RANDY WING, FIRST YEAR
SCIENCE TEACHER

"As a first year teacher I have found that having a mentor has been invaluable. Mary has really helped me hit the ground running in several ways... she is an exceptionally valuable resource for me during my first year. I believe that the mentor relationship will help me provide a higher quality education to my students than would otherwise be possible."



MARY WHITTEN, MENTOR



10
YEARS
of Excellence

...and planning for the future



MMSTEC (Maine Mathematics and Science Teacher Excellence Collaborative)

NEW Program Director: Richard Stebbins, University of Southern Maine

The Maine Mathematics and Science Teacher Excellence Collaborative (MMSTEC) is a partnership that includes the University of Southern Maine, University of Maine at Farmington and the University of Maine. The MMSTEC effort is funded by a five year (2000-2005), 4.1 million dollar grant from the National Science Foundation.

The three major grant goals are to:

- 1) increase recruitment of students interested in being grades 6-12 mathematics and science teachers;
- 2) improve the quality of the mathematics/science portion in teacher education programs at University of Maine System campuses; and
- 3) support teachers of mathematics and science in the first three years of teaching.

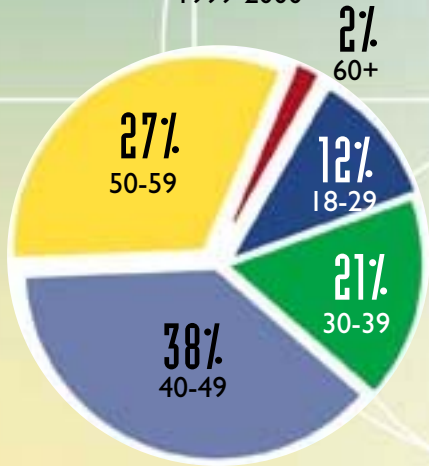
To date, enrollments in mathematics and science education have increased by 30% at the three campuses, and the number of certified grade 6-12 mathematics/science teachers graduating from the three MMSTEC campuses has increased by about 40% during the first two years of the grant. In addition, MMSTEC has been able to bring \$1,000,000 in student financial aid (NSF Teaching Scholar's program and Noyce Scholarship program) to students in the University of Maine System. In the first year of the NSF Teaching Scholars program, we awarded 39 scholarships; 20 graduated in Spring 2002 and are now teaching in Maine schools.

Regarding professional development support for university faculty and 6-12 teachers, 133 University of Maine System and K-12 faculty have attended the two summer institutes and 103 have attended the mid-year conferences featuring improvement in college level teaching and research on how students learn mathematics and science.

Currently, courses for potential teachers are being reviewed, and recommendations are being developed for improvements in the University of Maine system. The University of Maine at Presque Isle and the University of Maine at Fort Kent recently joined MMSTEC and are beginning their review processes. Two electronic resources have been developed to help people who are interested in teaching and for K-12 faculty to keep in touch with the most current research. For people who are interested in teaching, a web site: www.EducateMe.info, is available to help explain how to become a teacher. The faculty resource is called the "Digital Library" (www.EducateMe.info/MMSTEC/index.htm) and it contains current research about teaching mathematics and science. This large-scale initiative has many concrete results and the larger impact will be felt in the next five years as faculty, teachers, and programs improve, and the numbers of people who are interested in teaching mathematics and science increase.

Age of Maine Teachers

1999-2000



A significant number of Maine teachers are nearing retirement age.

As of 2001-2002, in Maine schools:

23% of science teachers have three or less years teaching science

21% of mathematics teachers have three or less years teaching mathematics



www.EducateMe.info



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BATES COLLEGE

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James Vesenka, *Professor, Department of*
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Douglas Williams, *Economics Consultant*

Financial Information

Revenue	2002	2001
Federal	75%	60%
State	8%	22%
Private	3%	4%
Professional Services	14%	14%

Expense	2002	2001
K-12 Professional Development	30%	41%
Higher Education Involvement in K-16 Professional Development	37%	26%
School Based Improvement	10%	12%
Other Educational Programs	18%	14%
Management and General	5%	7%

FINANCIAL NOTE: Percentages are based on total revenue and expense for the respective year.

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2001

2002 NEW PROGRAMS

- 1 Northern New England
Co-Mentoring Network
- 2 Maine Mathematics and
Science Teacher Excellence Collaborative
- 3 The Governor's Academy for Mathematics and
Science Education Leadership
- 4 Lesson Study
- 5 The JASON Academy
- 6 Quest: Investigating our World
- 7 The JASON Project
- 8 Local Comprehensive Assessment
System Development
- 9 GLOBE

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