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

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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:[i]

- **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.

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[i] 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.

[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.

- 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.

- 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.

Acknowledgments

The collection and analysis of data for this report was the collaborative work of a dedicated team. In addition to the individuals listed on the cover page, several other Westat staff were responsible for the design and implementation of the MSP MIS. Edward Mann, Dori Eliot, George Washburn, and Robert Delfierro were responsible for the programming of the online monitoring system. Amber Winkler, Joseph McInerney, Carl Setzer, John Wells, Barbara Queen, and Xiaodong Zhang participated in the development of the surveys and/or the collection and validation of the data. Our technical editor was Carol Litman, and our desktop publishing specialist was Sylvie Warren.

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LIST OF EXHIBITS

Section A: Introduction

Overview of the Math and Science Partnership Program

The Math and Science Partnership Program (MSP) implements a key element of the President's education vision, articulated in the No Child Left Behind Act, through a major investment designed to enhance the performance of U.S. students in mathematics and science, grades K–12. The MSP effort is itself a collaboration between two federal agencies, the National Science Foundation (NSF) and the U.S. Department of Education (ED). The goals of the MSP program are as follows:

- Ensure that all K–12 students have access to, are prepared for, and are encouraged to participate and succeed in challenging curricula and advanced mathematics and science courses;

- Enhance the quality, quantity, and diversity of the K–12 mathematics and science teacher workforce; and

- Develop evidence-based outcomes that contribute to our understanding of how students effectively learn mathematics and science.

MSP projects aim to address these issues by incorporating a depth and quality of creative strategic actions that extend beyond commonplace approaches. Although all MSP projects share a focus on the same set of fundamental issues, individual MSP projects differ in their scope and are categorized accordingly. MSP provides awards to the following three distinct types of partnerships:

- *Comprehensive Partnerships* implement change in mathematics and/or science educational practices in both institutions of higher education (IHEs) and in K–12 schools and school districts, resulting in improved student achievement across the K–12 continuum.

- *Targeted Partnerships* focus on improved K–12 student achievement in a narrower grade range or disciplinary focus within mathematics or science.

- *Institute Partnerships*, also referred to as *Teacher Institutes for the 21st Century*, focus on the development of mathematics and science teachers as school- and district-based intellectual leaders and master teachers.

A fourth type of MSP project addresses the research, evaluation, and technical assistance (MSP RETA) component of the MSP program. The MSP RETA projects are intended to enhance the capacity of the Comprehensive, Targeted, and Institute partnership projects to achieve their goals and to contribute to the development and dissemination of the knowledge base necessary to achieve sustained educational reform. As of FY 2004, the MSP program included 12 Comprehensive partnerships, 28 Targeted partnerships, 8 Institute partnerships, and 32 RETA projects. This report covers the 34 Comprehensive and Targeted partnership projects that completed the MSP MIS for the 2002–03 and 2003–04 school years.[1]

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[1] One Cohort 1 project (Baltimore County Public Schools) was not required to complete the collection but will submit data in future years. In addition, no MSP Institutes completed the MSP Management Information System for the 2003–04 school year. Plans are underway to develop surveys for the newly funded Institute projects. As such, we anticipate that information about the MSP Institute projects will be included in the Annual Report for the 2004–05 school year. Annual data about the MSP RETAs are covered in a separate document.

Overview of the MSP Management Information System

In September 2004, NSF and its contractor (Westat) initiated the MSP Management Information System (MIS)—a web-based data collection system. The MSP MIS is designed to obtain annual information from each MSP-funded project that can be used to assess the implementation and impact of the overall MSP program and to monitor the progress of individual MSP awards. The MSP MIS uses computer technology to check data for completeness, validity, and consistency prior to final submittal. This review is performed as data are entered into the online system. Questionable or incomplete entries are called to respondents' attention before they are formally submitted. Features such as automatic tabulations, drop-down menus, and predefined data input forms facilitate the reporting process, provide useful and rapid feedback to the data providers, and reduce response burden.

Because the same data are to be collected each year, the system allows for comparisons both within and across projects over time. Data collected through this system provide NSF and other stakeholders with timely information on the implementation and impact of the overall MSP program. These data also enable NSF program officers to assess the annual progress of their projects. Individual projects can make use of this information for their own planning, reporting, and evaluation efforts.

The MIS for Comprehensive and Targeted partnership projects is currently composed of four surveys:[2]

- **Annual Project Survey for Comprehensive and Targeted Partnership Projects.** This survey, completed by MSP principal investigators (PIs), is designed to collect background information on each project's partner organizations, the grades and subject areas that the project is addressing, the scope of the project, the number of project participants, the type of project activities by key feature, challenges encountered during the previous year, and involvement with RETA awards.

- **Annual K–12 District Survey**. This survey, completed by participating K–12 school districts, collects data about each participating K–12 district and school.[3] Information requested includes the number of schools within the district participating in MSP, the amount of MSP-sponsored professional development received by K–12 teachers and administrators, the demographic characteristics of all K–12 teachers in participating schools, teacher retention and recruitment in participating schools, the demographic characteristics of students in participating schools by grade level, the number of students enrolled in and completing challenging mathematics and science courses, and student performance on mathematics and science accountability assessments. Teacher and student data are always reported by demographic characteristics.

- **Annual IHE Survey.** This survey, completed by each MSP IHE partner, obtains information on the number of individuals who developed and/or delivered MSP activities, the number of individuals who were recipients of MSP activities, preservice enrollment, graduation and teacher certification, and information about preservice courses that were initiated or revised with MSP support.

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[2] A fifth survey is designed to obtain annual information from the MSP RETA projects. Additional surveys are being developed to collect data from MSP Institute projects.

[3] The MSP MIS collects two levels of data from participating K–12 schools in partner districts. Among schools working with the MSP program in *any* capacity, the system only collects the school's National Center for Education Statistics identification number, and the school and grade levels served. However, among schools meeting the criteria for significant participation in the MSP program, the system obtains detailed data about the characteristics of teachers and students at the school, as well as information about students' academic performance—i.e., enrollment and completion in mathematics and science courses, and scores on mathematics and science assessments. The rationale for collecting additional data from schools that meet the criteria is that their significant involvement in MSP should produce measurable gains in student achievement.

- **Annual IHE Participant Survey.** This survey, completed by individual IHE participants (e.g., disciplinary faculty, administrators) collects information about the characteristics and contributions of all 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.

Overview of the Report

The findings in this report represent a broad overview of the data that were submitted by the 34 projects that completed the MSP MIS for the 2003–04 school year. Where appropriate, information is also provided about the data that Cohort 1 partnerships submitted for the 2002–03 school year. The report is designed to answer five broad questions about the MSP program:

- ***What organizations were involved in the MSP program?*** In Section B, we provide information on the characteristics of the organizations that make up the MSP projects—including lead organizations, partner organizations, institutions of higher education, K–12 school districts and schools, and project evaluators. This section also examines factors that projects indicated hindered their efforts to engage partners and collect MSP-related data.

- ***What were the contributions of the individuals involved in the design and delivery of MSP activities?*** In Section C, we provide information on the characteristics of those individuals responsible for designing and delivering MSP-related activities over the 2-year period—including IHE participants, non-academic participants, and K–12 teachers and administrators.

- ***To what extent did partners collaborate on the design and delivery of MSP activities?*** In Section D, we discuss the extent to which multiple MSP partners were involved in the design and delivery of MSP activities. We also describe the range of challenges that projects encountered as they engaged their partners in their MSP activities—and steps taken to overcome those challenges.

- ***What MSP activities were targeted to IHE recipients?*** In Section E, we provide information on the range of MSP activities that were targeted to IHE recipients—as well as the number of individuals within participating IHEs that participated in these activities. This section also provides information about preservice courses developed or modified with MSP support.

- ***What MSP activities were targeted to K–12 recipients?*** In Section F, we describe the range of MSP activities that were targeted to K-12 districts and schools—as well as the number of individuals within participating K-12 schools that participated in these activities. Additional information is provided on the amount of MSP-supported professional development received by K–12 teachers and administrators in partner K–12 districts, the characteristics of K–12 students in the schools that met the criteria for substantial involvement in MSP, and the proportion of students that scored at or above proficient on a mathematics or science assessment in the schools that met the criteria.

Each section begins with a brief overview that addresses the corresponding question. The detailed tables that follow include a brief assessment of noteworthy findings and trends (where applicable). Due to rounding, some of the percentages on these tables do not sum to 100.0 percent.

It should be noted that the tables in this report only reflect aggregate data (i.e., across all 34 MSPs that completed the MSP MIS, by cohort) for the first collection cycle. As such, the picture that is presented describes where MSP projects were at the beginning of their efforts, and the data should not be interpreted as evidence for or against an MSP "effect."[4]

Although the MSP MIS checks data for completeness and consistency prior to final submittal, the post-collection validations performed by Westat identified a number of additional issues that will need to be addressed before some data can be reported to NSF. Specifically:

- Some districts reported that they entered zeros for those items for which data were not available—e.g., the number of National School Lunch Program participants, special education students, and limited English proficiency (LEP) students. In addition, a significant proportion of districts were unable to report data on the number of new teachers at the school and/or the number of teachers that left the school during the previous school year. Due to time constraints, these items have not yet been fully validated. In some instances, the zeros may represent actual findings; in other cases, the zeros may indicate that the data were not available.

- Only those districts that had completed and submitted the K–12 District Survey were included in the analyses that appear in this report. In addition, we excluded K–12 data for the Appalachian MSP because a considerable number of its districts had validation issues that were not resolved before the cutoff date.

Updated data will be presented to NSF as they become available. In addition, we anticipate that planned changes to the online system will prevent most of these validation issues before data are submitted to the MSP MIS in future years.

[4] In future years, we will conduct longitudinal, cross-site analyses of key items (e.g., course enrollment, student achievement) to assess what student gains are being made in the various projects, and to look across projects to uncover consistent patterns of outcomes that appear promising. These data, along with information obtained from other components of the online system, have the potential to identify the extent to which MSPs contribute to gains in student achievement, as well as specific project characteristics and activities that contribute the most to those gains.

Section B: What Organizations Were Involved in the MSP Program?

The MSP program for Comprehensive and Targeted Partnerships is designed to unite institutions of higher education, non-academic practitioners, and K–12 school systems around the goal of improving the academic performance of K–20 students in mathematics and science. As a result, the Foundation places considerable emphasis on the composition of the organizations that make up a partnership under the MSP program. This section provides basic information about the characteristics of the organizations that were involved in the MSP program during the 2003–04 school year. Additional information is provided on the extent to which there was an increase in the number of K–12 schools that worked with the MSP program over the 2-year period covered by the MSP MIS.

Lead Organizations

For all Comprehensive and Targeted Partnerships, one of the core partner organizations is designated to serve as the lead organization and submit the MSP proposal on behalf of the partnership. The lead organization is responsible for the management and financial oversight of the project. Most of the lead organizations for Cohorts 1 and 2 were affiliated with higher education organizations—e.g., an institution of higher education (64.7 percent) or a higher education system/consortium (8.8 percent) (Table B2). Two (5.9 percent) of the lead organizations were K–12 school districts.

Partner Organizations

The organizations that come together to form an MSP partnership are classified as being either a core or supporting partner. The main distinction between these two categories is that core partners share responsibility and accountability for the MSP project, while supporting partners are not required to commit to the institutional change necessary to sustain project activities and goals beyond the funding period.

Each Comprehensive and Targeted Partnership project must have at least one core partner that is an IHE and another that is a K–12 school district. It is therefore no surprise that most of the 635 partner organizations identified by the 34 Cohort 1 and 2 partnership projects were either an IHE (18.4 percent) or K–12 school district/consortium (65.4 percent) (Table B3). Aside from K–12 school districts and IHEs, the most common type of core partner was a county, regional, or state education agency (9 core partners). The most common type of supporting partners were public or private organization (16 supporting partners), county, regional, or state education agencies (13 supporting partners), science center or museum (13 supporting partners), and business or industry organizations (12 supporting partners).

Most of the 117 IHE partners were either a master's college/university (29.9 percent) or doctorate-granting institution (29.0 percent) (Table B4). Of the remaining IHE partners, 18.9 percent were baccalaureate colleges and 12.8 percent were associate's colleges.

Half of the K–12 district partners were located in an urban setting—i.e., urban fringe of central city (27.0 percent), urban fringe of mid-size city (10.1 percent), mid-size central city (9.6 percent), and large central city (3.9 percent) (Table B5). Most of the remaining K–12 district partners were located 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).

K–12 Schools

The MSP MIS collects two levels of data from participating K–12 schools in partner districts—i.e., schools working with the MSP program in *any* capacity, and schools meeting the criteria for significant participation in the MSP program.[5] The rationale for separating schools into these two categories is that schools that meet the criteria should realize measurable gains in student achievement as a result of their significant involvement in MSP.

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 (Tables B6 and B6a). One-fifth (20.9 percent) of the 3,559 K–12 schools that were working with MSP in any capacity met the criteria for significant MSP participation during the 2003–04 school year (Table B7). In Cohort 1, the number and proportion of schools that met the criteria increased over the 2-year period—from 159 (14.6 percent) during the 2002–03 school year to 388 (20.3 percent) during the 2003–04 school year (Table B7a). The greatest growth occurred at the high school level—(from 23 during the 2002–03 school year to 119 during the 2003–04 school year), suggesting that Cohort 1 partnership projects placed special emphasis on high schools during their second year.

MSP Evaluators

There were 57 evaluators associated with the MSP partnership projects during the 2003–04 school year (Table B9). Of this number, 43.9 percent were affiliated with an IHE or higher education system, while 29.8 percent were affiliated with a private firm.

[5] 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.

Table B1.—Information about the project type, subject focus, and grade spans of MSP partnership projects for the 2003–04 school year

Project characteristic	Overall (n=34 projects)		Cohort 1 (n=22 projects)		Cohort 2 (n=12 projects)	
	Number	Percent	Number	Percent	Number	Percent
Project type						
Targeted	23	67.6	16	72.7	7	58.3
Comprehensive	11	32.4	6	27.3	5	41.7
Subject focus						
Mathematics	13	38.2	9	40.9	4	33.3
Science	5	14.7	3	13.6	2	16.7
Mathematics and science	16	47.1	10	45.5	6	50.0
Grade levels served						
Pre-kindergarten	10	29.4	8	36.4	2	16.7
Kindergarten	19	55.9	12	54.5	7	58.3
1st	19	55.9	12	54.5	7	58.3
2nd	19	55.9	12	54.5	7	58.3
3rd	20	58.8	12	54.5	8	66.7
4th	23	67.6	15	68.2	8	66.7
5th	25	73.5	16	72.7	9	75.0
6th	30	88.2	18	81.8	12	100.0
7th	32	94.1	20	90.9	12	100.0
8th	32	94.1	20	90.9	12	100.0
9th	27	79.4	18	81.8	9	75.0
10th	27	79.4	18	81.8	9	75.0
11th	25	73.5	17	77.3	8	66.7
12th	25	73.5	17	77.3	8	66.7

A total of 34 MSP partnership projects (22 from Cohort 1 and 12 from Cohort 2) completed the MSP MIS for the 2003–04 school year. Of this number, 23 were Targeted and 11 were Comprehensive. In addition, 13 projects (38.2 percent) focused exclusively on mathematics and 5 (14.7 percent) on science, with the remaining 16 projects (47.1 percent) focusing on both mathematics and science.

Almost all of the partnership projects were designed to serve middle school grades—with 94.1 percent serving 7th and/or 8th grade students and 88.2 percent serving 6th grade students. While most partnership projects also served high school students, only slightly more than half reached students in 1st, 2nd, and 3rd grades.

Table B2.—Types of MSP lead organizations for the 2003–04 school year

Type of organization	Overall (n=34 projects)		Cohort 1 (n=22 projects)		Cohort 2 (n=12 projects)	
	Number	Percent	Number	Percent	Number	Percent
Institution of higher education (IHE)	22	64.7	15	68.2	7	58.3
Higher education system/consortium	3	8.8	2	9.1	1	8.3
Non-profit organizations focused on K–12 mathematics/science education	3	8.8	2	9.1	1	8.3
K–12 school district	2	5.9	1	4.5	1	8.3
County, regional, or state education agency	2	5.9	1	4.5	1	8.3
Other	2	5.9	1	4.5	1	8.3

Almost three-quarters of the lead organizations were higher education organizations—e.g., an institution of higher education (64.7 percent) or a higher education system/consortium (8.8 percent). Two (5.9 percent) of the lead organizations were K–12 school districts.

