

MSP Research, Evaluation and Technical Assistance (RETA) Projects: MSP MIS Summary Data for the 2003-2004 School Year

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MSP RESEARCH, EVALUATION AND TECHNICAL ASSISTANCE (RETA) PROJECTS: MSP MIS SUMMARY DATA FOR THE 2003–2004 SCHOOL YEAR

Introduction

Research, Evaluation and Technical Assistance (RETA) projects are one of the four components of the Math Science Partnership (MSP) program portfolio. The other three are the Comprehensive Projects, the Targeted Projects, and the Institute Projects.¹ Comprehensive Partnerships implement change across the K–12 continuum in mathematics, science or both. Targeted Partnerships focus on improved student achievement in a narrower grade range or disciplinary focus in mathematics and/or science. Institute Partnerships, the newest component of the MSP, develop school-based teacher intellectual leaders with deep content expertise in mathematics, science and related technologies and have the disciplinary depth and stature to engage their colleague teachers and motivate students towards continued study of mathematics and science in advanced courses.²

The RETA component of the MSP portfolio is intended to enhance the capacity of the other types of projects, help them to achieve their goals, and contribute to the development and dissemination of the knowledge base necessary to achieve sustained educational reform. RETA projects are expected to build and enhance large-scale research and evaluation capacity for all MSP awardees and provide them with tools and assistance in the implementation and evaluation of their work. The RETA solicitation specifically requests that proposals clearly demonstrate how the project would contribute to the MSP goals and how its findings, activities, or tools would support the MSP projects or the overall MSP program. In addition, RETA projects are expected to be active participants in the MSP Learning Network, sharing approaches, data, preliminary findings and ideas with others in the Network.

As part of the overall Management Information System (MIS) developed for the MSP program by Westat, an online survey of RETA principal investigators (PIs) was designed to obtain information regarding each RETA's activities during the 2003–2004 school year—defined for this purpose as September 1, 2003 to August 31, 2004. Westat staff met with NSF program officers, both collectively and through individual interviews to develop a prototype survey, which was reviewed and

¹ Information regarding the Targeted and Comprehensive Projects is contained in another MSP Annual Survey Report. Because they are new, the Institute Projects were not included in any of this year's MIS surveys.

² Although all four of these types of projects are officially MSPs, for ease of reporting and reading, the Partnership projects will simply be referred to as MSPs, and the RETA projects will not use the technically correct "MSP-RETA" moniker. Instead they will just be called RETAs.

commented on by most of the RETA PIs at the January 2004 Learning Network conference. Revisions were made and the next two iterations were sent electronically to all PIs for further review. Program officers reviewed and approved the final version.

The PIs of all of the 18 RETAs operating during the requisite timeframe completed the survey. The results of that survey, as well as certain responses obtained from some RETA-related questions that were included on the Annual Project Survey for Comprehensive and Targeted Projects completed by the MSP PIs, comprise the remainder of this report.

Survey Results

Types of Projects

The work of the RETA projects fits into one or more of the following categories:

- Theoretically informed, methodologically rigorous projects that contribute to the understanding of the processes that support continuous improvement of K–12 mathematics and science teaching and learning by using the other MSP projects as research sites;
- Rigorous, innovative evaluation projects that develop new models and tools for documenting, assessing and assisting MSP projects' progress toward their goals; and
- Technical assistance projects that build on a strong research base and that develop, implement and evaluate both (a) models of support and (b) tools for the MSP projects, particularly in the use of research and data.

According to survey responses, the average allocation of time RETAs devoted to each of these activities during the 2003–2004 school year was as follows: 57 percent to research, 38 percent to technical assistance, and 5 percent to evaluations.

Key Features

There are five Key Features integral to all MSP projects: (1) *Teacher Quantity, Quality, and Diversity*; (2) *Challenging Courses and Curricula*; (3) *Institutional Change and Sustainability*; (4) *Partnership-Driven*; and (5) *Evidence-Based Design and Outcomes*. Some RETAs focus on an individual

Key Feature, while others are examining the interactions and connections among two or more of them. Table 1 details the average percentage of time that the RETAs devote to each of the MSP key features. Most (41%) are focusing on evidence-based design and outcomes, followed at a distance by teacher quality, quantity and diversity (21%), institutional change and sustainability (17%), and partnership driven (14%). An average of only 7 percent of their focus is on challenging courses and curricula.

