

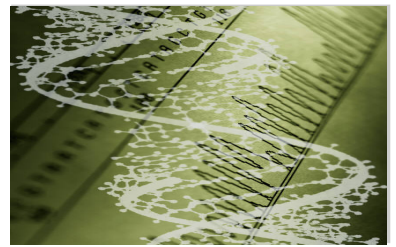


**Massachusetts Mathematics and Science Partnership Title IIB
Executive Summary of the Annual State-level
Evaluation Report for Cohort 3**

Reporting Period: September 1, 2006, through August 31, 2008

Prepared for the Massachusetts Department of Elementary & Secondary
Education

April 2010



Background

The purpose of the Massachusetts Mathematics and Science Partnership (MMSP) Program is to provide high quality professional development for teachers in Massachusetts in the content areas of mathematics, science, and technology/engineering (MSTE). This multi-year project is funded through Title IIB of the No Child Left Behind (NCLB) Act. The intention of the MMSP funding is to increase the number of highly qualified teachers in the specified content areas in the Commonwealth, particularly in high need districts, with an ultimate outcome of increased student achievement. The funding is administered by the Massachusetts Department of Elementary and Secondary Education (ESE).

ESE established the following three goals for the partnerships to achieve through MMSP funding for Cohort 3:

- Goal I Develop and implement an effective and sustained course of study for in-service teachers of MSTE by integrating the courses of study into schools of arts and sciences and/or education at institutions of higher education.
- Goal II Increase the number of MSTE teachers in the partner school districts who are licensed in the subject area(s) and grade level(s) they teach.
- Goal III Increase the number of MSTE teachers in the partner school districts who participate in high quality professional development and advance their content knowledge.

The Program began in February 2004, and has had five funding periods, defined as follows:

- Year 1: February 2, 2004 through August 31, 2004
- Year 2: September 1, 2004 through August 31, 2005
- Year 3: September 1, 2005 through August 31, 2006
- Year 4: September 1, 2006 through August 31, 2007
- Year 5: September 1, 2007 through August 31, 2008.

From the inception of the program in 2004, there have been 19 partnerships funded in three cohorts, 176 MMSP courses delivered, 1,693 unique participants, and 3,290 course seats filled. Massachusetts' funding for this program from February 2004 through August 2008 has been \$8,296,546.

The partnerships who received initial funding in Year 1 are referred to as Cohort 1; those who received initial funding in Year 2 are referred to as Cohort 2; those who received initial funding in Year 4 are referred to as Cohort 3. (No new programs were started in Year 3.) Table 1 provides an overview of all cohort and partnership participation from the inception of the program through the end of Cohort 3. Cohort 3 partnerships are located in the lower right corner.

Table 1. Overview of MMSP Partnership Participation						
		Funding Period				
		MMSP Year 1 <i>Feb04-Aug04</i>	MMSP Year 2 <i>Sep04-Aug05</i>	MMSP Year 3 <i>Sep05-Aug06</i>	MMSP Year 4 <i>Sep06-Aug07</i>	MMSP Year 5 <i>Sep07-Aug08</i>
Partnership Grouping	Cohort 1	Grant Year 1 EduTron/Fitchburg-Math Harvard-Math Lesley-Math MCLA-Science Salem-Math Springfield PS-Science Wareham PS-Math WPI-Math	Grant Year 2 EduTron/Fitchburg-Math Harvard-Math Lesley-Math MCLA-Science Salem-Math Springfield PS-Science Wareham PS-Math WPI-Math	Grant Year 3 EduTron/Fitchburg-Math Harvard-Math Lesley-Math MCLA-Science Salem-Math Springfield PS-Science Wareham PS-Math WPI-Math	Grant Year 3 Extension	
	Cohort 2		Grant Year 1 MCLA-Math PV STEMNET-Math	Grant Year 2 MCLA-Math PV STEMNET-Math	Grant Year 3 MCLA-Math PV STEMNET-Math	
	Cohort 3				Grant Year 1 EduTron/Lowell-Math/Sci EduTron/Fitchburg-Math Lesley-Math North Shore-Science PV STEMNET-Math/Sci Salem-Math SE/Cape-Science WPI-Science WPS-Math (discontinued)	Grant Year 2 EduTron/Lowell-Math/Sci EduTron/Fitchburg-Math Lesley-Math North Shore-Science PV STEMNET-Math/Sci Salem-Math SE/Cape-Science WPI-Science

Overview of Cohort 3 Partnerships, Budgets, Courses, and Participants

The primary focus of this executive summary is Cohort 3, the group of nine MMSP partnerships that originally were funded in the 2006-2007 funding period. Of these, five were organized around mathematical content, three were organized around science content, and one was organized around both mathematical and science content. Table 2 shows funding for Cohort 3.