Table B3.—Types of MSP partner organizations for the 2003–04 school year

Type of organization	Overall (n=34 projects)		Cohort 1 (n=22 projects)		Cohort 2 (n=12 projects)	
	Number	Average	Number	Average	Number	Average
All partners	635	18.7	330	15.0	305	25.4
IHE and K–12 partners						
Institution of higher education (IHE)	117	3.4	55	2.5	62	5.2
K–12 school district/consortium	415	12.2	239	10.9	176	14.7
Other core partner	22	0.6	6	0.3	16	1.3
County, regional, or state education agency	9	0.3	1	0.0	8	0.7
Public or private organization	4	0.1	1	0.0	3	0.3
Science center or museum	1	0.0	1	0.0	0	0.0
Research laboratory	1	0.0	1	0.0	0	0.0
Other	7	0.2	2	0.1	5	0.4
Other supporting partner	81	2.4	30	1.4	51	4.3
Public or private organization	16	0.5	11	0.5	5	0.4
County, regional or state education agency	13	0.4	3	0.1	10	0.8
Science center or museum	13	0.4	1	0.0	12	1.0
Business or industry organization	12	0.4	5	0.2	7	0.6
Disciplinary or professional society	6	0.2	1	0.0	5	0.4
Dissemination or implementation center	5	0.1	2	0.1	3	0.3
Research laboratory	4	0.1	1	0.0	3	0.3
Community organization	3	0.1	1	0.0	2	0.2
Other non education government agency	2	0.1	2	0.1	0	0.0
Private foundation	2	0.1	1	0.0	1	0.1
Other	5	0.1	2	0.1	3	0.3

The 34 partnership projects listed a total of 635 core and supporting partner organizations. Of this number, 415 (65.4 percent) were a K–12 school district, 117 (18.4 percent) were an institution of higher education (IHE), 22 (3.5 percent) were another type of core partner, and 81 (12.8 percent) were another type of supporting partner. Aside from K–12 school districts and IHEs, the most common type of core partner was a county, regional, or state education agency (9 core partners). The most common type of supporting partners were a public or private organization (16 supporting partners), county, regional, or state education agency (13 supporting partners), science center or museum (13 supporting partners), or business or industry organization (12 supporting partners).

It is worth noting that Cohort 2 partnership projects tended to have more core and supporting partners than their Cohort 1 counterparts. Overall, MSP projects had an average of 19 partners, with Cohort 1 partnerships averaging 15 partners and Cohort 2 partnerships averaging 25 partners. In addition, Cohort 1 partnership projects partnered with an average of 3 IHEs and 11 K–12 school districts—compared with 5 IHEs and 15 K–12 school districts for Cohort 2 partnership projects.

Table B4.—Carnegie Classification of IHE partners for the 2003–04 school year

Carnegie Classification	Overall (n=117 IHEs)		Cohort 1 (n=55 IHEs)		Cohort 2 (n=62 IHEs)	
	Number	Percent	Number	Percent	Number	Percent
Doctorate-granting institutions						
Doctoral/Research Universities—Extensive	24	20.5	15	27.3	9	14.5
Doctoral/Research Universities—Intensive	10	8.5	5	9.1	5	8.1
Master's colleges and universities						
Master's Colleges and Universities I	33	28.2	16	29.1	17	27.4
Master's Colleges and Universities II	2	1.7	2	3.6	0	0.0
Baccalaureate colleges						
Baccalaureate Colleges—Liberal Arts	7	6.0	1	1.8	6	9.7
Baccalaureate Colleges—General	14	12.0	3	5.5	11	17.7
Baccalaureate/Associates Colleges	1	0.9	0	0.0	1	1.6
Associate's colleges	15	12.8	6	10.9	9	14.5
Specialized institutions						
Teachers Colleges	1	0.9	1	1.9	0	0.0
Medical schools and medical centers	1	0.9	0	0.0	1	1.6
Tribal colleges and universities	1	0.9	0	0.0	1	1.6
Unknown	8	6.8	6	10.9	2	3.2

SOURCE: http://www.carnegiefoundation.org/Classification/CIHE2000/PartIIfiles/partII.htm.

Most of the 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.

Table B5.—Metropolitan status of K–12 district partners for the 2003–04 school year

Metropolitan status	Overall (n=415 districts)		Cohort 1 (n=239 districts)		Cohort 2 (n=176 districts)	
	Number	Percent	Number	Percent	Number	Percent
Urban fringe of central city	112	27.0	33	13.8	79	44.9
Rural, outside MSA	73	17.6	59	24.7	14	8.0
Small town	56	13.5	33	13.8	23	13.1
Rural, inside MSA	44	10.6	21	8.8	23	13.1
Urban fringe of mid-size city	42	10.1	32	13.4	10	5.7
Mid-size central city	40	9.6	25	10.5	15	8.5
Large central city	16	3.9	14	5.9	2	1.1
Large town	6	1.4	5	2.1	1	0.6
Unknown	26	6.3	17	7.1	9	5.1

SOURCE: http://nces.ed.gov/ccd/districtsearch/index.asp.

Half of the K–12 district partners were located in an urban setting—i.e., urban fringe of central city (27.0 percent), urban fringe of mid-size city (10.1 percent), mid-size central city (9.6 percent), and large central city (3.9 percent). Most of the remaining K–12 district partners were located 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).

Cohort 2 K–12 district partners were more frequently located in an urban fringe of a central city (44.9 percent, compared with 13.8 percent for Cohort 1). Conversely, a higher proportion of Cohort 1 K–12 districts partners were located in rural communities outside of an MSA (24.7 percent, compared with 8.0 percent for Cohort 2). However, these patterns should be viewed with caution as they are largely driven by the unique make-up of several individual partnerships in the two cohorts. Specifically, many of the rural districts in Cohort 1 are associated with the Appalachian MSP and NC-PIMS projects, while many of the urban districts in Cohort 2 are associated with the MSPGP project.

Table B6.—Number and level of K–12 schools that worked with the MSP program in any capacity during the 2003–04 school year

School level	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
All school levels						
Total	3,559	100.0	1,908	100.0	1,651	100.0
Average	105	n/a	87	n/a	138	n/a
Median	51	n/a	46	n/a	110	n/a
Elementary schools						
Total	2,018	56.7	1,086	56.9	932	56.5
Average	59	n/a	49	n/a	78	n/a
Median	54	n/a	31	n/a	67	n/a
Middle schools						
Total	817	22.9	431	22.6	386	23.4
Average	24	n/a	20	n/a	32	n/a
Median	19	n/a	11	n/a	28	n/a
High schools						
Total	693	19.5	376	19.7	317	19.2
Average	20	n/a	17	n/a	26	n/a
Median	15	n/a	12	n/a	25	n/a
Ungraded schools						
Total	31	0.9	15	0.8	16	0.9
Average	1	n/a	1	n/a	1	n/a
Median	3	n/a	2	n/a	6	n/a

n/a=not applicable

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 (Table B6 and Table B6a). Within Cohort 1, the number increased by 820 over the 2-year period—from 1,088 during the 2002–03 school year to 1,908 during the 2003–04 school year (Table B6a). In Cohort 2, a total of 1,651 K–12 schools worked with the MSP program during the 2003–04 school year.

MSP projects worked with an average of 105 K–12 schools during the 2003–04 school year. The majority of these were elementary schools (56.7 percent). The average Cohort 2 partnership project worked with a higher number of K–12 schools (138) than their Cohort 1 counterpart (87). This trend applied to all school levels—with Cohort 2 partnerships working with an average of 78 elementary schools (compared with 49 for Cohort 1), 32 middle schools (compared with 20 for Cohort 1), and 26 high schools (compared with 17 for Cohort 1).

Table B6a.—Number and level of K–12 schools that worked with the MSP program in any capacity for the 2002–03 and 2003–04 school years

School level	Cohort 1		Cohort 2
	2002–03	2003–04	2003–04
All school levels			
Total	1,088	1,908	1,651
Average	53	87	138
Median	29	46	110
Elementary schools			
Total	603	1,086	932
Average	55	49	78
Median	31	31	67
Middle schools			
Total	214	431	386
Average	13	20	32
Median	8	11	28
High schools			
Total	263	376	317
Average	16	17	26
Median	10	12	25
Ungraded schools			
Total	8	15	16
Average	3	1	1
Median	1	2	6

Table B7.—Proportion of K–12 schools working with MSP that met the criteria for significant MSP participation during the 2003–04 school year[1]

School level	Overall			Cohort 1			Cohort 2		
	Number of schools working with MSP	Schools that met criteria		Number of schools working with MSP	Schools that met criteria		Number of schools working with MSP	Schools that met criteria	
		Number	Percent		Number	Percent		Number	Percent
All school levels	3,559	744	20.9	1,908	388	20.3	1,651	356	21.6
Elementary schools	2,018	345	17.1	1,086	168	15.5	932	177	19.0
Middle schools	817	207	25.3	431	101	23.4	386	106	27.5
High schools	693	187	27.0	376	119	31.6	317	68	21.5
Ungraded schools	31	5	16.1	15	0	0.0	16	5	31.3

[1] 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.

One-fifth (20.9 percent) of the K–12 schools that were working with the MSP program met the criteria for significant participation in MSP during the 2003–04 school year. Of these 744 K–12 schools, 46.4 percent were elementary schools, 27.8 percent were middle schools, and 25.1 percent were high schools. Approximately one-fourth of middle schools (25.3 percent) and high schools (27.0 percent) working with MSP met the criteria.

- The proportion of K–12 schools that met the criteria was similar across the two cohorts. However, the proportion of K–12 schools working with the MSP program that met the criteria in a project's first year was higher for Cohort 2 (21.6 percent) than for Cohort 1 (14.6 percent) (Table B7a).

- In Cohort 1, the number and proportion of schools that met the criteria increased over the 2-year period—from 159 (14.6 percent) during the 2002–03 school year to 388 (20.3 percent) during the 2003–04 school year (Table B7a). The greatest growth occurred at the high school level—from 23 during the 2002–03 school year to 119 during the 2003–04 school year. This suggests that during their second year of operation, Cohort 1 partnerships placed special emphasis on high schools.

Table B7a.—Proportion of K–12 schools working with the MSP program that met the criteria for significant MSP participation for the 2002–03 and 2003–04 school years[1]

School level	Cohort 1						Cohort 2		
	2002–03			2003–04			2003–04		
	Number of schools working with MSP	Schools that met criteria		Number of schools working with MSP	Schools that met criteria		Number of schools working with MSP	Schools that met criteria	
		Number	Percent		Number	Percent		Number	Percent
All school levels	1,088	159	14.6	1,908	388	20.3	1,651	356	21.6
Elementary schools	603	101	16.7	1,086	168	15.5	932	177	19.0
Middle schools	214	35	16.4	431	101	23.4	386	106	27.5
High schools	263	23	8.7	376	119	31.6	317	68	21.5
Ungraded schools	8	0	0.0	15	0	0.0	16	5	31.3

[1] 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.

Table B8.—Number and proportion of K–12 schools that met the criteria for significant MSP participation during the 2003–04 school year[1]

Criterion	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
Schools that met *any* of the criteria	719	100.0	363	100.0	356	100.0
Schools that met *one* of the criteria						
Thirty percent of targeted teachers participated in 30 or more hours of MSP-sponsored activities during a school year	487	67.7	131	36.1	356	100.0
Thirty percent of targeted students were engaged in a challenging mathematics or science curriculum that was initiated or revised with MSP support during a school year	59	8.2	59	16.3	0	0.0
Thirty percent of targeted students participated in a MSP-sponsored academic enrichment activity during a school year	7	1.0	7	1.9	0	0.0
Schools that met *two* of the criteria						
Thirty percent of targeted teachers participated in 30 or more hours of MSP-sponsored activities and 30 percent of targeted students participated in a MSP-sponsored academic enrichment activity during a school year	130	18.1	130	35.8	0	0.0
Thirty percent of targeted teachers participated in 30 or more hours of MSP-sponsored activities and 30 percent of targeted students were engaged in a challenging mathematics or science curriculum that was initiated or revised with MSP support during a school year	6	0.8	6	1.7	0	0.0
Thirty percent of targeted students were engaged in a challenging mathematics or science curriculum that was initiated or revised with MSP support during a school year and 30 percent of targeted students participated in a MSP-sponsored academic enrichment activity during a school year	4	0.6	4	1.1	0	0.0
Schools that met *all* three of the criteria	26	3.6	26	7.2	0	0.0

[1] This table does not include the 25 Cohort 1 schools that met one or more criteria in the 2002–03 school year but none of the criteria in the 2003–04 school year.

Most (90.3 percent) of the K–12 schools that met the criteria during the 2003–04 school year did so by focusing (at least in part) on mathematics and science teacher involvement. However, there was a noteworthy difference across the two cohorts in how K–12 schools met the criteria in the first year of their project. Specifically, all Cohort 2 schools initially met the criteria by focusing solely on mathematics and science teachers, while 58.5 percent of Cohort 1 schools initially met the criteria by focusing solely on student involvement (Table B8a). One explanation might be that these Cohort 1 schools implemented a curriculum that was initiated or revised with MSP support without first training teachers in the use of the curriculum. Another possibility could be that the professional development provided to Cohort 1 teachers in support of their curriculum fell short of the 30-hour cutoff.

Almost two-thirds (61.6 percent) of the Cohort 1 schools that met the criteria during the 2002–03 school year reported that they satisfied two or more of the three conditions for significant participation in MSP (Table B8a). The proportion of Cohort 1 schools satisfying multiple conditions dropped to 45.8 percent during the 2003–04 school year.

Almost half (49.7 percent) of Cohort 1 schools that met the criteria during the 2002–03 school year satisfied both of the student-focused conditions—i.e., 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 and 30 percent or more of targeted students participated in a MSP-sponsored academic enrichment activity during a single school year (Table B8a).

None of the Cohort 2 schools met any of the student-focused conditions for significant participation in MSP during the 2003–04 school year.

Table B8a.—Number and proportion of K–12 schools that met the criteria for significant MSP participation for the 2002–03 and 2003–04 school years[1]

Criterion	Cohort 1				Cohort 2	
	2002–03		2003–04		2003–04	
	Number	Percent	Number	Percent	Number	Percent
Schools that met *any* of the criteria	159	100.0	363	100.0	356	100.0
Schools that met *one* of the criteria						
Thirty percent of targeted teachers participated in 30 or more hours of MSP-sponsored activities during a school year	47	29.6	131	36.1	356	100.0
Thirty percent of targeted students were engaged in a challenging mathematics or science curriculum that was initiated or revised with MSP support during a school year	5	3.1	59	16.3	0	0.0
Thirty percent of targeted students participated in a MSP-sponsored academic enrichment activity during a school year	9	5.7	7	1.9	0	0.0
Schools that met *two* of the criteria						
Thirty percent of targeted teachers participated in 30 or more hours of MSP-sponsored activities and 30 percent of targeted students participated in a MSP-sponsored academic enrichment activity during a school year	15	9.4	130	35.8	0	0.0
Thirty percent of targeted teachers participated in 30 or more hours of MSP-sponsored activities and 30 percent of targeted students were engaged in a challenging mathematics or science curriculum that was initiated or revised with MSP support during a school year	0	0.0	6	1.7	0	0.0
Thirty percent of targeted students were engaged in a challenging mathematics or science curriculum that was initiated or revised with MSP support during a school year and 30 percent of targeted students participated in a MSP-sponsored academic enrichment activity during a school year	79	49.7	4	1.1	0	0.0
Schools that met *all* three of the criteria	4	2.5	26	7.2	0	0.0

[1] Twenty-five of the Cohort 1 schools that met one or more criteria in the 2002–03 school year did not meet any of the conditions in the 2003–04 school year.

Table B9.—Organizational affiliation of MSP evaluators for the 2003–04 school year

Type of organization	Overall (n=57 evaluators)		Cohort 1 (n=34 evaluators)		Cohort 2 (n=23 evaluators)	
	Number	Percent	Number	Percent	Number	Percent
Private firm	17	29.8	12	35.3	5	21.7
IHE or higher education system (non-partner organization)	16	28.1	10	29.4	6	26.1
IHE or higher education system (partner organization)	9	15.8	4	11.8	5	21.7
Non-profit organization	4	7.0	1	2.9	3	13.0
Other	9	15.8	6	17.6	3	13.0
Not applicable	2	3.5	1	2.9	1	4.4

There were 57 evaluators associated with the MSP partnership projects during the 2003–04 school year. Of this number, 43.9 percent were affiliated with an IHE or higher education system, while 29.8 percent were affiliated with a private firm.

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

Perhaps more than other educational reform efforts, the scope and success of the MSP program are influenced by the composition and quality of the individuals that participate in project-related activities, because MSP partnership projects are designed to draw upon the disciplinary expertise of a wide range of K–20 educators and other disciplinary experts. This section provides findings for three types of individuals involved in the design and delivery of MSP activities: IHE participants, non-academic practitioners, and K–12 participants.

IHE Participants

The role of higher education disciplinary faculty, the keystone of this intervention, is essential to the success of the entire MSP program. In fact, it is the rigorous involvement of university science, mathematics, and engineering faculty that distinguishes MSP from other education reform efforts. It is anticipated that the participation of disciplinary faculty will enhance the quality of the mathematics and science professional development delivered to K–12 teachers. It is further expected that they will provide K–12 teachers and students with valuable internships and research experiences in mathematics- and science-related fields.