Table 1.—Average percent of time RETAs devoted MSP key features

Key features	Average percent
Evidence-based design and outcomes	41.0
Teacher quality, quantity, and diversity	21.3
Institutional change and sustainability	16.8
Partnership-driven	14.3
Challenging courses and curricula	6.6
Total	100.0

SOURCE: Math and Science Partnership Program (MSP), Annual Survey for Research, Evaluation, and Technical Assistance projects 2003–2004.

Working with MSPs

Thirteen of the 18 RETAs worked with MSPs during the 2003–04 school year, and all 35 MSPs are reportedly working with at least one RETA. Table 2 displays the number of MSPs with which the RETA PIs reported having worked. Ten of the MSPs are working with only one RETA, one is working with nine of them, and the median number for all of them is 5. Table 3 presents the distribution of MSP involvement with each RETA by Cohort. TERC’s *Electronic Community*, by its very nature, is working with all of the projects, including the other RETAs. Utah State’s *Evaluation Capacity* project has the next highest number (20), followed closely by the National Academies’ *Facilitation* project (18) and the University of Wisconsin’s *Adding Value* and WestEd’s *Recruitment, Induction, Retention* projects (17 each). Of course, the intent is not to work with as many projects as possible, but to work with as many are necessary to achieve the goals of each RETA.

Table 2.—Distribution of RETA projects across the partnership projects

MSP projects	Number of RETAs Reporting Working with Each MSP
Allegheny Intermediate Unit	9
Black Hills Special Services Cooperative.....	8
University of North Carolina General Administration Office	7
University System of Georgia	7
Cleveland Municipal School District	6
Merck Institute for Science Education.....	6
The Vermont Institutes	6
University of Wisconsin-Milwaukee	6
Boston University	5
La Salle University	5
Michigan State University.....	5
SUNY College at Brockport.....	5
University of Wisconsin-Madison	5
Washington University	5
Rutgers University New Brunswick.....	4
University of Rochester.....	4
University of Texas at El Paso	4
University of California-Riverside.....	3
Auburn University	2
Indiana University.....	2
National Science Teachers Association.....	2
San Francisco State University	2
Stark County Educational Service Center.....	2
University of California-Irvine.....	2
California State University-Fullerton Foundation.....	1
Duke University	1
Hofstra University.....	1
Palo Alto Unified School District	1
Stephen F. Austin State University	1
Texas Engineering Experiment Station.....	1
University of Kentucky Research Foundation.....	1
University of Puerto Rico-Rio Piedras.....	1
University System of Maryland	1
Western Washington University	1

SOURCE: Math and Science Partnership Program (MSP), Annual Survey for Research, Evaluation, and Technical Assistance projects 2003–04.

Table 3.—Distribution of MSP project involvement across the 13 RETAs working with them

	Cohort 1 number	Cohort 2 number	Total number
Education Development Center—Leadership Content Knowledge and Mathematics Instructional Quality in the MSPs: A Study of Elementary and Middle School Principals.....	6	4	10
Education Development Center—Online Technologies to Enhance MSP Teacher Quality Programs.....	10	5	15
Horizon Research Inc—Assessing Teacher Learning About Science Teaching.....	1	0	1
National Academy of Sciences—Facilitating Mathematics/Science Partnerships.....	14	4	18
Northwestern University—Developing Distributed Leadership: Understanding the Role Boundary Tools in Developing and Sustaining Leadership for Learning Networks.....	0	2	2
TERC Inc—MSPnet: An Electronic Community of Practice Facilitating Communication and Collaboration.....	23	12	35
Council of Chief State School Officers—Longitudinal Design to Measure Effects of MSP Professional Development in Improving Quality of Instruction in Mathematics and Science Education.....	6	0	6
University of Michigan—Design, Validation, and Dissemination of Measures of Content Knowledge for Teaching Mathematics.....	6	4	10
University of Michigan—MSP Motivation Assessment Program.....	2	2	4
University of Wisconsin (Madison)—Adding Value to the Mathematics and Science Partnerships Evaluations.....	11	6	17
Utah State University—Building Evaluation Capacity of STEM Projects	17	3	20
Westat—The Effect of STEM Faculty Engagement in MSP: A Longitudinal Perspective.....	1	3	4
WestEd—Research on MSP Teacher Recruitment, Induction, Retention....	12	5	17

SOURCE: Math and Science Partnership Program, Annual Project Survey 2003–2004.

