

MSP MIS Summary Data for Comprehensive and Targeted Partnership Projects: 2002-03 and 2003-04 School Years

Executive Summary

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Executive Summary

The Math and Science Partnership (MSP) Management Information System (MIS) is designed to obtain annual information from each MSP-funded project. This information can be used to describe the implementation and impact of the overall MSP program and to monitor the progress of individual MSP awards. The MIS for Comprehensive and Targeted Partnerships is currently composed of four surveys:¹

- **Annual Project Survey for Comprehensive and Targeted Partnership Projects**—completed by MSP principal investigators (PIs), the survey collects broad-based background information on the project and its partners.
- **Annual K–12 District Survey**—completed by partner K–12 school districts, this survey collects data about the K–12 district and any participating K–12 schools.
- **Annual IHE Survey**—completed by each MSP institution of higher education (IHE) partner, this survey obtains information about IHE involvement.
- **Annual IHE Participant Survey**—completed by individual IHE participants (e.g., disciplinary faculty, administrators) this survey collects information about the characteristics and contributions of IHE faculty members and administrators who are active participants in an MSP project.

The response rate for the initial administration of the MSP MIS was quite high. For this collection, 406 (97.8 percent) of the 415 K–12 district partners across Cohorts 1 and 2 completed the K–12 District Survey, and 115 (98.3 percent) of the 117 IHE partners completed the IHE Survey. In addition, the 117 IHE partners reported a total of 818 active IHE participants during the 2002–03 and 2003–04 school years. Of this number, 776 (94.9 percent) fully completed and submitted their individual Annual IHE Participant Survey. All 34 projects required to complete the 2003–04 survey for partnership projects did so.

This report provides initial findings for 34 Cohort 1 and 2 MSP projects for the 2002–03 and 2003–04 school years. It addresses five basic questions about the MSP program:

- What organizations were involved in the MSP program?
- What were the contributions of the individuals involved in the design and delivery of MSP activities?
- To what extent did MSP partners collaborate on the design and delivery of MSP activities?
- What MSP activities were targeted to IHE recipients?
- What MSP activities were targeted to K–12 recipients?

Findings from the first 2 years of the MSP program provide evidence that projects are laying the groundwork for significant changes in their participating educational institutions. Most notably, projects are making progress in establishing the kinds of partnerships envisioned by NSF. The unique feature of these partnerships, the involvement of disciplinary faculty in the reform efforts, is in place and growing.

¹ A fifth survey obtains annual information from the MSP RETA projects. Beginning with the 2004–05 school year, additional surveys will be administered to collect data from the MSP Institute projects.

The number of teachers and students involved in participating K–12 schools is also increasing—and data suggest that projects are, in fact, addressing the needs of urban and rural students with significant needs.

What Organizations Were Involved in the MSP Program?

As originally envisioned, the role played by IHEs during the 2003–04 school year was quite significant. In fact, most of the MSP lead organizations were either institutions of higher education (64.7 percent) or higher education systems/consortia (8.8 percent). In addition, IHEs accounted for 18.4 percent of the 635 core and supporting partner organizations identified by projects during the 2003–04 school year. Most of these 117 IHE partners were either a master’s college/university (29.9 percent) or doctorate-granting institution (29.0 percent). Of the remaining IHE partners, 18.9 percent were baccalaureate colleges and 12.8 percent were associate’s colleges.

A wide array of other organizations were also significantly involved as either core or supporting partners. Most notably K–12 districts/consortia made up 5.9 percent of the lead institutions and 65.4 percent of the core and supporting partners. In addition 9 county, regional, or state education agencies served as core partners, while 13 served as supporting partners. Other supporting partners included science centers or museums (13 partners) and businesses or industry organizations (12 partners).