A total of 1,704 individuals across 115 IHEs participated in the development and/or delivery of MSP activities during the 2003–04 school year (Table C1). Most of these individuals were either STEM faculty (34.5 percent) or students (35.3 percent). Among Cohort 1 partnerships, there was an increase in the number and proportion of participating individuals who were STEM faculty—from 252 (22.7 percent) during the 2002–03 school year to 332 (33.4 percent) during the 2003–04 school year (Table C1a). During the same period, there was a decrease in the number and proportion of students involved in the development or delivery of MSP activities—from 592 (53.3 percent) to 367 (36.9 percent).

Almost three-fifths (59.4 percent) of the individuals responding to the IHE Participant Survey for the 2003–04 school year were male (Table C2). In addition:

- Most (88.3 percent) of the respondents were White; 4.4 percent were Black, and 4.4 percent were Asian (Table C2).

- Over two-thirds (69.9 percent) had some prior experience in K–12 reform efforts (Table C2).

- More than half (53.1 percent) were tenured at their partner IHEs, while an additional 17.5 percent were on a tenure track (Table C3). One-fourth (25.5 percent) were professors, and 21.6 percent were associate professors.

- 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.

- Almost half (48.4 percent) identified their research area as belonging to the scientific and mathematical fields—while 34.5 percent indicated that education was their primary field of research.

- The majority (59.7 percent) reported spending 81 or more hours on MSP-related activities during the 2003–04 school year (C5). Conversely, only one-fifth (22.7 percent) of IHE participants reported devoting 40 hours or less to the MSP program. Additionally, among respondents that completed a survey for *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 for the 2002–03 school year to 72.2 percent during the 2003–04 school year (Table C5a).

- IHE participants reported that they were most heavily involved with 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 (Table C5).

Non-Academic Practitioners

The MSP program is also designed to promote the participation of non-academic practitioners (e.g., mathematicians, scientists, and engineers) in K–20 reform efforts. As with IHE disciplinary faculty, the involvement of these practitioners is a feature that distinguishes the MSP program from other programs seeking to improve K–12 student outcomes in mathematics and science.

Fourteen (41.2 percent) MSP projects—and 58.3 percent of Cohort 2 partnership projects—worked with a scientist from a non-academic setting during the 2003–04 school year (Table C9). Five projects reported working with a mathematician (14.7 percent) and/or an engineer (14.7 percent). Overall, a total of 490 non-academic individuals were involved in developing and/or delivering MSP activities during the 2003–04 school year (Table C10). Of this number, 147 (30.0 percent) were scientists, 54 (11.0 percent) were engineers, 24 (4.9 percent) were mathematicians, and 265 (54.1 percent) were classified as "other."

K–12 Participants

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 (Table C11). Of this number, 9,672 (85.9 percent) were K–12 teachers and 897 (8.0 percent) were school-level administrators. In addition, the total number of K–12 participants involved in the first year of an MSP project was 1,127 across the 22 Cohort 1 partnership projects (Table C11a) and 8,838 across the 12 Cohort 2 partnerships. It is also worth noting that 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 (Table C11b).

Over two-fifths (3,512 of 8,033—or 43.7 percent) of teachers in schools that met the criteria for significant participation in the MSP program during the 2003–04 school year were reported as participating in MSP (Table C12).[6] Most of these teachers were female (78.0 percent), 48.2 percent were White, and 40.5 percent were Hispanic. In Cohort 2, 63.8 percent of participating teachers were Hispanic—compared with 42.2 percent of all mathematics/science teachers.

[6] Teachers were defined as "participating" if they participated in 30 or more hours of MSP-sponsored activities during a given school year. Examples included teachers who (a) developed or delivered a MSP-sponsored activity to K–12 students or other teachers, (b) participated in a MSP-sponsored effort to revise mathematics or science curriculum, (c) received MSP-sponsored professional development, and/or (d) took part in MSP-related learning communities. Also, the 193 K–12 schools that met the criteria and reported all zeros in the MSP MIS for this item were excluded from this analysis.

Table C1.—Type of IHE individuals involved in the development/delivery of MSP activities during the 2003–04 school year

Type of individual	Overall (n=115 IHEs)		Cohort 1 (n=53 IHEs)		Cohort 2 (n=62 IHEs)	
	Number	Percent	Number	Percent	Number	Percent
Total	1,704	100.0	994	100.0	710	100.0
IHE STEM faculty (tenure track)	486	28.5	277	27.9	209	29.4
STEM undergraduate students	221	13.0	177	17.8	44	6.2
Preservice undergraduate and alternative certification students	189	11.1	63	6.3	126	17.7
Graduate students (including doctoral candidates)	177	10.4	115	11.6	62	8.7
IHE administrators	135	7.9	81	8.1	54	7.6
MSP liaisons/coordinators	131	7.7	83	8.4	48	6.8
IHE education faculty (tenure track)	112	6.6	50	5.0	62	8.7
IHE STEM faculty (non-tenure track)	102	6.0	55	5.5	47	6.6
K–12 teachers in residence	37	2.2	16	1.6	21	3.0
IHE education faculty (non-tenure track)	36	2.1	12	1.2	24	3.4
Postdoctoral students	14	0.8	12	1.2	2	0.3
Other	64	3.8	53	5.3	11	1.5

A total of 1,704 individuals across 115 institutions of higher education (IHEs) participated in the development and/or delivery of MSP activities during the 2003–04 school year. Of this number, 994 were from Cohort 1 and 710 were from Cohort 2. Most of these individuals were STEM faculty (34.5 percent) or students (35.3 percent).

- Among Cohort 1 partnerships, the type of individual participating in the development and/or delivery of MSP activities changed over the 2-year period. Specifically, there was an increase in the number and proportion of participating individuals who were STEM faculty—from 252 (22.7 percent) during the 2002–03 school year to 332 (33.4 percent) during the 2003–04 school year (Table C1a). During the same period, there was a decrease in the number and proportion of students involved in the development or delivery of MSP activities—from 592 (53.4 percent) to 367 (36.9 percent).

- Among Cohort 2 partnerships, 36.0 percent of IHE individuals responsible for the development and/or delivery of MSP activities in 2003–04 were STEM faculty, while 32.9 percent were students.

Table C1a.—Type of IHE individuals involved in the development/delivery of MSP activities in the 2002–03 and 2003–04 school years

Type of individual	Cohort 1				Cohort 2	
	2002–03 (n=51 IHEs)		2003–04 (n=53 IHEs)		2003–04 (n=62 IHEs)	
	Number	Percent	Number	Percent	Number	Percent
Total	1,109	100.0	994	100.0	710	100.0
Preservice undergraduate and alternative certification students	305	27.5	63	6.3	126	17.7
IHE STEM faculty (tenure track)	192	17.3	277	27.9	209	29.4
Graduate students (including doctoral candidates)	141	12.7	115	11.6	62	8.7
STEM undergraduate students	130	11.7	177	17.8	44	6.2
IHE administrators	75	6.8	81	8.1	54	7.6
IHE STEM faculty (non-tenure track)	60	5.4	55	5.5	47	6.6
MSP liaisons/coordinators	55	5.0	83	8.4	48	6.8
IHE education faculty (tenure track)	52	4.7	50	5.0	62	8.7
IHE education faculty (non-tenure track)	27	2.4	12	1.2	24	3.4
K–12 teachers in residence	19	1.7	16	1.6	21	3.0
Postdoctoral students	16	1.4	12	1.2	2	0.3
Other	37	3.3	53	5.3	11	1.5

Table C2.—Gender, race/ethnicity, and prior educational reform experiences of MSP IHE participants for the 2003–04 school year[1]

Characteristic	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
All IHE participants	744	100.0	372	100.0	372	100.0
Gender						
Female	302	40.6	137	36.8	165	44.4
Male	442	59.4	235	63.2	207	55.6
Race						
White	657	88.3	340	91.4	317	85.2
Black or African American	33	4.4	6	1.6	27	7.3
Asian	33	4.4	20	5.4	13	3.5
American Indian or Alaskan Native	3	0.4	1	0.3	2	0.5
Native Hawaiian or Other Pacific Islander	5	0.7	0	0.0	5	1.3
More than one race	11	1.5	5	1.3	6	1.6
Not reported	2	0.3	0	0.0	2	0.5
Ethnicity						
Hispanic or Latino	111	14.9	28	7.5	83	22.3
Not Hispanic or Latino	631	84.8	344	92.5	287	77.2
Not reported	2	0.3	0	0.0	2	0.5
Prior education reform experience						
Have prior experience in K–12 reform	520	69.9	265	71.2	255	68.5
Have no prior experience in K–12 reform	220	29.6	103	27.7	117	31.5
Not reported	4	0.5	4	1.1	0	0.0

[1] Tables C2–C8 summarize the characteristics of following types of IHE MSP participants that completed the IHE Participant Survey: IHE STEM faculty, IHE education faculty, and IHE administrators. Other types of IHE MSP participants (e.g., STEM undergraduate students, postdoctoral students) were not asked to complete this survey.

Almost three-fifths (59.4 percent) of the individuals responding to the IHE Participant Survey for the 2003–04 school year were male. The vast majority of respondents (88.3 percent) were White; 4.4 percent were Black, and 4.4 percent were Asian.

Over two-thirds (69.9 percent) of respondents had some prior experience in K–12 reform efforts. The proportion of IHE participants that had no prior experience with K–12 reform efforts was similar across the two cohorts—27.7 percent for Cohort 1 and 31.5 percent for Cohort 2.

Table C3.—Tenure status and faculty rank of MSP IHE participants for the 2003–04 school year

Tenure status and faculty rank	Overall (n=742 IHE respondents)		Cohort 1 (n=370 IHE respondents)[1]		Cohort 2 (n=372 IHE respondents)	
	Number	Percent	Number	Percent	Number	Percent
Tenure status						
Tenured	394	53.1	184	49.7	210	56.5
On tenure track	130	17.5	61	16.5	69	18.5
Not on tenure track	90	12.1	42	11.4	48	12.9
Not applicable to my position/at my institution	128	17.3	83	22.4	45	12.1
Faculty rank						
Professor	189	25.5	92	24.9	97	26.1
Associate professor	160	21.6	72	19.5	88	23.7
Assistant professor	131	17.7	61	16.5	70	18.8
Other	61	8.2	41	11.1	20	5.4
Lecturer	58	7.8	25	6.8	33	8.9
Administrator with instructional and/or research responsibilities	42	5.7	12	3.2	30	8.1
Adjunct faculty	34	4.6	25	6.8	9	2.4
Instructor	27	3.6	17	4.6	10	2.7
Administrator without instructional and/or research responsibilities	24	3.2	15	4.1	9	2.4
Not applicable for my position	13	1.8	10	2.7	3	0.8
Not applicable at this institution	3	0.4	0	0.0	3	0.8

[1] Two Cohort 1 respondents did not provide information on tenure status and faculty rank.

More than half (53.1 percent) of respondents were tenured at their partner IHEs, while an additional 17.5 percent were on a tenure track. One-fourth (25.5 percent) were professors, and 21.6 percent were associate professors. Another 8.9 percent were IHE administrators.

Table C4.—Field of research and instruction for MSP IHE participants for the 2003–04 school year

Field of research and instruction	Overall (n=739 IHE respondents)		Cohort 1 (n=367 IHE respondents)[1]		Cohort 2 (n=372 IHE respondents)	
	Number	Percent	Number	Percent	Number	Percent
Field of research						
Education	255	34.5	118	32.2	137	36.8
Mathematical sciences	140	19.0	64	17.4	76	20.4
Biological sciences	82	11.1	40	10.9	42	11.3
Chemistry	52	7.0	29	7.9	23	6.2
Physics	26	3.5	17	4.6	9	2.4
Engineering	21	2.8	12	3.3	9	2.4
Geosciences	21	2.8	9	2.5	12	3.2
Astronomy	8	1.1	4	1.1	4	1.1
Computer science	6	0.8	2	0.5	4	1.1
Atmospheric sciences	1	0.1	0	0.0	1	0.3
Ocean sciences	1	0.1	1	0.3	0	0.0
Other	57	7.7	31	8.4	26	7.0
Not applicable	69	9.3	40	10.9	29	7.8
Field of instruction						
Mathematical sciences	184	24.9	84	22.9	100	26.9
Education	174	23.6	84	22.9	90	24.2
Biological sciences	108	14.6	53	14.4	55	14.8
Chemistry	65	8.8	30	8.2	35	9.4
Physics	38	5.1	24	6.5	14	3.8
Geosciences	29	3.9	12	3.3	17	4.6
Engineering	24	3.3	12	3.3	12	3.2
Astronomy	7	0.9	4	1.1	3	0.8
Computer science	5	0.7	2	0.5	3	0.8
Atmospheric sciences	0	0.0	0	0.0	0	0.0
Ocean sciences	0	0.0	0	0.0	0	0.0
Other	46	6.2	25	6.8	21	5.6
Not applicable	59	8.0	37	10.1	22	5.9

[1] Five Cohort 1 respondents did not provide information on their field of research or instruction.

Almost half (48.4 percent) of the IHE participants identified their research area as belonging to the scientific, mathematical, or engineering fields—including mathematical sciences (19.0 percent) and biological sciences (11.1). Another 34.5 percent identified their primary field of research as education. Similarly, 62.2 percent identified their instructional area as belonging to the scientific, mathematical, or engineering fields—most notably mathematical sciences (24.9 percent) and biological sciences (14.6 percent). Just under one-fourth (23.6 percent) were primarily providing instruction in education. Very few IHE participants were involved in the fields of astronomy or computer science—and none were involved in ocean or atmospheric sciences.

It is worth noting that a greater proportion of respondents were involved with education-focused research (34.5 percent) than education-focused instruction (23.5 percent). Conversely, a slightly higher proportion of respondents were involved with instruction in mathematical sciences (24.9 percent) than research in mathematics sciences (18.9 percent). For the remaining disciplinary fields, the proportion of respondents aligned with a particular field of research and instruction were roughly similar.

Table C5.—Area and intensity of IHE participant involvement in MSP for the 2003–04 school year

Area and intensity of involvement	Overall (n=740 IHE respondents)		Cohort 1 (n=368 IHE respondents)[1]		Cohort 2 (n=372 IHE respondents)	
	Number	Percent	Number	Percent	Number	Percent
Areas of involvement[2]						
Preservice	337	45.5	162	44.0	175	47.0
Inservice	511	69.1	270	73.4	241	64.8
Management and/or other MSP-related activities	347	46.9	173	47.0	174	46.8
Hours of involvement						
Less than 20 hours	72	9.7	32	8.7	40	10.8
20 to 40 hours	96	13.0	50	13.6	46	12.4
41 to 80 hours	130	17.6	54	14.7	76	20.4
81 to 160 hours	140	18.9	68	18.5	72	19.4
161 to 200 hours	80	10.8	39	10.6	41	11.0
More than 200 hours	222	30.0	125	34.0	97	26.1

[1] Four Cohort 1 respondents did not provide information on their areas and hours of involvement.

[2] Areas of involvement do not sum to totals because respondents could select more than one area of involvement.

The majority (59.7 percent) of IHE participants reported spending 81 or more hours on MSP-related activities during the 2003–04 school year. In fact, 34.0 percent of Cohort 1 and 26.1 percent of Cohort 2 participants reported spending 200 or more hours on MSP. Conversely, only one-fifth (22.7 percent) of IHE participants reported devoting 40 hours or less to the MSP program. Additionally, among respondents that completed a survey for *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 for the 2002–03 school year to 72.2 percent during the 2003–04 school year (Table C5a).

IHE participants were most heavily involved with 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. Respondents that spent more than 40 hours on MSP in a single year were asked to provide additional information on the types of activities they were involved in. As shown in Tables C6-C8, the most common MSP activities reported for the 2003–04 school year were conducting content or pedagogical workshops with K–12 teachers (55.9 percent), remaining on-call for classroom teachers (42.8 percent), and serving as a member of a partnership management structure (39.5 percent).

Table C5a.—Area and intensity of IHE participant involvement in MSP in the Cohort 1 IHEs that participated in MSP in both the 2002–03 and 2003–04 school years

Area and intensity of involvement	2002–03 (n=230 IHE respondents)		2003–04 (n=230 IHE respondents)	
	Number	Percent	Number	Percent
Areas of involvement[1]				
Preservice	105	45.7	107	46.5
Inservice	170	73.9	169	73.5
Management and/or other MSP-related activities	122	53.0	129	56.1
Hours of involvement				
Less than 20 hours	25	10.9	14	6.1
20 to 40 hours	32	13.9	25	10.9
41 to 80 hours	27	11.7	25	10.9
81 to 160 hours	46	20.0	37	16.1
161 to 200 hours	12	5.2	28	12.2
More than 200 hours	88	38.3	101	43.9

[1] Areas of involvement do not sum to totals because respondents could select more than one area of involvement.