The manner in which contact was initiated between the RETAs and the MSPs varied, as displayed in Table 4. Because of the multiple relationships that the MSPs have with various RETAs, there were a total of 73 such associations within Cohort 1 and 49 within Cohort 2. The initiation of contact reflects both the nature and maturity of a particular RETA. For example, projects that are focusing on research or evaluation issues need to “recruit” projects to be part of their studies. On the other hand, those that are focused on providing technical assistance (TA) and/or materials are more likely to have partnerships contact them to inquire about or request those resources. The latter category of RETAs also takes time to develop their TA procedures or materials, so they are less likely to be contacted when they are in the early stages of their activities. Further, some partnership projects were not aware of the RETAs and what their roles are at the beginning of their work. For Cohort 1, 30 percent of the time a partnership initiated contact with a RETA, while for Cohort 2, that was the case in nearly one-half (49%) of the

instances. Conversely, whereas nearly two-thirds (64%) of the contacts with Cohort 1 partnerships were initiated by RETAs, this percentage had fallen below one-half (45%) for Cohort 2. This may reflect the fact that the later cohort of MSPs was more familiar with the RETAs than the earlier cohort, since the RETAs were more established when the projects in the second cohort were initiated.

Table 4.—Ways in which contacts between MSP partnership projects and RETAs were initiated

	Cohort 1		Cohort 2	
	Number	Percent	Number	Percent
The partnership contacted the RETA to request assistance	16	21.9	14	28.6
The partnership contacted the RETA to request information/ materials	6	8.2	10	20.4
The RETA contacted the Partnership to request information/ materials	4	5.5	3	6.1
The RETA contacted the Partnership to participate in their project	43	58.9	19	38.8
Other	4	5.5	3	6.1
Total	73	100.0	49	100.0

SOURCE: Math and Science Partnership Program, Annual Project Survey 2003–2004.

Hindrances to MSP Involvement

As reported earlier, all of the MSPs are involved with at least one RETA. However, getting the MSPs and RETAs together was not always an easy task, as demonstrated in Table 5. Thirteen Cohort 1 projects reported a total of 23 instances of either moderate (7) or large (16) problems that hindered their ability to become involved with a RETA, with the highest number (11) indicating that they just could not find a good match between their activities and that of any of the RETAs. (One project reported all factors as either moderate or large problems.) However, only six Cohort 2 MSPs reported having any degree of problems connecting with a RETA, probably because the RETAs and their roles have become increasingly visible over time, as they contributed to the MSP Learning Network and participated in the MSP conferences.

Table 5.—Number and percent of MSP partnership projects indicating that they consider various factors to be moderate or large problems that hindered their ability to get involved with a RETA

Factors	Cohort 1		Cohort 2	
	Moderate problem	Large problem	Moderate problem	Large problem
	Number	Number	Number	Number
Not knowing <i>how</i> to approach the RETAs	0	2	0	1
Not knowing <i>who</i> to contact at the RETAs	0	1	0	0
Convincing MSP partners that working with RETAs can benefit our project	1	3	0	1
Not being able to find a good match between our activities and those of the RETAs	3	8	1	1
Other	3	2	4	0
Total.....	7	16	5	3

SOURCE: Math and Science Partnership Program, Annual Project Survey 2003–2004.

Institutions and People Involved

The number of institutions and people impacted by the RETAs is substantial, as reflected in Table 6. At the K–12 level, there were 375 districts, 722 schools, 2004 teachers and 465 administrators involved with RETA activities—research, evaluation, workshops, institutes, meetings, and so forth. There were also 404 institutions of higher education (IHEs) engaged in some RETA events, including 849 faculty members and 266 administrators. The large number of K-12 teachers reportedly having been involved in research/evaluation activities may appear to be counterintuitive, since one typically envisions their involvement in these types of programs as falling more into the TA/workshops/institutes category. However, in this instance, there were two RETA projects that skewed this distribution in that direction.

The Motivation Assessment Program at the University of Michigan is developing revised versions of extant scales and creating new instruments to assess both student and teacher motivations, and has established relationships with MSPs to field test their instruments. It is estimated that some 500 teachers have been involved in these activities. Another some 500 K-12 teachers have been involved in the Council of Chief State School Officers’ MSP, which is testing and demonstrating the use of survey data tools to analyze the quality of professional development being provided to math and science teachers. In addition, Westat, WestEd, and Horizon Research are each conducting research studies that involve smaller numbers of K-12 faculty.