The total number of K–12 schools that worked with the MSP program in *any* capacity increased from 1,088 during the 2002–03 school year to 3,559 during the 2003–04 school year—with 744 (20.9 percent) of these 3,559 K–12 schools meeting the criteria for significant MSP participation.ⁱⁱ In Cohort 1, the proportion of schools that met the criteria increased—from 14.6 percent during the 2002–03 school year to 20.3 percent during the 2003–04 school year. The greatest growth during this 2-year period occurred at the high school level—from 23 to 119.

The program served students in a wide range of community settings. Half (50.6 percent) of the K–12 district partners were located in an urban setting, while two-fifths were in less densely populated settings such as rural communities outside of a metropolitan statistical area (MSA) (17.6 percent), small towns (13.5 percent), or rural communities inside of an MSA (10.6 percent).

What Were the Contributions of the Individuals Involved in the Design and Delivery of MSP Activities?

At the IHE level, a total of 1,704 individuals participated in the development and/or delivery of MSP activities during the 2003–04 school year. IHE participants reported that they were most heavily involved in inservice activities (69.1 percent), while 45.5 percent were involved in preservice activities and 46.9 percent were involved in management or other MSP-related activities. In addition:

- More than half (53.1 percent) were tenured, with an additional 17.5 percent on a tenure track.
- Nearly two thirds (62.2 percent) identified their instructional area as belonging to the scientific, mathematical, or engineering fields. Another 23.6 percent indicated that education was their primary instructional field.

ⁱⁱ Schools met the criteria for significant participation in the MSP program if they met *any* of the following conditions: (a) 30 percent or more of targeted teachers participated in 30 or more hours of MSP-sponsored activities during a single school year, (b) 30 percent or more of targeted students were engaged in a challenging mathematics or science curriculum that was initiated or revised with MSP support during a single school year, or (c) 30 percent or more of targeted students participated in a MSP-supported academic enrichment activity during a single school year.

- Almost half (48.4 percent) identified their research area as belonging to the scientific, mathematical, or engineering fields—while 34.5 percent indicated that education was their primary field of research.
- Over two-thirds (69.9 percent) had some prior experience in K–12 reform efforts.
- The majority (59.7 percent) reported spending 81 or more hours on MSP-related activities during the 2003–04 school year.
- Among Cohort 1 partnerships, there was an increase in the number and proportion of participating STEM faculty over the 2-year period—from 252 (22.7 percent) to 332 (33.4 percent).
- For all respondents that participated in *both* school years, there was an increase in the proportion that reported spending 81 or more hours on MSP in a single year—from 63.5 percent in the 2002–03 school year to 72.2 percent in the 2003–04 school year.

At the K–12 level, a total of 11,262 K–12 participants were involved in the development and/or delivery of MSP activities during the 2003–04 school year. Of this number, 9,672 (85.9 percent) were K–12 teachers and 897 (8.0 percent) were school-level administrators. In addition, the number of Cohort 1 K–12 participants doubled in the school districts that participated in MSP in both years—from 1,127 in the 2002–03 school year to 2,286 in the 2003–04 school year.

Overall, a total of 490 non-academic individuals were involved in developing and/or delivering MSP activities during the 2003–04 school year. Fourteen (41.2 percent) MSP projects worked with a scientist from a non-academic setting during the 2003–04 school year. Five projects reported working with a mathematician (14.7 percent) and/or an engineer (14.7 percent).

To What Extent Did MSP Partners Collaborate on the Design and Delivery of MSP Activities?

Partnerships were engaging multiple participant types—most notably IHE faculty and K–12 participants—in the design and delivery of their MSP efforts. Over half of the MSP activities identified by partnership projects for the 2003–04 school year were conducted with input from IHE STEM faculty (68.0 percent), K–12 teachers (61.5 percent), and/or IHE education faculty (57.9 percent). In addition, almost half (48.7 percent) of all MSP activities—and 52.2 percent of activities targeted to K–12 recipients—were conducted with the involvement of both IHE faculty and K–12 teachers.