Table C6.—Preservice activities undertaken by MSP IHE participants during the 2003–04 school year[1]

Preservice activity	Overall (n=572 respondents)		Cohort 1 (n=286 respondents)		Cohort 2 (n=286 respondents)	
	Number	Percent	Number	Percent	Number	Percent
Mentor preservice students	145	25.3	71	24.8	74	25.9
Develop/revise preservice courses to align with national, state, and/or local standards	138	24.1	53	18.5	85	29.7
Develop an innovation as part of a traditional preservice course	128	22.4	56	19.6	72	25.2
Teach or co-teach a preservice STEM content course	121	21.2	66	23.1	55	19.2
Participate in preservice recruitment activities	118	20.6	66	23.1	52	18.2
Provide preservice students with experience in K–12 classroom settings before formal student teaching	107	18.7	51	17.8	56	19.6
Design preservice STEM courses specifically for elementary school teacher certification programs	79	13.8	29	10.1	50	17.5
Provide preservice students with opportunities to participate in local school district inservice activities	76	13.3	35	12.2	41	14.3
Involve K–12 master teachers in preservice program	74	12.9	32	11.2	42	14.7
Design preservice STEM courses specifically for middle school teacher certification programs	66	11.5	33	11.5	33	11.5
Design preservice STEM courses specifically for high school teacher certification programs	58	10.1	28	9.8	30	10.5
Participate in efforts to link the preservice process to national teacher certification activities	46	8.0	14	4.9	32	11.2
Other	71	12.4	23	8.0	48	16.8

[1] Only the 572 IHE participants that spent more than 40 hours on their IHE's MSP during the 2003–04 school year were included in this analysis.

The most commonly cited preservice activities for the 2003–04 school year were mentoring preservice students (25.3 percent), developing or revising preservice courses to align with national, state, and/or local standards (24.1 percent), developing an innovation as part of a traditional preservice course (22.4 percent), teaching or co-teaching a preservice STEM course (21.2 percent), and participating in preservice recruitment activities (20.6 percent). There were only a few differences in the distribution of preservice activities across the two cohorts.

- A higher proportion of Cohort 2 IHE participants were involved in developing or revising preservice courses to align with national/local standards—29.7 percent, compared with 18.5 percent for Cohort 1.

- A higher proportion of Cohort 2 IHE participants were involved in designing preservice STEM courses specifically for elementary school teacher certification programs—17.5 percent, compared with 10.1 percent for Cohort 1.

Table C7.—Inservice activities undertaken by MSP IHE participants during the 2003–04 school year[1]

Inservice activity	Overall (n=572)		Cohort 1 (n=286)		Cohort 2 (n=286)	
	Number	Percent	Number	Percent	Number	Percent
Conduct workshops with K–12 teachers that increase general content or pedagogical knowledge	320	55.9	165	57.7	155	54.2
Remain "on call" for classroom teachers	245	42.8	133	46.5	112	39.2
Conduct targeted workshops/institutes/courses with K–12 teachers	181	31.6	101	35.3	80	28.0
Align K–12 mathematics and science curricula to other courses/standards	171	29.9	89	31.1	82	28.7
Participate in activities that motivate K–12 student participation in challenging mathematics/science courses	140	24.5	75	26.2	65	22.7
Help K–12 teachers utilize technology for course content innovation	134	23.4	82	28.7	52	18.2
Conduct a review of K–12 course curricula	122	21.3	56	19.6	66	23.1
Establish/provide STEM learning communities/study groups	109	19.1	51	17.8	58	20.3
Mentor a K–12 teacher in a shared discipline	106	18.5	56	19.6	50	17.5
Work one on one with K–12 students	86	15.0	48	16.8	38	13.3
Design STEM courses specifically for middle school teacher certification programs	60	10.5	41	14.3	19	6.6
Support adjunct positions for K–12 master teachers at your IHE	60	10.5	33	11.5	27	9.4
Design STEM courses specifically for high school teacher certification programs	59	10.3	32	11.2	27	9.4
Participate in activities that encourage high school students to enroll in IHE courses	56	9.8	28	9.8	28	9.8
Establish/provide externship opportunities for K–12 teachers	46	8.0	28	9.8	18	6.3
Design STEM courses specifically for elementary school teacher certification programs	44	7.7	19	6.6	25	8.7
Develop/redesign traditional STEM units or courses for in-depth immersion in a single topic	44	7.7	21	7.3	23	8.0
Provide traditional STEM courses at alternative venues	35	6.1	18	6.3	17	5.9
Help K–12 schools utilize computer-communications technology for challenging course delivery	29	5.1	18	6.3	11	3.8
Other	87	15.2	42	14.7	45	15.7

[1] Only the 572 IHE participants that spent more than 40 hours on their IHE's MSP during the 2003–04 school year were included in this analysis.

While most IHE participants focused on inservice activities that addressed K–12 teachers or classroom practices, some participated in activities that targeted K–12 students. For example, 24.5 percent participated in efforts to motivate K–12 student enrollment in challenging mathematics or science courses, 15.0 percent were working directly with K–12 students, and 9.8 percent participated in activities designed to encourage high school students to enroll in IHE courses.

Table C8.—Management and other MSP-related activities undertaken by MSP IHE participants during the 2003–04 school year[1]

Management or other MSP-related activity	Overall (n=572)		Cohort 1 (n=286)		Cohort 2 (n=286)	
	Number	Percent	Number	Percent	Number	Percent
Serve as a member of the partnership management structure	226	39.5	108	37.8	118	41.3
Help create formal links between all MSP core partners	114	19.9	66	23.1	48	16.8
Work on project-related evaluation activities or with RETA projects	109	19.1	57	19.9	52	18.2
Help develop joint databases or facilitate data sharing between K–12 and IHE partners	100	17.5	57	19.9	43	15.0
Attend national MSP conferences	99	17.3	57	19.9	42	14.7
Conduct research on teaching and learning in mathematics and science	95	16.6	52	18.2	43	15.0
Participate in development of policies to reward IHE faculty for involvement in K–12 reforms	40	7.0	17	5.9	23	8.0
Help align teacher certification program requirements among partner IHEs	29	5.1	15	5.2	14	4.9
Enlist support from STEM industry/business personnel working in disciplinary fields related to own	29	5.1	20	7.0	9	3.1
Other	72	12.6	37	12.9	35	12.2

[1] Only the 572 IHE participants that spent more than 40 hours on their IHE's MSP during the 2003–04 school year were included in this analysis.

Almost two-fifths (39.5 percent) of IHE participants served as members of the partnership management structures for their projects, while 19.9 percent helped create formal links between all MSP core partners.

- One-fifth (19.1 percent) were involved in project-related evaluation activities or with RETA projects.
- Only a few participated in the development of policies to reward IHE faculty for involvement of K–12 reforms (7.0 percent), helped to align teacher certification program requirements among partner IHEs (5.1 percent), or enlisted support from non-academic STEM personnel (5.1 percent).

Table C9.—Number and proportion of MSP projects working with non-academic participants during the 2003–04 school year

Type of non-academic participant	Overall (n=34 projects)		Cohort 1 (n=22 projects)		Cohort 2 (n=12 projects)	
	Number	Percent	Number	Percent	Number	Percent
MSP projects working with scientists	14	41.2	7	31.8	7	58.3
MSP projects working with mathematicians	5	14.7	2	9.1	3	25.0
MSP projects working with engineers	5	14.7	4	18.2	1	8.3

Two-fifths (41.2 percent) of MSP projects—and 58.3 percent of Cohort 2 partnership projects—reported working 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).

Table C10.—Type of non-academic participants involved in the development/delivery of MSP activities during the 2003–04 school year

Type of non-academic participant	Overall (n=490)		Cohort 1 (n=419)		Cohort 2 (n=71)	
	Number	Percent	Number	Percent	Number	Percent
Scientists	147	30.0	105	25.1	42	59.2
Engineers	54	11.0	52	12.4	2	2.8
Mathematicians	24	4.9	17	4.1	7	9.9
Other	265	54.1	245	58.5	20	28.2

A total of 490 non-academic participants were involved in developing and/or delivering MSP activities during the 2003–04 school year. Of this number, 147 (30.0 percent) were scientists, 54 (11.0 percent) were engineers, and 24 (4.9 percent) were mathematicians. It is worth noting that 59.2 percent of Cohort 2 non-academic MSP participants were scientists, compared with 25.1 percent for Cohort 1. In addition, 265 individuals (54.1 percent) were classified by projects as “other.”

Table C11.—Type of K–12 participants involved in the development/delivery of MSP activities during the 2003–04 school year

K–12 participant	Overall (n=264 districts)[1]		Cohort 1 (n=121 districts)		Cohort 2 (n=143 districts)	
	Number	Percent	Number	Percent	Number	Percent
All K–12 participants	11,262	100.0	2,424	100.0	8,838	100.0
Teachers	9,672	85.9	1,818	75.0	7,854	88.9
Principals, vice principals, and assistant principals	897	8.0	274	11.3	623	7.0
District-level administrators/staff	309	2.7	147	6.1	162	1.8
Instructional coordinators and supervisors	268	2.4	136	5.6	132	1.5
Guidance counselors	24	0.2	19	0.8	5	0.1
Other	92	0.8	30	1.2	62	0.7

[1] This table excludes the 142 districts that reported that they had no participants involved in the development/delivery of MSP activities during the 2003–04 school year.

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.

The total number of K–12 participants involved in the first year of an MSP project was 1,127 across the 22 Cohort 1 partnership projects and 8,838 across the 12 Cohort 2 partnership projects (Table C11a). 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 (Table C11b). Nonetheless, over three-fourths (78.5 percent) of all K–12 participants during the 2003–04 school year were from Cohort 2. These findings suggest that Cohort 2 districts involved their K–12 teachers and administrators earlier than their Cohort 1 counterparts.

Table C11a.—Type of K–12 participants involved in the development/delivery of MSP activities in the 2002–03 and 2003–04 school years

K–12 participant	Cohort 1				Cohort 2	
	2002–03 (n=88 districts)		2003–04 (n=121 districts)		2003–04 (n=143 districts)	
	Number	Percent	Number	Percent	Number	Percent
All K–12 participants	1,127	100.0	2,424	100.0	8,838	100.0
Teachers	663	58.8	1,818	75.0	7,854	88.9
Principals, vice principals, and assistant principals	202	17.9	274	11.3	623	7.0
Instructional coordinators and supervisors	117	10.4	136	5.6	132	1.5
District-level administrators/staff	107	9.5	147	6.1	162	1.8
Guidance counselors	14	1.2	19	0.8	5	0.1
Other	24	2.1	30	1.2	62	0.7

Table C11b.—Type of K–12 participants involved in the development/delivery of MSP activities in the Cohort 1 K–12 districts that participated in MSP in both the 2002–03 and 2003–04 school years

K–12 participant	2002–03 (n=88 districts)		2003–04 (n=88 districts)	
	Number	Percent	Number	Percent
All K–12 participants	1,127	100.0	2,286	100.0
Teachers	663	58.8	1,699	74.3
Principals, vice principals, and assistant principals	202	17.9	264	11.5
Instructional coordinators and supervisors	117	10.4	134	5.9
District-level administrators/staff	107	9.5	144	6.3
Guidance counselors	14	1.2	18	0.8
Other	24	2.1	27	1.2

Table C12.—Characteristics of mathematics and science teachers in the K–12 schools that met the criteria for significant MSP participation during the 2003–04 school year

Characteristic	Overall (n=551 schools)			Cohort 1 (n=213 schools)			Cohort 2 (n=338 schools)		
	Number of mathematics/ science teachers in schools that met the criteria	Teachers participating in MSP		Number of mathematics/ science teachers in schools that met the criteria	Teachers participating in MSP		Number of mathematics/ science teachers in schools that met the criteria	Teachers participating in MSP	
		Number	Percent		Number	Percent		Number	Percent
All teachers	8,033	3,512	43.7	3,834	1,673	43.6	4,199	1,839	43.8
Gender									
Male	1,905	754	39.6	1,140	467	41.0	765	287	37.5
Female	6,020	2,739	45.5	2,637	1,203	45.6	3,383	1,536	45.4
Not reported	108	19	17.6	57	3	5.3	51	16	31.4
Race/ethnicity									
White	4,820	1,692	35.1	2,703	1,165	43.1	2,117	527	24.9
Black or African American	300	171	57.0	142	69	48.6	158	102	64.6
Hispanic	2,332	1,423	61.0	558	250	44.8	1,774	1,173	66.1
Asian	105	43	41.0	76	30	39.5	29	13	44.8
American Indian or Alaska Native	50	6	12.0	37	5	13.5	13	1	7.7
Native Hawaiian or Other Pacific Islander	8	1	12.5	3	1	33.3	5	0	0.0
More than one race	6	0	0.0	1	0	0.0	5	0	0.0
Not reported	412	176	42.7	314	153	48.7	98	23	23.5

Over two-fifths (3,512 of 8,033—or 43.7 percent) of teachers in schools that met the criteria for significant participation in the MSP program during the 2003–04 school year were reported as participating in MSP.[7] It should be noted that we have no way of knowing whether this primarily reflects the number of teachers that participated in the design and delivery of MSP activities or also includes teachers that received MSP services.

- Most of these teachers were female (78.0 percent), 48.2 percent were White, and 40.5 percent were Hispanic.
- The race/ethnicity characteristics of the teachers that participated in MSP differed across the two cohorts. Specifically, 63.8 percent of Cohort 2 teachers that met the criteria were Hispanic—compared with 14.9 percent of Cohort 1 teachers. Conversely, 69.6 percent of Cohort 1 teachers that met the criteria were White—compared with 28.7 percent of Cohort 2 teachers.
- Within Cohort 1, there was no difference in the race/ethnicity characteristics of all mathematics/science teachers in schools that met the criteria and the teachers in those schools that participated in MSP. However, in Cohort 2, 63.8 percent of participating teachers were Hispanic—compared with 42.2 percent of all mathematics/science teachers.

[7] Teachers were defined as "participating" if they participated in 30 or more hours of MSP-sponsored activities during a given school year. Examples included teachers who (a) developed or delivered a MSP-sponsored activity to K–12 students or other teachers, (b) participated in a MSP-sponsored effort to revise mathematics or science curriculum, (c) received MSP-sponsored professional development, and/or (d) took part in MSP-related learning communities. Also, the 193 K–12 schools that met the criteria and reported all zeros in the MSP MIS for this item were excluded from this analysis.

Table C13.—Highly qualified status of mathematics and science teachers in the K–12 schools that met the criteria for significant MSP participation during the 2003–04 school year

Characteristic	Overall (n=551 schools)				Cohort 1 (n=213 schools)				Cohort 2 (n=338 schools)			
	All teachers in schools that met the criteria		Teachers participating in MSP		All teachers in schools that met the criteria		Teachers participating in MSP		All teachers in schools that met the criteria		Teachers participating in MSP	
	Number of teachers	Percent highly qualified	Number of teachers	Percent highly qualified	Number of teachers	Percent highly qualified	Number of teachers	Percent highly qualified	Number of teachers	Percent highly qualified	Number of teachers	Percent highly qualified
All teachers	8,033	89.9	3,512	89.0	3,834	87.9	1,673	87.7	4,199	91.8	1,839	90.3
Gender												
Male	1,905	86.2	754	84.2	1,140	84.2	467	83.5	765	89.3	287	85.4
Female	6,020	91.8	2,739	90.8	2,637	89.3	1,203	89.3	3,383	93.7	1,536	92.1
Not reported	108	50.0	19	21.1	57	93.0	3	100.0	51	2.0	16	6.3
Race/ethnicity												
White	4,820	91.3	1,692	87.8	2,703	89.0	1,165	88.2	2,117	94.3	527	86.9
Black or African American	300	77.7	171	85.4	142	80.3	69	87.0	158	75.3	102	84.3
Hispanic	2,332	91.5	1,423	92.0	558	87.1	250	86.0	1,774	92.8	1,173	93.3
Asian	105	81.9	43	86.0	76	75.0	30	80.0	29	100.0	13	100.0
American Indian or Alaska Native	50	96.0	6	83.3	37	94.6	5	80.0	13	100.0	1	100.0
Native Hawaiian or Other Pacific Islander	8	100.0	1	100.0	3	100.0	1	100.0	5	100.0	0	0.0
More than one race	6	83.3	0	0.0	1	0.0	0	0.0	5	100.0	0	0.0
Not reported	412	74.3	176	81.3	314	85.0	153	88.2	98	39.8	23	34.8

The vast majority (89.0 percent) of teachers that participated in MSP were highly qualified. Further, it appears that most teachers were highly qualified *before* they began participating in MSP—e.g., 91.8 percent of all participating Cohort 2 teachers were highly qualified in the first year that their projects worked with the MSP program. There was no difference in the highly qualified designation of all mathematics/science teachers in schools that met the criteria—and the teachers in those schools that participated in MSP. We are not sure what to make of the finding that the vast majority of mathematics/science teachers in schools working with MSP were highly qualified. While one might conclude that MSP projects focused on schools staffed with highly qualified teachers, a more likely explanation is that states are crafting flexible definitions of "highly qualified" that are designed to include as many teachers as possible.