Table 6.—Number of K–12 and IHE institutions and individuals involved with specific RETA activities

	Research/ evaluation activities	Technical assistance/ workshops/ institutes/ meetings	Other types of technical assistance	Totals
K–12 districts				
Districts	69	54	252	375
Schools	142	80	500	722
Teachers	1,151	53	800	2,004
Administrators.....	147	141	177	465
IHEs				
IHEs.....	43	126	235	404
Faculty.....	74	213	562	849
Administrators.....	18	75	173	266
Other types of institutions				
Institutions.....	9	124	103	236
People involved from these institutions.....	20	255	283	558

SOURCE: Math and Science Partnership Program (MSP), Annual Survey for Research, Evaluation, and Technical Assistance projects 2003–04

Instrument Development

As shown in Table 7, there were 19 instruments developed by the RETAs, including instruments for evaluating the success of RETA activities (3), classroom observation instruments (2), and partnership assessment and motivational instruments (1 each). More than half of the respondents indicated “other.” Assessment instruments were developed for several purposes identified in the survey instrument, including one for testing teachers’ mathematical knowledge and/or pedagogy, one for testing teachers’ scientific knowledge and/or pedagogy, and one for measuring students’ scientific knowledge. Assessment instruments were also developed for first through eighth grade by one RETA. The “other” responses were quite varied, including developing instruments to measure the content knowledge of elementary and middle school principals, a rubric for analyzing mathematical content of instruction from videotapes, a combination principal activity log and “shadower” observation log, a tool for examining the alignment of standards and assessments, an integrated set of web-based tools and instruments for communication, collaboration, and dissemination, and a RETA workshop intake survey. Only two projects did not develop any instruments.

Table 7.—Number and percent of various type of instruments developed by RETAs

Various types of instruments	Number	Percent
All types of instruments, total	19	100.0
Classroom observation instruments	2	10.5
Instrument(s) for evaluating the success of RETA activities	3	15.8
Partnership assessment instruments	1	5.3
Motivation instruments	1	5.3
Other	10	52.6
Did not develop any instruments	2	10.5

SOURCE: Math and Science Partnership Program (MSP), Annual Survey for Research, Evaluation, and Technical Assistance projects 2003–04

RETA Collaborations

The RETAs tend to collaborate more with each other rather than other types of entities, as reflected in Table 8. Only two collaborated with a state-funded MSP, and two others worked in partnership with an IHE that was not affiliated with an MSP project. None reported working with a K–12 school or district that was not affiliated with an MSP. However, there were 19 instances of RETAs working with other RETAs. As shown in Table 9, those connections were about evenly divided among discussions (44%), materials exchanges (35%), and participation in RETA activities (35%). Obviously, some RETAs participated in more than one type of interaction, depending upon their objectives and activities. Sixty-one percent indicated “other”—including serving as advisory board members for other MSPs, conducting evaluations of other educational programs, co-authoring a manuscript, providing technical assistance to other MSPs, and conducting an alignment analysis.

Table 8.—RETA collaborations with other entities

Organization type	Number	Percent
State-funded MSP	2	9%
Institution of higher education not affiliated with an MSP project	2	9%
Another RETA	19	82%
Total	23	100%

SOURCE: Math and Science Partnership Program (MSP), Annual Survey for Research, Evaluation, and Technical Assistance (RETA) projects 2003–04

Table 9.—Nature of RETA collaborations with others

Interaction type	Number	Percent
Discussions	10	44
Materials exchange	8	35
Participation in RETA activities	9	39
Other	14	61

SOURCE: Math and Science Partnership Program (MSP), Annual Survey for Research, Evaluation, and Technical Assistance (RETA) projects 2003–04

Future RETAs

Cohort 1 and 2 RETAs will be continuing for periods of two to three years. Although they were not included in this data collection timeframe, those RETAs funded as part of the third Cohort of projects, which included the Institute Partnerships component for the first time, are expected to carry out one or more of the following:

- Conduct research on the characteristics that define teacher intellectual leadership in K–12 mathematics and the sciences, and the factors that contribute to its development;
- Develop assessments of teacher growth in (a) content knowledge, especially for teachers of grades 9-12; (b) leadership in mathematics or the sciences; and/or (c) reflective practice in mathematics and science, K–12;
- Conduct research on the attributes of challenging mathematics/science content for teachers and/or K–12 students.