Projects indicated that their greatest challenge in establishing and maintaining their partnerships was a lack of time or other resources among their K–12 partners (47.1 percent) and/or IHE partners (41.2 percent). There is evidence that at least one of the partnership challenges cited by projects was associated with reduced participation among IHE participants. Specifically, projects that reported “lack of time” as a moderate or large challenge had fewer IHE participants spending 161 or more hours on their MSP-related activities (Gamma coefficient of -0.49).

What MSP Activities Were Targeted to IHE Recipients?

MSP projects conducted a wide range of activities at the IHE level that were designed to recruit and train new STEM teacher candidates. The most commonly cited activities targeted to IHE recipients during the 2003–04 school year were providing opportunities for preservice students to gain classroom experience

before student teaching (47.1 percent), involving IHE STEM faculty in preservice programs (44.1 percent), developing/revising preservice courses to align with national and/or state standards (41.2 percent), and providing opportunities for STEM postsecondary students to tutor K–20 students (41.2 percent).

A total of 6,188 individuals across 115 participating IHEs were recipients of MSP activities during the 2003–04 school year. Most of these recipients were preservice undergraduate and alternative certification students (40.5 percent) or STEM undergraduate students (28.7 percent). Another 12.9 percent were IHE STEM faculty, while 5.8 were graduate students. In addition, a total of 2,119 students were enrolled in a preservice course that was initiated or revised with MSP support during the 2003–04 school year.

What MSP Activities Were Targeted to K–12 Recipients?

The partnerships used a variety of strategies to enhance the skills of K–12 teachers. During the 2003–04 school year, partnerships were most heavily involved in such inservice strategies as developing and utilizing the skills of teacher leaders (97.1 percent), conducting content and/or pedagogical workshop for K–12 teachers (91.2 percent), providing administrative supports for K–12 teachers (85.3 percent), conducting targeted workshops for K–12 teachers (73.5 percent), and providing instructional materials for K–12 teachers (61.8 percent). During the 2003–04 school year, the 34 MSP projects provided professional development to a total of 16,957 K–12 teachers and 1,652 administrators. While most teachers (90.9 percent) and administrators (98.1) received between 1 and 80 hours of professional development over the 12-month period, 13.9 percent of middle school science and 15.6 percent of high school science teachers received 81 or more hours.

MSP projects also used a wide range of strategies to provide K–12 students with challenging mathematics and science courses. The most prominently cited activities included aligning mathematics (75.9 percent) and science (66.7 percent) curricula to other courses/standards, implementing standards-based mathematics (62.1 percent) and science (66.7 percent) curricula, and implementing evidence-based mathematics (51.7 percent) and science (47.6 percent) curricula.

A total of 450,810 students were enrolled in the K–12 schools that met the criteria for significant MSP participation during the 2003–04 school year. Of this number, 42.2 percent were Hispanic, 37.0 percent were White, and 13.0 percent were Black. For Cohort 1 partnerships, the number of students potentially reached by MSP increased dramatically over the 2-year period—from 84,023 during the 2002–03 school year to 281,807 during the 2003–04 school year. The increase was accompanied by a change in the characteristics of the students potentially affected by MSP. Specifically, the proportion of White students in Cohort 1 K–12 schools decreased over the 2-year period (from 49.7 percent to 36.3 percent), and the proportion of Hispanic students increased from 26.8 percent to 40.5 percent.

Half (50.2 percent) of 8th grade students in middle schools that met the criteria had been enrolled in a Level 1 mathematics course. Of these 10,055 8th grade students, 70.1 percent received a passing grade.

Limited data were available regarding proficiency on mathematics and science assessments in the schools that met the criteria. During the 2003–04 school year, the proportion of students scoring at or above proficient on an assessment was 42.6 percent for mathematics and 48.1 percent for science. In both mathematics and science, there were some noteworthy differences in the performance of students across race/ethnicity categories. For example, the proportion scoring at or above proficient on a science assessment was highest for Asian (69.3 percent) and White (60.6 percent) students—compared with 43.8 percent for Hispanic students and 24.5 percent for Black students.