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

A prominent feature of the MSP program is its emphasis on creating sustainable opportunities for disciplinary experts to work in partnership with K–12 educators. Findings presented in the previous two sections suggest that the MSP partnership projects have begun to engage a wide range of stakeholders around the common goal of improving student academic performance in mathematics and science. This section explores whether there is evidence that participating IHE faculty and K–12 educators are collaborating on their efforts to enhance the quality of K–12 mathematics and science teachers and ensure that K–12 students are engaged in challenging mathematics and science curricula.

Our review of MSP MIS data suggests that projects 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) (Table D1). 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 (Table D2).

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) (Table D3). Data from the MSP MIS provides some 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) (not shown in tables).

Table D1.—Participant involvement in the design and delivery of MSP activities during the 2003–04 school year

Participant type	All MSP activities (n=634)	MSP activities targeted to IHE recipients (n=163)	MSP activities targeted to K–12 recipients (n=471)
IHE STEM faculty	68.0	76.7	65.0
K–12 teachers	61.5	42.3	68.2
IHE education faculty	57.9	67.5	54.6
K–12 district/school administrators	47.2	22.1	55.8
Other K–12 staff[1]	46.2	16.6	56.5
IHE administrators[2]	28.1	42.3	23.1
Postsecondary students[3]	23.5	29.4	21.4
Non-academic practitioners[4]	9.8	4.9	11.5

[1] Including instructional coordinators, supervisors, and guidance counselors.

[2] For example, deans and department chairs.

[3] Includes graduate students (including doctoral candidates), postdoctoral students, STEM undergraduate students, and preservice undergraduate students.

[4] Including non-academic mathematicians, scientists, and engineers.

The MSP MIS obtains information on the extent to which IHE, K–12, and non-academic participants are involved in the design and delivery of MSP activities. Over half of the 634 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). K–12 district/school administrators and other K–12 staff were also involved in many of the activities identified by MSP projects. IHE participants were more likely to be involved in the design and delivery of activities targeted to IHE recipients, while K–12 participants were more likely to be involved in activities targeted to K–12 teachers and students.[8]

[8] There appears to be a discrepancy between the findings on this table for IHE participants and the findings on Table C5 that IHE participants were more heavily involved with inservice activities than preservice activities. However, Table C5 uses data obtained by IHE participants about their own contributions, while Table D1 relies on information provided by principal investigators about the types of participants that were involved in the design and delivery of a given activity. In addition, the list of preservice and inservice services presented to IHE participants on the IHE Participant Survey included fewer activities than the list provided to principal investigators on the Annual Project Survey. As a result, a direct comparison of findings from these two tables is not possible.

Table D2.—Extent to which multiple participant types were involved in the design and delivery of MSP activities during the 2003–04 school year

Participant type		All MSP activities (n=634)	MSP activities targeted to IHE recipients (n=163)	MSP activities targeted to K–12 recipients		
				Overall (n=471)	Inservice (n=245)	Mathematics/ science curricula (n=226)
IHE faculty[1] and:	K–12 teachers	48.7	38.7	52.2	49.4	55.3
	K–12 administrators	36.9	21.5	42.3	40.4	44.2
	Other K–12 staff[2]	35.0	16.0	41.6	38.4	45.1
IHE *STEM* faculty and:	K–12 teachers	42.6	33.1	45.9	40.4	51.8
	K–12 administrators	31.5	19.0	35.9	31.8	40.3
	Other K–12 staff	29.7	12.9	35.5	31.4	39.8
IHE *education* faculty and:	K–12 teachers	36.0	30.7	37.8	38.0	37.6
	K–12 administrators	29.2	18.4	32.9	31.8	34.1
	Other K–12 staff	28.4	14.7	33.1	29.8	36.7
IHE *administrators* and:	K–12 teachers	18.8	17.8	19.1	21.2	16.8
	K–12 administrators	16.6	13.5	17.6	19.2	15.9
	Other K–12 staff	15.0	12.3	15.9	16.3	15.5
IHE postsecondary students[3] and:	K–12 teachers	17.8	16.0	18.5	13.9	23.5
	K–12 administrators	12.0	5.5	14.2	11.4	17.3
	Other K–12 staff	11.5	4.3	14.0	11.0	17.3
Non-academic practitioners[4] *and*	K–12 teachers	7.1	1.2	9.1	7.3	11.1
	IHE STEM faculty	6.9	4.3	7.9	6.1	9.7
	IHE education faculty	6.2	4.3	6.8	5.7	8.0
	Other K–12 staff	5.7	1.8	7.0	3.7	10.6
	K–12 administrators	5.5	2.5	6.6	3.7	9.7
	IHE administrators	2.2	1.8	2.3	2.9	1.8

[1] Includes IHE STEM and/or IHE education faculty.

[2] Including instructional coordinators, supervisors, and guidance counselors.

[3] Includes graduate students, postdoctoral students, STEM undergraduate students, and preservice undergraduate students.

[4] Includes non-academic mathematicians, scientists, and engineers.

MSP partnership projects are to draw upon the expertise of multiple partners. Some insights regarding the extent to which there were opportunities for collaboration among partners can be found in the combinations of participant types that were involved in the design and delivery of MSP activities. Most notably, 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. Several other interesting trends emerged from this analysis, including the following:

- There were more potential opportunities for K–12 teachers to collaborate with IHE STEM faculty than with IHE education faculty. For example, IHE STEM faculty and K–12 teachers were jointly involved in 42.6 percent of all MSP activities, and 51.8 percent of activities designed to enhance mathematics/science curricula (compared with 36.0 and 37.6 percent, respectively, for IHE education faculty and K–12 teachers).

- IHE STEM faculty and K–12 teachers were both involved in 45.9 percent of MSP activities targeted to K–12 recipients—compared with 33.1 percent for activities targeted to IHE recipients.

- IHE faculty and other types of K–12 participants (e.g., administrators, instructional coordinators) were also more likely to be jointly involved in MSP activities targeted to K–12 recipients than those targeted to IHE recipients.

- IHE postsecondary students and K–12 teachers were most likely to be jointly involved in activities designed to enhance mathematics/science curricula.

Taken together, these findings suggest that projects were engaging multiple participant types—most notably IHE faculty and K–12 teachers—in the design and delivery of their MSP efforts. It should be noted that the MSP MIS did not collect any quantitative data on whether these partner types actually collaborated on the design and delivery of these activities. However, a review of the narratives submitted for these activities offers some examples of ways in which projects were creating opportunities for IHE faculty and K–12 participants to work together. For example, 10 of the 19 projects that were providing professional development for IHE STEM faculty to support new roles in K–12 education during the 2003–04 school year reported the involvement of both IHE faculty and K–12 participants (not shown in tables). According to one project:

> *A working group of K–16 mathematics teachers and higher education faculty met every other month, and for a week during the summer, to align the geometry high school course—following similar work done in algebra. The group used the book, Adding it Up, by the National Research Council, to focus the dialogue and discussion regarding the mapping of course content to five levels of cognitive demand, and the state and national standards. The group is strengthening the agreement between K–12 teachers and postsecondary faculty in aligning mathematics expectations between the two. Similar to the mathematics working group, the MSP convened a group to align high school science courses, with a current focus on chemistry.*

In addition, 17 of the 22 projects that were aligning challenging mathematics curricula to other courses/standards also reported the involvement of both IHE faculty and K–12 participants. Two of these projects reported the following:

> *During the development of the coursework and programs, teams of IHE STEM faculty, education faculty, and master teachers worked together to assure alignment of the content coursework to the math and science standards established by the Ohio Department of Education. The coursework was designed to reflect the content and standards that middle and high school teachers need to teach those grades.*

> *During the 2003–2004 year, the MSP continued to convene the K–16 Mathematics Working Group. Postsecondary faculty and elementary, middle and high school teachers representing both urban and rural districts were brought in every other month during the school year, and for a week during the summer, to develop a framework for high school geometry. The framework maps geometry content to mathematics cognitive demands and state and national standards. Included in the work is the articulation of the geometry strand of K–8 mathematics with high school geometry. Because the group is made up of K–12 mathematics teachers and postsecondary mathematics faculty, the group is aligning the expectations of the high school courses with college freshmen mathematics courses. To facilitate the work of the K–16 Mathematics Working Group, the MSP Director of Mathematics and Science convenes the group at the university in 4-hour working meetings. Incorporated into the design of each work session is time for discussing relevant articles and/or books. Both teachers and faculty are compensated for their time and are asked to share with and bring back ideas from teachers at their school.*

Exhibit D1 provides additional examples of collaboration among different participant types to conduct MSP activities with IHE and K–12 recipients.

Exhibit D1.—Examples of collaboration among different participant types

Activities targeted to IHE recipients
College of Science faculty are involved in the preparation of K–12 teachers through instruction in math and science courses required for all students under the university's core curriculum, and (in particular) support to math and science majors who plan on becoming secondary-level teachers. In addition, College of Science faculty have participated in the alignment of their entry-level courses with standards set for new math teachers, and some serve as co-instructors of pre-service teachers—with College of Education faculty—in content/ methods courses, which are held at K-12 school sites. *At both UWM and MATC, IHE STEM faculties were involved in the pre-service teacher preparation programs. At UWM, faculty in the Department of Mathematical Sciences established a new committee—the Mathematics Education Committee—to bring together IHE mathematics faculty and IHE mathematics education faculty to collaboratively examine and work on issues related to the mathematical preparation of teachers for the elementary, middle, and high school levels. At UWM, three design teams led by a mathematics faculty member including mathematics education faculty and teachers-in-residence were formed to begin development of new mathematics content courses for pre-service teachers. At MATC, STEM faculty worked in collaboration with UWM faculty to develop two new courses for pre-service teachers.*
Activities targeted to K-12 recipients
Content activities for two 80-hour elementary institutes were created by the MSP math and science directors in collaboration with the Irvine Math and Science Projects, district administrators and UCI math and science faculty. Current research for effective math and science instruction and student learning was sought out and implemented. Content was focused on those California science and mathematics content standards with which students struggle most, evidenced by State test results. Content and leadership activities for the mathematics follow-up secondary Teacher Leader Institute were created by the MSP math directors in collaboration with the Irvine Math Project, district administrators and UCI Math Faculty…Classroom teachers and district administrators met with the MSP math directors to create the curriculum guides based upon California math standards and the current adopted textbooks. The guides were paced to match the requirements of the Content Standards Test blueprint. 225 teachers attended for 30 hours. *In Summer 2003, 2 teacher leaders joined 2 newly hired MSP Coordinators to plan the annual "Everyday Math" Network. In Spring 2004, a dinner meeting for 20 people interested in establishing new educator networks resulted in a day-long planning meeting for 15 educators (4 districts) and 4 MSP staff in Summer 2004 to establish Educator Networks for "Investigations in Data, Number and Space" and "Connected Mathematics." 3 IHE faculties attended the Everyday Math Network meetings. Eight MSP Coordinators and 27 IHE faculties were involved in the development, design, and facilitation of the Teacher Leadership Academies (TLA). The MSP contracted with the developers of the tools featured in each TLA to provide them with expert training. The last day of each training involved collaborative design of the respective TLA. The MSP Coordinators then prepared Participant Binders and defined responsibilities for facilitators, culminating in a walk-through for colleagues and IHE faculty. In September, each district's Leadership Action Team was provided information about the Academies and the Educator Networks and invited to appoint 2 teacher leaders to each Academy by February, and to register Network attendees on-line conference the Intermediate Unit location of choice. The TLA applications allowed the educators to preference timing and location (which IHE) for the TLA. 24 educators from 11 districts participated in the Everyday Math Network. During the 4 elementary math (86 teachers), 4 secondary math (85 teachers), and 4 high science teacher academies (74 teachers), a peer coaching network was developed among the teacher leaders.*

NOTE: As reported by projects on the MSP MIS.

Table D3.—Extent to which various factors hindered projects' partnership efforts to a moderate or large extent during the 2003–04 school year[1]

Factor	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
Lack of time or other resources among K–12 partners	16	47.1	7	31.8	9	75.0
Lack of time or other resources among IHE partners	14	41.2	7	31.8	7	58.3
Low levels of commitment or interest among IHE partners	9	26.5	7	31.8	2	16.7
Lack of flexibility among IHE partners	7	20.6	4	18.2	3	25.0
Lack of flexibility among K–12 partners	7	20.6	4	18.2	3	25.0
Poor communication among all MSP partners	7	20.6	3	13.6	4	33.3
Conflicting goals or missions among all MSP partners	5	14.7	4	18.2	1	8.3
Low levels of commitment or interest among other partners	3	12.5	3	21.4	0	0.0
Low levels of commitment or interest among K–12 partners	4	11.8	3	13.6	1	8.3
Unbalanced levels of authority and decision-making ability among partners	3	8.8	2	9.1	1	8.3
Lack of time or other resources among other partners	2	8.3	2	14.3	0	0.0
Lack of flexibility among other partners	1	4.2	1	7.1	0	0.0

[1] The data in this table reflect projects that indicated that a factor was a "moderate" or "large" challenge. The change in denominators reflects the exclusion of projects that indicated "not applicable" for specific factors.

While projects provided evidence that they were involving both IHE and K-12 partners in the design and delivery of their MSP activities, they also indicated that gaining access to these stakeholders was not always easy. In fact, 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). For example, one project indicated that, as a result of a statewide budget crisis, the participating K–12 school district was unable to continue to offer extended learning opportunities for students other than those in danger of retention in grade, or who had not passed the California High School Exit Exam in a timely fashion. Another project indicated that their state education department did not permit K–12 teachers to attend professional development during the week. As a result, the project was forced to offer most of its activities during Saturdays, which was the only day many teachers had to attend to their personal needs. As shown in Exhibit D2, several projects also offered insights as to the challenges that hindered IHE faculty participation in their MSP.

Exhibit D2.—Examples of challenges that hindered IHE faculty participation in their MSP

University professors have many demands placed upon their time (classes, advising, departmental obligations, tenure-related obligations), and since our program demands are over and above these primary demands it may be difficult for IHE faculty to meet our expectations. We have approached this hurdle from two sides: (1) We have provided the university faculty participating in our grant with a laptop, computer software, a TI graphing calculator, and departmental use of an LCD projector. These tools should help to make the faculty both more efficient and more effective in their endeavors. They should be able to be more successful in their classroom teaching, and other university obligations, as well. (2) We have scheduled the majority of IHE faculty responsibilities during the summer institute. This is a time when professors are not so busy with university teaching responsibilities, advising, etc. The obligations of IHE faculty that do exist during the school year are minimal, flexible, and mentoring of the K-12 teachers can even be done online at times.

The colleges in our county were not offering a load lift or tenure compensation for professor participation in MSP. Consequently some professors did not have the extra time to devote to the MSP program. This issue has been discussed with our MSP Advisory Board, but with no decision.

By the time that the NSF award was announced, many of the IHE faculty in the partnership made commitments to work on other projects for the 2003–2004 school year, leaving little to no time for them to become involved in the MSP. The Principal Investigator and the Project Director worked with the Co-PI and the Deans to actively recruit as many STEM faculty during the 2003–2004 school year. To overcome this challenge in Year 2, we actively recruited STEM faculty well in advance of the 2004–2005 school year. In addition, we held a "Vision Convocation Launch" at the start of Year 2 for all of the stakeholder, including the IHE faculty to announce ways that K–12 teachers and IHE faculty could become involved in developing and designing MSP activities. Since the launch, two IHE faculty members were added to the implementation committees.

IHE teaching schedules are set a year in advance. As the grant was not awarded until October, finding available time for MSP activities was problematic. With cooperation of the IHEs, dates for joint IHE/MSP trainings by expert partners were scheduled as possible, primarily around term breaks and holidays.

NOTE: As reported by projects on the MSP MIS.

Other significant partnership-related challenges cited by projects included low levels of commitment or interest among IHE partners (26.5 percent), lack of flexibility among IHE and/or K–12 partners (20.6 percent), and poor communication among all MSP partners (20.6 percent). For example, one project indicated a divergence in the grade span they are serving (K–8 students) and the desired grade level focus of participating IHE faculty (students in grades 9–12). This project indicated that efforts were underway to identify IHE faculty who were more interested in working with elementary and middle school students. A second project reported that frequent changes in the Co-PI during the early months of the first year of the MSP made an "unfavorable impression" on many of the participating IHE faculty. In addition, a lack of understanding of the project's goals and strategies by participating faculty (and how faculty were expected to be involved in meeting those goals) resulted in further delays. Examples of other challenges reported by MSP partnership projects are provided in Exhibit D3.

It is worth noting that only a few projects cited the following as being a significant challenge: low levels of commitment among K–12 partners (11.8 percent), and unbalanced levels of authority and decision-making ability among partners (8.8 percent).

Data from the MSP MIS provide some 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) (not shown in tables). A review of the narratives provided by projects suggests that projects were aware that this obstacle had the potential to limit the contributions of their core partners—and were taking steps to overcome those challenges.