Table 2. Budgets: Cohort 3 Partnerships			
Partnership	Sep06-Aug07	Sep07-Aug08	TOTAL
EduTron Lowell (M/S*)	\$210,000	\$220,000	\$430,000
EduTron Fitchburg (M*)	\$102,000	\$110,000	\$212,000
Lesley University C3 (M)	\$347,911	\$355,626	\$703,537
North Shore (S*)	\$196,474	\$194,729	\$391,203
UMass Amherst C3 (M/S)	\$107,424	\$216,281	\$323,705
Salem State College C3 (M)	\$120,882	\$113,551	\$234,433
SE Cape (S)	\$129,438	\$181,420	\$310,858
WPI – Science (S)	\$99,586	\$70,734	\$170,320
Worcester PS (M)	\$231,210		\$231,210
TOTAL	\$1,544,925	\$1,242,341	\$2,787,266

**“M/S” indicates that a partnership focused on both mathematics and science content, “M” indicates that a partnership focused on mathematics content, and “S” indicates that a partnership focused on science content.

Courses and Participation

- Of the nine Cohort 3 MMSP partnerships, all delivered courses. Of the nine partnerships, all offered multiple courses, and, of these, all had participants who attended more than one course. All but one of the mathematics-focused partnerships also received funding in the 2007-2008 funding period.
- Across both years of funding for Cohort 3, there were 82 courses delivered. Of these 82 courses, 44 were mathematics courses, 34 were science courses, three were technology/engineering courses, and one course covered both math and science content. Of those 82 courses, 44 (54%) were unique, and 38 (46%) were repeat offerings.
- By the end of the second year of Cohort 3, 797 unique Cohort 3 participants participated in MMSP courses.
 - 255 participants (32% of all Cohort 3 participants) attended multiple courses across the 2006-2007 and 2007-2008 years.
 - 296 participants (37% of all Cohort 3 participants) attended multiple courses across all MMSP funding periods.
 - 1333 course seats were filled by Cohort 3 participants across 2006-2007 and 2007-2008.
 - Course attrition rates were generally low, averaging 5% across Cohort 3 courses.

Types of Schools of Participants

- Of all 797 unique Cohort 3 participants, 97% came from public schools (including public charter schools) and 2% came from non-public schools.

High Need Status of Districts of Participants

The Cohort 3 partnerships exceeded the MADOE target of having at least 50% of all participants come from high need districts:

- 73% of *all* Cohort 3 participants in the program were from high need districts.
- 75% of only those participants who were from *public schools* were from high need districts.
- Six of the nine partnerships had at least 50% of their participants coming from high need districts.
- Five of the nine partnerships had at least 75% of the participants come from high need districts.

Teaching Experience of Participants

The teaching experience of the 797 unique Cohort 3 participants was as follows:

- 18% were in their first to third year of teaching.
- 40% had between four and ten years experience in education.
- 25% had between 11 and 20 years of experience.
- 15% reported over twenty years of experience.

Teaching Levels of Participants

At the time of their last completed survey from an MMSP course:

- 39% of Cohort 3 participants were teaching in an elementary or K-8 school.
- 43% of Cohort 3 participants were teaching in a middle school.
- 13% of Cohort 3 participants were teaching in a high school.

- 1% of Cohort 3 participants were teaching at both the middle and high school levels.
- <1% of Cohort 3 participants were teaching at all levels or other levels such as pre-K or an adult level.

Positions of Participants

At the time of their last MMSP course:

- 93% of Cohort 3 participants identified themselves as teachers.
- 74% of Cohort 3 participants were regular education teachers.
- 13% of Cohort 3 participants were special education or special education inclusion teachers.
- 2% of Cohort 3 participants were ELL teachers.
- 3% of Cohort 3 participants were support specialists, paraprofessionals, or long-term substitutes.
- 2% of Cohort 3 participants were department heads or curriculum coordinators.
- 2% of Cohort 3 participants were principals, assistant principals, or headmasters.
- <1% of Cohort 3 participants were superintendents or assistant superintendents.
- 4% of Cohort 3 participants indicated that they held “other” positions.

Content Taught

At the time of their last MMSP course:

- 33% of Cohort 3 participants were teaching mathematics.
- 39% of Cohort 3 participants were teaching science.
- 28% of Cohort 3 participants were teaching all subjects at the elementary level.

(Although not all participants held teaching positions, these figures total 100% because some participants taught both mathematics and science.)

Highly Qualified Status

Public school teachers must meet the federal definition of highly qualified to comply with the federal NCLB legislation. The MMSP addresses the federal NCLB legislation regarding teacher licensure, professional development, and competency in subject area taught.

- Attaining Highly Qualified Status
 - By the end of the 2007-2008 funding period, of the Cohort 3 participants who had entered MMSP as not highly qualified, 23 had attained highly qualified status.
- Licensure in Mathematics and Science Content Areas

At the time of their last MMSP course:

 - Of regular education mathematics courses taught by Cohort 3 teachers, 76% were taught by teachers who were licensed in mathematics.
 - Of special education mathematics courses taught by Cohort 3 teachers, 28% were taught by teachers who were licensed in mathematics.
 - Of ELL mathematics courses taught by Cohort 3 teachers, 17% were taught by teachers who were licensed in mathematics.