Exhibit D3.—Examples of other partnership challenges reported by MSP projects

For the most part, faculty who self-selected to participate in the work with 6–12 teachers have remained committed to the MSP and have taken advantage of faculty development opportunities, they have extended office hours for teachers, met with teachers in study group formats, visited schools, etc. Faculty members that were assigned to teach one of the courses have less commitment. Steps have been taken to meet with the faculty to share teacher focus group evidence so that they can reflect on what teachers are saying about their teaching. In addition, faculty development has been offered. Discussions are underway with the Deans who assign teachers to teach the coursework to assure a better alignment between faculty selection and MSP courses.

In a large bureaucratic structure, such as at university or a technical college, there are many procedures and rules to follow, forms to complete, and meetings to attend in order to hire or re-assign individuals, establish courses, and develop monitoring plans for the budget and project evaluation. In order to get the MSP up and running, we needed to expedite or modify some of the procedures, which was a challenge. To overcome these challenges, many additional meetings, discussions, and electronic communications occurred with numerous levels of administrators, including the chancellor, deans of several colleges/schools, department chairs, and a provost. In addition, discussions and electronic communications occurred with numerous faculty and academic staff personnel. Project timelines were sometimes shifted and some IHE exceptions were allowed, but more often individuals shifted schedules and calendars to make the work of the MSP more of a priority.

K-12 partners, for the most part, have been flexible. However, the schools within a district are relatively autonomous. The inflexibility we encounter is due to the fact that each individual school principal needs to understand the program, and that process is not yet complete. The inflexibility arises from the fact that coordinating schools system-wide for a science program is a new challenge. Sharing curriculum materials among teachers across schools is new to all of the participating districts, and lines of communication are not yet established.

All partners are not equal in terms of their perception of [Name of MSP] and what we aim to accomplish. There are many constraints on teachers' time. In the first year, a great deal of emphasis was on building trust and educating administrators and teachers about our goals and expectations.

Our partnership is distributed over a large geographical area. With busy schedules it is difficult to schedule meetings—even through the use of technology. We are addressing this challenge in a number of ways. We try to schedule well in advance (up to a year) to give participants a chance to get meetings on their schedule early. This has helped in year 2. We make extensive use of email and teleconferencing and some use of videoconferencing. The project director and teachers on special assignment regularly contact key partners for information beyond the required monthly reports. We have initiated monthly Learning Community Forums for all of our teacher leaders.

NOTE: As reported by projects on the MSP MIS.

Section E: 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 participants 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) (Table E1).

A total of 6,188 individuals across 115 IHEs were recipients of MSP activities during the 2003–04 school year (Table E2). 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 (tenure and non-tenure track), while graduate students accounted for 5.8 percent of IHE recipients.

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 (Table E8). Of this number, 58.3 percent were female and 50.4 percent were White.

Table E1.—MSP preservice recruitment and preparation activities targeted to IHE recipients during the 2003–04 school year

Strategy	Overall (n=34)		Cohort 1 (n=22)		Cohort 2 (n=12)	
	Number	Percent	Number	Percent	Number	Percent
Provide opportunities for preservice students to gain classroom experience before student teaching	16	47.1	9	40.9	7	58.3
Involve IHE STEM faculty in preservice program	15	44.1	8	36.4	7	58.3
Create/provide opportunities for STEM undergraduate/graduate students to tutor K–20 students	14	41.2	11	50.0	3	25.0
Develop/revise preservice courses to align with national and/or state standards	14	41.2	7	31.8	7	58.3
Develop/revise preservice course content to align with local school district curricula	12	35.3	7	31.8	5	41.7
Design/offer preservice content course for elementary/middle/high school teacher certification programs	12	35.3	5	22.7	7	58.3
Invite preservice students to take part in local school district inservice activities	11	32.4	7	31.8	4	33.3
Invite STEM undergraduate/graduate students to help at K–12 special events	10	29.4	7	31.8	3	25.0
Mentor preservice student	10	29.4	6	27.3	4	33.3
Involve K–12 master teachers in preservice program	9	26.5	5	22.7	4	33.3
Create/provide teaching assistant positions for STEM undergraduate/graduate students	7	20.6	3	13.6	4	33.3
Create/provide informative materials for potential STEM teaching candidates	7	20.6	4	18.2	3	25.0
Provide scholarships to undergraduate students	6	17.6	4	18.2	2	16.7
Establish/provide alternative certification programs	4	11.8	2	9.1	2	16.7
Conduct presentations at career fairs	4	11.8	4	18.2	0	0.0
Establish a regional plan for recruiting preservice students that encompasses multiple MSP partners	3	8.8	1	4.5	2	16.7
Establish and/or revise course articulation agreements between 4-year institutions and community colleges	2	5.9	0	0.0	2	16.7
Link the preservice process to national teacher certification activities	2	5.9	0	0.0	2	16.7

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 conducting preservice recruitment activities that were designed to create/provide opportunities for STEM postsecondary students to tutor K–20 students (41.2 percent). Exhibits E1 and E2 provide examples of the preservice recruitment (E1) and preparation (E2) activities that projects were conducting during the 2003–04 school year.

Exhibit E1.—Examples of MSP preservice recruitment activities targeted to IHE recipients

Create/provide opportunities for STEM undergraduate/graduate students to tutor K–20 students

Undergraduate and community college STEM majors served as K–12 tutors through three MSP supported programs. Undergraduate STEM majors tutored students from partner schools an average of 5–15 hours per week. The purpose of these activities is to allow undergraduates to gain additional experience working in classrooms with diverse groups of learners. Teacher Leaders from the MSP Teacher Leader Cadre supervised and mentored undergraduates in all activities. The MSP partners worked collaboratively to facilitate training and place 67 undergraduates in tutoring positions. Qualitative data were collected on a bi-weekly basis in the form of journals from the undergraduate participants, and participating teachers were given the opportunity throughout the year to offer feedback on how to enrich the teaching experience for the undergraduates. All feedback was used to guide the program.

The purpose of the multiple pathways to tutoring opportunities for STEM students is to increase their exposure to students from a variety of backgrounds, and to allow STEM students to experience STEM content from a teaching, rather than learning, perspective. The scope and intensity of these opportunities varies depending on the route chosen, and can be ongoing tutoring within the CTF Fellows classroom experience; on-going off campus tutoring through the Pathways referral service; or one time tutoring during a student academy. Undergraduates mathematics majors and graduate students who are part of GAANN are provided with information and encouraged or required to participate.

Invite STEM undergraduate/graduate students to help at K–12 special events

The College of Engineering hosted the annual Engineering EXPO, during National Engineers Week, for representatives from K–12 schools; and participated in engineering camps for middle and high school students. Laboratories and demonstrations at these events introduced students to careers in Engineering.

Undergraduate STEM majors were invited to participate in local science fairs, science competitions, and college-outreach events at the K–12 level. The purpose was to gain more exposure to working with K–12 students and gain an understanding of how academic enrichment programs contribute to K–12 education.

Create/provide teaching assistant positions for STEM undergraduate/graduate students

8-10 Graduate students have been actively involved as mentors to teachers participating in the immersion experience portion of the new Master's Degree in Mathematics for Teaching at Boston University. Also, a teaching assistant position was created to support the joint course in abstract algebra and the associated shadow seminar for pre-service teachers. A committee consisting of members of Boston University's mathematics department, the School of Education, and EDC was formed to plan and design these elements. Other planning included meetings of graduate students and faculty on an ongoing basis during the summer and academic year.

NOTE: As reported by projects on the MSP MIS.

Exhibit E2.—Examples of MSP preservice preparation activities targeted to IHE recipients

Provide opportunities for preservice students to gain experience in K–12 classroom settings before formal student teaching *Pre-service students enrolled in TE 301 through TE 402 are placed for fieldwork. The courses are available only to students admitted to the teacher certification program. In TE 301 (Learners and Learning in Context) a pre-service student observes the teacher and students once a week. In TE 401 (Teaching of Subject Matter to Diverse Learners) and 402 Crafting Teaching Practice) pre-service students go to a school twice a week. They examine teaching as enabling diverse learners to inquire into and construct subject-specific meanings and, how to adapt subject matter to learner diversity.*
Involve IHE STEM faculty in preservice program *Our program involves IHE faculty from several disciplines (STEM, Education) in the design and implementation of in-service and pre-service teacher courses. Further, the same individuals are involved in teacher professional development throughout the school year. IHE faculties teach and mentor the K–12 teachers. IHE faculties participate in numerous meetings regarding the design and implementation of the summer courses. Each IHE CMST faculty member is assigned one or a few CMST schools at which to mentor the teachers. This involves regular communication with the CMST coaches at the school, as well as at least two visits to the school to visit/observe/participate in the classrooms of the CMST teachers. IHE faculty also deliver the instruction for supplemental training sessions that are held monthly to address specific teacher questions about the CMST software, hardware, and strategies.*
Develop/revise preservice courses to align with national and/or state standards *Each of the 4 IHE partners has committed to revision of 90 percent of their STEM and pre-service education courses to enable greater success for their students. They define that success as fewer than 20 percent of the students in a revised course earning C- or below. The MSP Teacher Fellow activity places a K–12 teacher on an IHE campus for a sabbatical of half year, whole year or summer semester. The activity enables K–12 and Higher Education faculty to bring their unique expertise together to deepen math and science knowledge for all students by implementing research-based, effective teaching strategies in K–16 math and science. The K–12 Teacher Fellows bring both their pedagogical knowledge and experience, and their knowledge of the state-adopted Academic Standards to their IHE colleagues, who in turn share their experience and disciplinary expertise. Over the next 5 years, two Teacher Fellows from each district participating in the MSP (one in math and one in science) will be appointed by the district's Leadership Action Team. 25 of the 40 districts have already made such appointments. Nine Teacher Fellows, spread across the 4 IHEs, participated in the summer semester of 2004. Each Teacher Fellow: works with IHE faculty to help revise two courses, enrolls in at least one course to help deepen their own content knowledge, and participates in MSP activities such as the Teacher Leadership Academies, and Network Connections.*

NOTE: As reported by projects on the MSP MIS.

Table E2.—Number and proportion of IHE individuals that were recipients of MSP activities during the 2003–04 school year

Type of IHE recipient	Overall (n=115 IHEs)		Cohort 1 (n=53 IHEs)		Cohort 2 (n=62 IHEs)	
	Number	Percent	Number	Percent	Number	Percent
Total	6,188	100.0	4,322	100.0	1,866	100.0
Preservice undergraduate and alternative certification students	2,508	40.5	2,024	46.8	484	25.9
STEM undergraduate students	1,779	28.7	1,561	36.1	218	11.7
IHE STEM faculty (tenure track)	627	10.1	202	4.7	425	22.8
Graduate students (including doctoral candidates)	361	5.8	310	7.2	51	2.7
IHE administrators	261	4.2	67	1.6	194	10.4
IHE STEM faculty (non-tenure track)	175	2.8	64	1.5	111	5.9
MSP liaisons/coordinators	165	2.7	11	0.3	154	8.3
IHE education faculty (tenure track)	157	2.5	16	0.4	141	7.6
K–12 teachers in residence	94	1.5	35	0.8	59	3.2
IHE education faculty (non-tenure track)	30	0.5	4	0.1	26	1.4
Postdoctoral students	6	0.1	3	0.1	3	0.2
Other	25	0.4	25	0.6	0	0.0

A total of 6,188 individuals across 115 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 graduate students accounted for 5.8 percent of IHE recipients.

The distribution of IHE recipients of MSP activities differed among Cohort 1 and Cohort 2 partnership projects. For example, during the 2003–04 school year, almost one-fourth (22.8 percent) of Cohort 2 IHE recipients of MSP activities were tenure-track STEM faculty—compared with 4.7 percent for Cohort 1 partnerships during the same period. In addition, a greater number and proportion of Cohort 2 IHE recipients of MSP activities were IHE administrators during the 2003–04 school year—194 (10.4 percent) compared with 67 (1.6 percent) for Cohort 1 IHE recipients. Finally, Cohort 2 IHEs were less likely than their Cohort 1 counterparts to targeted MSP activities to preservice undergraduate and/or alternative certification students (25.9 percent of Cohort 2, compared with 46.8 percent for Cohort 1) or STEM undergraduate students (11.7 percent of Cohort 2, compared with 36.1 percent of Cohort 1).

Table E3.—Number and proportion of students newly enrolled in preservice programs in participating IHEs during the 2003–04 school year

Program type	Overall (n=64 IHEs)		Cohort 1 (n=27 IHEs)		Cohort 2 (n=37 IHEs)	
	Number	Percent	Number	Percent	Number	Percent
All new students enrolled	16,548	100.0	7,844	100.0	8,704	100.0
New students enrolled in preservice program	15,120	91.4	7,180	91.5	7,940	91.2
New students enrolled in certified program	1,428	8.6	664	8.5	764	8.8

The 64 IHEs working with their preservice programs reported that 15,120 students enrolled in their preservice programs for the first time during the 2003–04 school year. Additionally, 28 of these partner IHEs enrolled 1,428 new students in an alternative certification program.

Table E4.—Number and proportion of preservice graduates in participating IHEs since the beginning of MSP

Program type and focus	Overall (n=64 IHEs)		Cohort 1 (n=27 IHEs)		Cohort 2 (n=37 IHEs)	
	Number	Percent	Number	Percent	Number	Percent
All graduates and programs	13,496	100.0	8,792	100.0	4,704	100.0
Elementary education	10,354	76.7	6,909	78.6	3,445	73.2
Secondary education						
Mathematics	804	6.0	494	5.6	310	6.6
Science	741	5.5	465	5.3	276	5.9
Middle grades education						
Mathematics	224	1.7	120	1.4	104	2.2
Science	190	1.4	79	0.9	111	2.4
Alternative certification program	1,183	8.8	725	8.2	458	9.7

The IHE partners working with their preservice programs reported that a total of 13,496 students had graduated from their preservice and alternative certification programs since the beginning of their MSP programs. Of this number, 10,345 students (76.7 percent) graduated from an elementary education program, 1,545 (11.5 percent) from a secondary education program, 414 (3.1 percent) from a middle grades education program, and 1,183 (8.8 percent) from an alternative certification program.

Table E5.—MSP contribution to preservice courses in participating IHEs during the 2003–04 school year

Type of MSP contribution	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
All contribution type	133	100.0	56	100.0	77	100.0
Developed a new course/seminar	36	27.1	14	25.0	22	28.6
Modified or enhanced a preexisting course/ seminar	91	68.4	39	69.6	52	67.5
Other	6	4.5	3	5.4	3	3.9

A total of 133 preservice courses were either developed or modified at partner IHEs during the 2003–04 school year. Of this number, 36 (27.1 percent) were newly developed and 91 (68.4 percent) were modified or enhanced with MSP support. It is worth noting that over half (57.9 percent) of the courses that were initiated or revised with MSP support—and 61.1 percent of newly developed courses—were at Cohort 2 institutions.

Table E6.—Subject matter of preservice courses that were initiated or revised with MSP support in participating IHEs during the 2003–04 school year

Course level and subject	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
Undergraduate level, total	115	100.0	48	100.0	67	100.0
Mathematical sciences	62	53.9	31	64.6	31	46.3
Education	28	24.3	18	37.5	10	14.9
Biological sciences	14	12.2	6	12.5	8	11.9
Physics	14	12.2	8	16.7	6	9.0
Chemistry	11	9.6	4	8.3	7	10.4
Geosciences	8	7.0	4	8.3	4	6.0
Computer science	4	3.5	3	6.3	1	1.5
Astronomy	3	2.6	3	6.3	0	0.0
Atmospheric sciences	3	2.6	1	2.1	2	3.0
Engineering	1	0.9	0	0.0	1	1.5
Ocean sciences	0	0.0	0	0.0	0	0.0
Other	14	12.2	7	14.6	7	10.4
Graduate level, total	18	100.0	8	100.0	10	100.0
Education	11	61.1	3	37.5	8	80
Mathematical sciences	9	50.0	6	75	3	30
Biological sciences	3	16.7	1	12.5	2	20
Chemistry	2	11.1	2	25	0	0
Physics	2	11.1	2	25	0	0
Atmospheric sciences	1	5.6	1	12.5	0	0
Computer science	1	5.6	1	12.5	0	0
Geosciences	1	5.6	1	12.5	0	0
Astronomy	0	0.0	0	0	0	0
Engineering	0	0.0	0	0	0	0
Ocean sciences	0	0.0	0	0	0	0
Other	3	16.7	3	37.5	0	0

Most (86.5 percent) of the preservice courses that were initiated or revised with MSP support were at the undergraduate level. For both Cohort 1 and Cohort 2, the majority of undergraduate preservice courses being developed or modified included a mathematical sciences component (53.9 percent overall; 64.6 percent for Cohort 1; 46.3 percent for Cohort 2) and about a quarter (24.3 percent) of all undergraduate courses included an education component. At the graduate level, 61.1 percent of courses contained an education component, while 50.0 percent included a mathematical sciences focus.

Table E7.—Number and proportion of preservice courses developed or modified in participating IHEs during the 2003–04 school year

Level and status	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
All level and all status	133	100.0	56	100.0	77	100.0
Fully developed and offered	55	41.4	41	73.2	14	18.2
Fully developed, but not offered yet	18	13.5	4	7.1	14	18.2
Still under development	13	9.8	8	14.3	5	6.5
Other	47	35.3	3	5.4	44	57.1
Undergraduate level	115	100.0	48	100.0	67	100.0
Fully developed and offered	46	40.0	33	68.8	13	19.4
Fully developed, but not offered yet	12	10.4	4	8.3	8	11.9
Still under development	11	9.6	8	16.7	3	4.5
Other	46	40.0	3	6.3	43	64.2
Graduate level	18	100.0	8	100.0	10	100.0
Fully developed and offered	9	50.0	8	100.0	1	10.0
Fully developed, but not offered yet	6	33.3	0	0.0	6	60.0
Still under development	2	11.1	0	0.0	2	20.0
Other	1	5.6	0	0.0	1	10.0

Of the 133 preservice courses that were initiated or revised with MSP support, 55 (41.4 percent) were fully developed and offered during the 2003–04 school year, 18 (13.5 percent) were fully developed but not offered, and 13 (9.8 percent) were still under development. The remaining 47 courses (35.3 percent) reported a development status of “other” (39 of the 47 courses with an “other” status were from a couple of Cohort 2 IHE partners).

Table E8.—Characteristics of students enrolled in preservice courses that were initiated or revised with MSP support in participating IHEs during the 2003–04 school year

Characteristic	Overall		Cohort 1		Cohort 2	
	Number	Percent	Number	Percent	Number	Percent
All students	2,119	100.0	1,542	100.0	577	100.0
Gender						
Male	204	9.6	136	8.8	68	11.8
Female	1,236	58.3	727	47.1	509	88.2
Not reported	679	32.0	679	44.0	0	0.0
Race/ethnicity						
White	1,069	50.4	645	41.8	424	73.5
Black or African American	92	4.3	35	2.3	57	9.9
Hispanic	135	6.4	104	6.7	31	5.4
Asian	15	0.7	11	0.7	4	0.7
American Indian or Alaska Native	2	0.1	1	0.1	1	0.2
Native Hawaiian or Other Pacific Islander	25	1.2	1	0.1	24	4.2
More than one race	1	0.0	1	0.1	0	0.0
Not reported	780	36.8	744	48.2	36	6.2

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. Of this number, 58.3 percent were female and 50.4 percent were White. Of the 577 students enrolled in a Cohort 2 preservice course, 88.2 percent were female and 73.5 percent were White.

Section F: What MSP Activities Were Targeted to K–12 Recipients?

The ultimate measure of success for an MSP project is the extent to which it is able to engage K–12 teachers and students in partnership-related activities—and whether these activities contribute to the enhancement of the teacher workforce and the improvement of K–12 student achievement. This section describes the range of MSP activities that were targeted to K–12 teachers and students. It also provides information on the number of K–12 teachers that participated in MSP-supported professional development, and the characteristics of students enrolled in the K–12 schools that met the criteria for significant MSP participation.

During the 2003–04 school year, MSP projects were most heavily involved in such inservice strategies as conducting activities designed to develop and utilize 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) (Table F1). A total of 16,957 K–12 teachers from 388 districts received MSP professional development during the 2003–04 school year. While most (90.9 percent) received between 1 and 80 hours of professional development over the 12-month period, 13.9 percent of the middle school science and 15.6 percent of the high school science teachers that received MSP-sponsored professional development participated in 81 or more hours over the same period (Table F2). In addition, a total of 1,652 K–12 administrators received professional development through the MSP program during the 2003–04 school year (Table F3). Almost all (98.1 percent) received between 1-80 hours of professional development over the 12-month period.

MSP projects also used a wide range of strategies to engage K–12 students in challenging mathematics and science courses during the 2003–04 school year. 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 (Tables F4a and F4b).

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 (Table F5). The number of students enrolled in Cohort 1 K–12 schools that met the criteria 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 (Table F5a). This increase reflects the increase over time in the total number of Cohort 1 K–12 schools that met the criteria for significant participation in MSP (from 147 schools during the 2002–03 school year to 348 schools during the 2003–04 school year). The increase in the number of Cohort 1 K–12 schools that met the criteria resulted in a change in the characteristics of the students potentially affected by MSP. Specifically, while 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), the proportion of Hispanic students increased from 26.8 percent to 40.5 percent (Table F5a).

During the 2003–04 school year, the proportion of students scoring at or above proficient on an assessment was 42.6 percent for mathematics (Table F6) and 48.1 percent for science (Table F7). 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. In Cohort 1 K–12 schools that met the criteria in both years, the proportion of students scoring at or above proficient on a mathematics assessment increased from 59.5 percent during the 2002–03 school year to 64.6 percent during the 2003–04 school year (Table F6a). However, during the same period, the proportion of students scoring at or above proficient on a science assessment decreased from 33.8 percent during the 2002–03 school year to 27.6 percent during the 2003–04 school year (Table F7a). Neither of these 2-year patterns was statistically significant at the 0.05 level.

Table F1.—MSP activities targeted to K–12 teachers during the 2003–04 school year

Strategy	Overall (n=34)		Cohort 1 (n=22)		Cohort 2 (n=12)	
	Number	Percent	Number	Percent	Number	Percent
Conduct activities that develop and utilize teacher leaders	33	97.1	22	100.0	11	91.7
Conduct workshops with K–12 teachers that increase general content and/or pedagogical knowledge	31	91.2	21	95.5	10	83.3
Provide administrative supports for K–12 teachers	29	85.3	20	90.9	9	75.0
Conduct targeted workshops/institutes/courses with K–12 teachers	25	73.5	20	90.9	5	41.7
Provide instructional materials for K–12 teachers	21	61.8	16	72.7	5	41.7
Provide a peer coaching network for STEM teachers	19	55.9	16	72.7	3	25.0
Provide individual supports for STEM teachers	19	55.9	14	63.6	5	41.7
Provide professional development for IHE STEM faculty to support new roles in K–12 education	19	55.9	12	54.5	7	58.3
Establish/provide STEM study groups	16	47.1	12	54.5	4	33.3
Design/offer STEM content courses superficially for elementary/middle/high teacher certification programs	10	29.4	7	31.8	3	25.0
Provide group induction supports for new STEM teachers	9	26.5	7	31.8	2	16.7
Establish/provide adjunct positions for K–12 master teachers at the partner IHEs	8	23.5	5	22.7	3	25.0
Provide externship opportunities for K–12 teachers	2	5.9	1	4.5	1	8.3

During the 2003–04 school year, MSP projects were most heavily involved in such inservice strategies as conducting activities designed to develop and utilize teacher leaders (97.1 percent), conducting content and/or pedagogical workshop for K–12 teachers (91.2 percent), and providing administrative supports for K–12 teachers (85.3 percent). Exhibit F1 provides some examples of the activities that projects were providing to K–12 teachers in these three areas.

Exhibit F1.—Examples of MSP inservice activities

Develop and utilize teacher leaders *We have a teacher leader development program that focuses on: developing a learning community focused on fostering and sustaining systemic reform; increasing our understanding of mathematics reform; deepening mathematics content knowledge; deepening our understanding of what it takes to design and implement professional development; and developing leadership skills more generally. The program consists of 5 years of monthly leadership seminars where one or two of the above foci are grounded for the year…All teacher leaders are expected to foster support for mathematics reform within their own buildings by informally collaborating with their administrators, colleagues and parents and through the implementation of formal professional development. The formal professional development will include project-designed programs (i.e., mathematics courses for parents, evening chats for colleagues, evening chats for parents and community, mathematics courses for support staff, Algebra-geometry course).*
Conduct workshops/institutes with K-12 teachers that increase general content/pedagogical knowledge *The primary purpose of courses, workshops and institutes offered through the Vermont Mathematics Partnership is to help teachers develop a deep understanding of mathematics and be able to translate that knowledge into high levels of learning for all students. Underpinning our topic selections are our Content Knowledge Frameworks, which were generated this year by our staff and consulting mathematicians and are based on Conference Board recommendations, state and national standards, the content of pre-existing graduate level courses, and the recently adopted Vermont Mathematics Grade Level Expectation. All professional development in our project also builds upon our Equity Framework, which is based on the Complex Instruction/Equity in Homogeneous Classrooms research of Elizabeth Cohen and Rachael Lotan, and others at Stanford University. The five elements of this framework are: Assessment, Language, Content-Rich Curriculum and Instruction, Classroom Organization/Instructional Practice, and Equalizing Participation. Most of our courses include a pre- and post-assessment of teacher pedagogical content knowledge, for which we use items selected from Deborah Ball's (LMT) assessment item bank. Another integral component of our courses, workshops and institutes is making a direct connection with the mathematics programs and/or curricula used by the participating teachers. We are intentional about integrating the learning of our project's research and development teams into the courses and workshops that we offer. For example, our Vermont Mathematics Partnership Ongoing Assessment Team has extensively researched how children learn fractions, including developmental understandings and common misconceptions. Our distillation of this research, along with the tools that the team is developing based on the research to assess students' developing understandings of fractions, is informing how we design courses and workshops that focus on fractions.*
Provide administrative supports for K–12 teachers *Administrative supports provided to K–12 teachers have been developed in communication with the school district. These supports include: Scheduling of release time for teacher professional development. Arranging summer school schedules to accommodate professional development summer institutes. Updating school district and principals on the activities surrounding the grant. These minimal supports were developed through monthly meetings and briefings with the school district administrators.* *The purpose of this activity is to help school systems learn how to eliminate some of the structural barriers to ongoing professional development and teacher leadership. Examples of the supports we provided include: Funds available to partner schools to hire substitute teachers so that classroom teachers could be released for professional development…Funds were available to districts to hire a teacher to step out of the classroom and take on the role of math teacher leader/site coordinator for the project Stipends were available to teachers who developed training materials for their grade-level teams..*

NOTE: As reported by projects on the MSP MIS.

Table F2.—Amount of MSP professional development (PD) received by K–12 teachers during the 2003–04 school year

School level and amount of MSP PD	Overall (n=388)[1]		Cohort 1 (n=227)		Cohort 2 (n=161)	
	Number	Percent	Number	Percent	Number	Percent
All K–12 teachers	16,957	100.0	8,856	100.0	8,101	100.0
1-80 hours	15,418	90.9	7,556	85.3	7,862	97.0
81-160 hours	1,126	6.6	932	10.5	194	2.4
161 or more hours	413	2.4	368	4.2	45	0.6
Elementary school teachers	10,099	100.0	5,071	100.0	5,028	100.0
1-80 hours	9,405	93.1	4,472	88.2	4,933	98.1
81-160 hours	621	6.1	531	10.5	90	1.8
161 or more hours	73	0.7	68	1.3	5	0.1
Middle school mathematics teachers	2,247	100.0	1,006	100.0	1,241	100.0
1-80 hours	2,036	90.6	832	82.8	1,204	96.9
81-160 hours	125	5.6	103	10.2	22	1.8
161 or more hours	86	3.8	71	7.1	15	1.2
Middle school science teachers	1,152	100.0	615	100.0	537	100.0
1-80 hours	991	86.0	520	84.6	471	87.7
81-160 hours	111	9.6	60	9.8	51	9.5
161 or more hours	50	4.3	35	5.7	15	2.8
High school mathematics teachers	2,016	100.0	1,209	100.0	807	100.0
1-80 hours	1,768	87.7	981	81.1	787	97.6
81-160 hours	157	7.8	144	11.9	13	1.6
161 or more hours	91	4.5	84	6.9	7	0.9
High school science teachers	1,443	100.0	955	100.0	488	100.0
1-80 hours	1,218	84.4	751	78.6	467	95.7
81-160 hours	112	7.8	94	9.8	18	3.7
161 or more hours	113	7.8	110	11.5	3	0.6

[1] This table excludes districts with validation issues and the 11 districts that reported that none of their teachers received MSP-sponsored professional development during the 2003–04 school year.

A total of 16,957 K–12 teachers from 388 districts received MSP professional development during the 2003–04 school year. While most (90.9 percent) received between 1 and 80 hours of professional development over the 12-month period, 13.9 percent of the middle school science and 15.6 percent of the high school science teachers participated in 81 or more hours over the same period. In addition, a higher proportion (14.7 percent) of Cohort 1 teachers received 81 or more hours of professional development through MSP than did their Cohort 2 counterparts (3.0 percent). Finally, 21.3 percent of Cohort 1 high school science teachers receiving MSP professional development participated in 81 or more hours—with 11.5 percent of those teachers receiving 161 or more hours.

Table F3.—Amount of MSP-professional development received by K–12 administrators during the 2003–04 school year

School level and amount of MSP PD	Overall (n=187)[1]		Cohort 1 (n=67)		Cohort 2 (n=120)	
	Number	Percent	Number	Percent	Number	Percent
All K–12 administrators	1,652	100.0	590	100.0	1,062	100.0
1-80 hours	1,620	98.1	571	96.8	1,049	98.8
81-160 hours	31	1.9	19	3.2	12	1.1
161 or more hours	1	0.1	0	0.0	1	0.1
Elementary school administrators	941	100.0	328	100.0	613	100.0
1-80 hours	930	98.8	320	97.6	610	99.5
81-160 hours	11	1.2	8	2.4	3	0.5
161 or more hours	0	0.0	0	0.0	0	0.0
Middle school administrators	391	100.0	111	100.0	280	100.0
1-80 hours	378	96.7	108	97.3	270	96.4
81-160 hours	12	3.1	3	2.7	9	3.2
161 or more hours	1	0.3	0	0.0	1	0.4
High school administrators	320	100.0	151	100.0	169	100.0
1-80 hours	312	97.5	143	94.7	169	100.0
81-160 hours	8	2.5	8	5.3	0	0.0
161 or more hours	0	0.0	0	0.0	0	0.0

[1] This table excludes districts with validation issues and the 11 districts that reported that none of their administrators received MSP-sponsored professional development during the 2003–04 school year.

A total of 1,652 K–12 administrators received professional development through the MSP program during the 2003–04 school year. Almost all (98.1 percent) received between 1 and 80 hours of professional development over the 12-month period.

Table F4a.—Strategies undertaken by MSP projects to engage students in challenging mathematics courses during the 2003–04 school year

Strategy	Overall (n=29)		Cohort 1 (n=19)		Cohort 2 (n=10)	
	Number	Percent	Number	Percent	Number	Percent
Align challenging mathematics curricula to other courses/standards	22	75.9	15	78.9	7	70.0
Implement standards-based mathematics curricula	18	62.1	14	73.7	4	40.0
Emphasize the importance of K–12 gateway courses	16	55.2	12	63.2	4	40.0
Adopt, adapt, and/or implement evidence-based mathematics curricula	15	51.7	10	52.6	5	50.0
Support expert review of challenging mathematics course curricula	12	41.4	8	42.1	4	40.0
Utilize technology for content innovation	11	37.9	9	47.4	2	20.0
Offer activities that motivate K–12 student participation in challenging mathematics courses	10	34.5	8	42.1	2	20.0
Implement efforts to increase time spent on mathematics at elementary school level	8	27.6	6	31.6	2	20.0
Provide guidance counselors with professional development on challenging mathematics courses	7	24.1	4	21.1	3	30.0
Provide focused support/tutoring for K–12 students	7	24.1	7	36.8	0	0.0
Provide outreach on challenging mathematics courses to parents	5	17.2	4	21.1	1	10.0
Develop/redesign traditional mathematics units or courses for in-depth immersion in a single topic	4	13.8	3	15.8	1	10.0
Encourage high school student enrollment in IHE mathematics courses	3	10.3	2	10.5	1	10.0
Offer challenging mathematics courses via computer-communications technology	0	0.0	0	0.0	0	0.0
Provide traditional mathematics courses at alternative venues	0	0.0	0	0.0	0	0.0
Other	2	6.9	2	10.5	0	0.0

MSP projects used a wide range of strategies to engage K–12 students in challenging mathematics and science courses during the 2003–04 school year. As shown in Tables F4a and F4b, 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. In addition:

- While 55.2 percent of partnerships with a mathematics focus were taking steps to emphasize the importance of K–12 "gateway"[9] courses for mathematics, a much smaller proportion of partnerships with a science focus (23.8 percent) were emphasizing the importance of such courses.

- A similar proportion of partnerships were using experts to review challenging mathematics (41.4 percent) and science (42.9 percent) curricula.

- A higher proportion of partnerships were using technology for content innovation in mathematics (37.9 percent) than science (19.0 percent).

[9]The definition of what constitutes a "gateway" mathematics or science course was left to individual projects.

- One-third of partnerships were offering activities designed to motivate K–12 student participation in challenging mathematics (34.5 percent) and science (33.3 percent) courses.

- Only a few partnerships were providing focused support/tutoring or outreach for K–12 students (24.1 percent for mathematics and 19.0 percent for science) and parents (17.2 percent for mathematics and 9.5 percent for science). Even fewer were encouraging high school enrollment in IHE mathematics (10.3 percent) and science (9.5 percent) courses.

Exhibits F2 and F3 provide examples of the strategies that projects were using to engage students in challenging mathematics (F2) and science (F3) courses.