- Of regular education science or technology/engineering courses taught by Cohort 3 teachers, 61% were taught by teachers who were licensed in the subject of the course.
- Of special education science or technology/engineering courses taught by Cohort 3 teachers, 41% were taught by teachers who were licensed in the subject of the course.
- Of ELL science or technology/engineering courses taught by Cohort 3 teachers, 50% were taught by teachers who were licensed in the subject of the course.
- Degrees Held in Content Area in which Teaching
At the time of their last MMSP course:
 - Of regular education mathematics courses taught by Cohort 3 teachers, 19% were taught by teachers who held mathematics degrees.
 - Of special education mathematics courses taught by Cohort 3 teachers, 4% were taught by teachers who held mathematics degrees.
 - Of ELL mathematics courses taught by Cohort 3 teachers, 17% were taught by teachers who held mathematics degrees.
 - Of regular education science or technology/engineering courses taught by Cohort 3 teachers, 28% were taught by teachers who held degrees that were relevant to the focus of the course.
 - Of special education science or technology/engineering courses taught by Cohort 3 teachers, 3% were taught by teachers who held degrees that were relevant to the focus of the course.
 - Of ELL science or technology/engineering courses taught by Cohort 3 teachers, 13% were taught by teachers who held degrees that were relevant to the focus of the course.
- Degrees Being Pursued
At the time of their last MMSP course:
 - Of the 249 regular education teachers, 44 special education, and seven ELL Cohort 3 teachers who reported teaching mathematics, 18 were pursuing mathematics degrees.
 - Of the 218 regular education teachers, 21 special education, and seven ELL Cohort 3 teachers who reported teaching in science or technology/engineering areas, 15 were pursuing science degrees in their current areas of teaching and five were pursuing degrees in areas of science they did not currently teach.

Content Knowledge Gains

The content knowledge of Cohort 3 participants was increased:

- Of the 82 Cohort 3 courses, statistically significant improvements in scores on content knowledge assessments occurred in 90%, but small sample sizes in four courses precluded detection of statistical significance.
- Gains in average percentage of items correct between pre- and post-course test administrations occurred in all 82 of the 82 courses delivered across all Cohort 3 partnerships.

Integrating Courses into Higher Education Institutions

Asked to describe activities during the 2006-2007 and 2007-2008 funding periods related to the institutionalization of their courses, all nine partnerships in Cohort 3 evinced integration, plans for future integration, or – in the case of partnerships with previously established involvement with MMSP – work toward sustaining prior integration. As would be expected in a program involving partnerships with diverse structures and

styles, the extent and type of integration varied across partnerships. To convey a sense of how integration occurred, following are significant activities, grouped according to partnership:

EduTron Lowell Public Schools (Math/Science) and EduTron Fitchburg State College (Math)

- Two remedial courses, based on the EduTron model for MMSP courses, will continue to be offered at Fitchburg State College (FSC). EduTron partners supported FSC in designing three pre-service courses that are optimized for education majors. EduTron has begun working with FSC to help FSC apply the EduTron model used in MMSP math courses to science courses.
- FSC has partnered with Lowell Public Schools to offer a teacher certification/CAGS program.
- Four mathematics and two science courses were approved by FSC as offerings at the continuing education level.

Lesley University C3 (Math)

- Two courses created through Lesley University's MMSP in 2007-2008 are now offered to Lesley's on-campus pre-service teachers.
- Efforts through MMSP contributed to the development of an online Mathematics Education program at Lesley leading to the Master of Arts degree for elementary and middle school teachers.
- Nine math content courses were developed through participation in the MMSP program in 2007-2008 and in prior years. All of these courses are part of Lesley University's mathematics major for undergraduates, which would not have been possible without the MMSP program.

North Shore (Science)

- As a result of their joint involvement in MMSP through the North Shore partnership and the National Science Foundation MSP program, Northeastern University has institutionalized all MMSP courses. Eight MMSP courses can be used to fulfill 80% of the degree requirements toward a Master's in Education for Middle School Science. In addition, this degree was developed as a result of these courses.

UMass Amherst C3 (Math/Science)

- Four courses developed through the UMass Amherst partnership were approved for graduate level credit.

Salem State C3 (Math)

- Salem State College offers courses developed through MMSP as part of a master's level teaching program in middle school mathematics. All courses developed by Salem State College through MMSP can be applied towards earning a degree through that program. (This approach had been developed through Salem State College's prior participation MMSP.)

Southeast/Cape (Science)

- Participants of the three courses offered through the SE/Cape partnership may apply credit for the courses towards the Master of Arts in Teaching in Physical Science program that is offered through Bridgewater State College.

Worcester Polytechnic Institute (Science)

- A Master of Science Education program was created through the physics department at Worcester Polytechnic Institute, and the MMSP course that was offered through the WPI-Science partnership will serve as the model for instruction of future courses that will be offered.

Worcester Public Schools (Math)

- As a result of the experience of working with Worcester Public Schools on MMSP, Clark University has expressed interest in exploring the institutionalization of courses that were offered through MMSP.