Table F4b.—Strategies undertaken by MSP projects to engage students in challenging science courses during the 2003–04 school year

Strategy	Overall (n=21)		Cohort 1 (n=13)		Cohort 1 (n=8)	
	Number	Percent	Number	Percent	Number	Percent
Align challenging science curricula to other courses/standards	14	66.7	10	76.9	4	50.0
Implement standards-based science curricula	14	66.7	11	84.6	3	37.5
Adopt, adapt, and/or implement evidence-based science curricula	10	47.6	7	53.8	3	37.5
Support expert review of challenging science course curricula	9	42.9	7	53.8	2	25.0
Offer activities that motivate K–12 student participation in challenging science courses	7	33.3	6	46.2	1	12.5
Implement efforts to increase time spent on science at elementary school level	6	28.6	4	30.8	2	25.0
Emphasize the importance of K–12 gateway courses	5	23.8	4	30.8	1	12.5
Utilize technology for content innovation	4	19.0	4	30.8	0	0.0
Provide focused support/tutoring for K–12 students	4	19.0	3	23.1	1	12.5
Provide guidance counselors with professional development on challenging science courses	4	19.0	3	23.1	1	12.5
Encourage high school student enrollment in IHE science courses	2	9.5	1	7.7	1	12.5
Provide outreach on challenging science courses to parents	2	9.5	2	15.4	0	0.0
Offer challenging science courses via computer-communications technology	1	4.8	1	7.7	0	0.0
Develop/re-design traditional science units or courses for in-depth immersion in a single topic	1	4.8	1	7.7	0	0.0
Provide traditional science courses at alternative venues	0	0.0	0	0.0	0	0.0
Other	3	14.3	2	15.4	1	12.5

Exhibit F2.—Examples of MSP activities designed to engage K-12 students in challenging mathematics courses

Align challenging mathematics curricula to other course/standards

As the Consortium began work, partners set a priority for having a common set of curriculum frameworks. Frameworks were defined as a description of how the concepts and skills identified by the standards are developed over several school grades. A sequence of development was outlined by grade level in an effort to describe subject matter coherence with each grade level building upon previous student work. The goal was to develop sufficient commonality in the mathematics curriculum so that cross-Consortium mathematics reform would be effective and high expectations for student achievement would be consistently communicated. The Consortium Planning and Implementation team, the central planning group of approximately 25 teachers, administrators, and IHE representatives, developed a consensus that the Consortium model its curriculum frameworks after the learning outcomes in the New Jersey Core Curriculum Content Standards. These common frameworks, based on state standards, provide a basis for planning professional development and for reviewing and selecting instructional materials. Using the state standards ensured an emphasis on higher-level skills and meant district concerns regarding the state testing program could be channeled into productive work directly related to the intended curriculum outcomes.

A goal of our MSP is to implement and utilize a comprehensive mathematics framework and district learning targets that are aligned with the Wisconsin Model Academic Standards for Mathematics. Our mathematics framework includes the five components of mathematical proficiency—understanding, computing, reasoning, applying, and engaging—as presented in the National Research Council's report Helping Children Learn Mathematics (NRC, 2002) and drawn from the report Adding It Up (NRC, 2001). These five components revolve around the Wisconsin content standards of number, algebra, statistics, probability, geometry, measurement, and their interconnections. The district learning targets for mathematics are statements of what students are expected to know and be able to do by the end of a particular grade level. In writing the mathematics learning targets, our goal was to write eight to ten statements per grade that captured the important mathematical ideas for students to learn by the end of that grade, as well as statements that showed the progression of ideas across the grades. Our goal is that our vision as defined by our mathematics framework and the learning targets will drive classroom practice, define high-quality teaching of challenging mathematics, and be incorporated into the entire teacher learning continuum from teacher preparation through induction and continuing professional development.

Implement standard-based mathematics curricula

The MSP supported the implementation of standards-based curricula in several ways in the 2003–04 school year. The university offered professional development courses for teachers on number and computation development, mathematical reasoning and communication, and data analysis. Each of these courses were aligned to district, state, and national mathematics standards and allowed participants to connect the course content to their mathematics curricular programs. Courses were also offered for principals to develop their knowledge of standards-based mathematics and to develop their abilities to support their staff in the implementation of standards-based mathematics curricula. Workshops were also offered for new teachers with a focus on implementation of standards-based curricula.

NOTE: As reported by projects on the MSP MIS.

Exhibit F3.—Examples of MSP activities designed to engage K–12 students in challenging science courses

Align challenging science curricula to other courses/standards

The Science Curriculum Framework, developed by the MSP Project, provides a tool for educators to align their curriculum with the Pennsylvania Academic Standards for Science, Technology, Environment and Ecology and the National Science Education Standards. The purpose of this standards-based Framework is to provide a tool for educators to focus attention on the "big ideas" of science at each grade level to build students' deep conceptual understanding of science across the grade levels. The Framework consists of Knowledge Networks illustrating the conceptual development from narrow to overarching, which supports understandings of the big ideas or Essential Learnings of science. The building blocks represent the active student involvement in the content areas. The Framework also conveys these concepts in a more traditional scope and sequence format. This shows the sequence of Essential Learnings from K–12 for each of the three content strands of Life, Physical and Earth and Space Science. This section reflects the developers' effort to make sure that all unnecessary repetition in content are eliminated. This tool can be used by districts to align their curriculum to standards. To build K–12 site-based capacity, during the summer Teacher Leadership Academies (TLAs), teacher leaders learned to use this tool and have been prepared to take the tool back to their districts and share it with their colleagues. Orientation for the framework was also provided for IHE faculty.

Implement standard-based science curricula

The seven districts that were BASEE project members maintain their standards-based elementary and middle school curricula through the New Teacher Training program. (The two new districts are joining this regional opportunity this year—2004/05.) Throughout the school year, districts take turns hosting a New Teacher Training event which is a six-hour, 1 day program designed to provide an introduction to one of the three units at a grade level that the teacher must teach. The introduction includes opportunities to try the lessons in the kit/unit, basic content background of the unit and pedagogical strategies that have been selected to help teachers better teach that unit. The SRTs designed a template for these one day lessons so that there would be continuity across the sessions. Also, seven significant mega-messages are included in each session such as: literacy connections to the unit, differentiation strategies for ELL students, assessment ideas etc. Each year the SRTs recruit and train new lead teachers to become the trainers for New Teacher Training sessions. This is an important strategy in building and maintaining the leadership capacity for the districts and project.

Adopt, adapt, and/or implement evidence-based science curricula

Because the MSP works with 3 large urban districts and 9 smaller districts, it is difficult for all districts at any level to be using the same science curriculum. Those that are being used are implemented in conjunction with FOSS science kits. Along with these kits, 35 elementary and middle school science teachers were trained on using scientific inquiry with whatever curriculum materials they were using. To better incorporate these curricula, teachers are writing frameworks for each grade level that maps science content to both the state standards and the NCTM standards, science cognitive demands, and the curricula mentioned above. This assists teachers in knowing how to engage students with the content by using science cognitive demands, which reflect levels of thinking that are specific to scientific thinking.

NOTE: As reported by projects on the MSP MIS.

Table F5.—Characteristics of students in the K–12 schools that met the criteria for significant MSP participation during the 2003–04 school year

Characteristic	Overall (n=705 schools)		Cohort 1 (n=349 schools)		Cohort 2 (n=356 schools)	
	Number	Percent	Number	Percent	Number	Percent
Total	450,810	100.0	281,807	100.0	169,003	100.0
Gender						
Male	226,219	50.2	141,801	50.3	84,418	50.0
Female	217,634	48.3	136,314	48.4	81,320	48.1
Not reported	6,957	1.5	3,692	1.3	3,265	1.9
Race/ethnicity						
White	166,706	37.0	102,347	36.3	64,359	38.1
Black or African American	58,716	13.0	44,049	15.6	14,667	8.7
Hispanic	190,441	42.2	114,091	40.5	76,350	45.2
Asian	17,991	4.0	12,035	4.3	5,956	3.5
American Indian or Alaska Native	5,743	1.3	2,443	0.9	3,300	2.0
Native Hawaiian or Other Pacific Islander	1,546	0.3	1,154	0.4	392	0.2
More than one race	613	0.1	464	0.2	149	0.1
Not reported	9,054	2.0	5,224	1.9	3,830	2.3

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. The number of students enrolled in Cohort 1 K–12 schools that met the criteria 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 (Table F5a). This increase reflects the increase over time in the total number of Cohort 1 K–12 schools that met the criteria for significant participation in MSP (from 147 schools during the 2002–03 school year to 349 schools during the 2003–04 school year).

- The increase in the number of Cohort 1 K–12 schools that met the criteria resulted in a change in the characteristics of the students potentially affected by MSP. Specifically, while 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), the proportion of Hispanic students increased from 26.8 percent to 40.5 percent (Table F5a).

- A total of 169,003 students were enrolled in the Cohort 2 K–12 schools that met the criteria during the 2003–04 school year. Of this number, 45.2 percent were Hispanic, 38.1 percent were White, and 8.7 percent were Black.

Table F5a.—Characteristics of students in the K–12 schools that met the criteria for significant MSP participation in both the 2002–03 and 2003–04 school years

Characteristic	Cohort 1				Cohort 2	
	2002–03 (n=147 schools)		2003–04 (n=348 schools)		2003–04 (n=354 schools)	
	Number	Percent	Number	Percent	Number	Percent
Total	84,023	100.0	281,807	100.0	169,003	100.0
Gender						
Male	42,364	50.4	141,801	50.3	84,418	50.0
Female	41,155	49.0	136,314	48.4	81,320	48.1
Not reported	504	0.6	3,692	1.3	3,265	1.9
Race/ethnicity						
White	41,765	49.7	102,347	36.3	64,359	38.1
Black or African American	17,288	20.6	44,049	15.6	14,667	8.7
Hispanic	22,533	26.8	114,091	40.5	76,350	45.2
Asian	1,369	1.6	12,035	4.3	5,956	3.5
American Indian or Alaska Native	447	0.5	2,443	0.9	3,300	2.0
Native Hawaiian or Other Pacific Islander	0	0.0	1,154	0.4	392	0.2
More than one race	48	0.1	464	0.2	149	0.1
Not reported	573	0.7	5,224	1.9	3,830	2.3

Table F6.—Proportion of students in the K–12 schools that met the criteria scoring at or above proficient on a *mathematics* assessment during the 2003–04 school year[1]

Characteristic	Overall (n=407 schools)		Cohort 1 (n=199 schools)		Cohort 2 (n=208 schools)	
	Number of students taking a mathematics assessment	Percent of students scoring at or above proficient	Number of students taking a mathematics assessment	Percent of students scoring at or above proficient	Number of students taking a mathematics assessment	Percent of students scoring at or above proficient
All students	154,340	42.6	113,388	45.2	40,952	35.6
Gender						
Male	77,291	42.4	56,598	45.5	20,693	33.9
Female	76,344	42.7	56,102	44.7	20,242	37.3
Not reported	705	54.8	688	55.2	17	35.3
Race/ethnicity						
White	29,375	68.8	24,901	69.4	4,474	65.9
Black or African American	16,111	23.4	11,403	19.5	4,708	32.9
Hispanic	97,871	36.4	66,457	38.7	31,414	31.6
Asian	4,711	67.3	4,561	67.7	150	55.3
American Indian or Alaska Native	1,277	35.9	1,240	36.2	37	27.0
Native Hawaiian or Other Pacific Islander	834	25.9	834	25.9	0	0.0
More than one race	30	70.0	24	75.0	6	50.0
Not reported	4,131	54.7	3,968	55.5	163	34.4

[1] This table only includes those projects with a mathematics or mathematics/science focus. A total of 407 schools (1,077 mathematics assessments) across 19 MSP projects met this condition.

Over two-fifths (42.6 percent) of students in the schools that met the criteria scored at or above proficient on a mathematics assessment during the 2003–04 school year. The proportion scoring at or above proficient was highest for White (68.8 percent) and Asian (67.3 percent) students—compared with 36.4 percent for Hispanic students and 23.4 percent for Black students.

Table F6a.—Proportion of students in the Cohort 1 K–12 schools that met the criteria in <u>both</u> the 2002–03 and 2003–04 school years scoring at or above proficient on a *mathematics* assessment[1]

Characteristic	2002–03 (n=43 schools)		2003–04 (n=43 schools)	
	Number of students taking a mathematics assessment	Percent of students scoring at or above proficient	Number of students taking a mathematics assessment	Percent of students scoring at or above proficient
All students	10,661	59.5	9,537	64.6
Gender				
Male	5,242	60.2	4,792	64.8
Female	5,144	60.6	4,738	64.5
Not reported	275	25.8	7	42.9
Race/ethnicity				
White	6,624	72.7	5,831	77.9
Black or African American	1,432	20.5	1,337	20.1
Hispanic	1,950	47.0	2,001	54.3
Asian	189	77.8	133	83.5
American Indian or Alaska Native	145	46.2	169	59.2
Native Hawaiian or Other Pacific Islander	1	0.0	0	0.0
More than one race	8	75.0	11	90.9
Not reported	312	32.4	55	74.5

[1] The analysis on this table only includes Cohort 1 schools that (a) met the criteria for significant participation in the MSP program in *both* the 2002–03 and 2003–04 school years; (b) administered the same mathematics assessments in both years; <u>and</u> (c) were either a Comprehensive or a Targeted partnership with a mathematics or mathematics/science focus. A total of 43 schools (81 mathematics assessments) across 6 MSP projects met these conditions in both school years.

In the Cohort 1 schools that met the criteria in *both* years, the proportion of students scoring at or above proficient on a mathematics assessment increased from 59.5 percent during the 2002–03 school year to 64.6 percent during the 2003–04 school year. However, the increase was not statistically significant at the 0.05 level.

Table F7.—Proportion of students in the K–12 schools that met the criteria scoring at or above proficient on a *science* assessment during the 2003–04 school year[1]

Characteristic	Overall (n=245 schools)		Cohort 1 (n=104 schools)		Cohort 2 (n=141 schools)	
	Number of students taking a science assessment	Percent of students scoring at or above proficient	Number of students taking a science assessment	Percent of students scoring at or above proficient	Number of students taking a science assessment	Percent of students scoring at or above proficient
All students	55,387	48.1	38,856	53.0	16,531	36.6
Gender						
Male	27,704	49.1	19,336	54.6	8,368	36.5
Female	27,551	47.1	19,428	51.4	8,123	36.6
Not reported	132	43.2	92	51.1	40	25.0
Race/ethnicity						
White	20,355	60.6	9,300	83.0	11,055	41.8
Black or African American	8,388	24.5	6,709	25.9	1,679	18.8
Hispanic	22,444	43.8	20,258	45.3	2,186	29.6
Asian	2,591	69.3	1,956	79.6	635	37.6
American Indian or Alaska Native	682	20.4	45	55.6	637	17.9
Native Hawaiian or Other Pacific Islander	58	0.0	58	0.0	0	0.0
More than one race	11	100.0	11	100.0	0	0.0
Not reported	858	53.7	519	68.6	339	31.0

[1] This table only includes those projects with a science or mathematics/science focus. A total of 245 schools (314 science assessments) across 9 MSP projects met this condition.

Almost half (48.1 percent) of students in the K–12 schools that met the criteria scored at or above proficient on a science assessment during the 2003–04 school year. The proportion scoring at or above proficient 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.

Table F7a.—Proportion of students in the Cohort 1 K–12 schools that met the criteria in *both* the 2002–03 and 2003–04 school years scoring at or above proficient on a *science* assessment[1]

Characteristic	2002–03 (n=7 schools)		2003–04 (n=7 schools)	
	Number of students taking a science assessment	Percent of students scoring at or above proficient	Number of students taking a science assessment	Percent of students scoring at or above proficient
All students	1,971	33.8	1,858	27.6
Gender				
Male	1,014	35.1	952	28.9
Female	948	32.2	905	26.3
Not reported	9	66.7	1	0.0
Race/ethnicity				
White	919	68.4	681	69.9
Black or African American	993	1.8	1,138	1.9
Hispanic	7	28.6	9	22.2
Asian	7	42.9	6	33.3
American Indian or Alaska Native	4	25.0	1	0.0
Native Hawaiian or Other Pacific Islander	0	0.0	0	0.0
More than one race	8	75.0	11	100.0
Not reported	33	24.2	12	0.0

[1] The analysis on this table only includes Cohort 1 schools that (a) met the criteria for significant participation in the MSP program in *both* the 2002–03 and 2003–04 school years; (b) administered the same science assessments in both years; and (c) were either a Comprehensive or a Targeted partnership with a science and/or a mathematics/science focus. A total of seven schools (seven science assessments) across two MSP projects met these conditions in both school years.

In the Cohort 1 schools that met the criteria in *both* years, the proportion of students scoring at or above proficient on a science assessment decreased from 33.8 percent during the 2002–03 school year to 27.6 percent during the 2003–04 school year. However, the decrease was not statistically significant at the 0.05 level.