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Math and Science Partnership Program Evaluation (MSP-PE)

An Examination of Sustainability and Institutional Change Issues in the NSF-MSP Program

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*The present draft is based on materials, information, and data
that were available to the authors as of September 2006.*

Preface

This partnership sustainability and institutional change study is one in a series of substudies for the Math and Science Partnership Program Evaluation (MSP-PE) conducted for the National Science Foundation's Math and Science Partnership Program (NSF-MSP). The MSP-PE is conducted under Contract No. 0456995. Gabriel Della-Piana, Ph.D., Program Director, Division of Research, Evaluation, and Communication, serves as the NSF Program Officer. Diane Spresser, Ph.D., serves as the Senior Program Coordinator, Directorate for Education and Human Resources for NSF. The author is Jennifer Scherer, Ph.D., Executive Vice-President and Chief Operating Officer of COSMOS Corporation.

The initial study draws on secondary materials including: available extant literature together with all of the annual reports, evaluation reports, MSPnet documents, and Web site information reported by the individual Math and Science Partnerships (MSPs) in the MSP Program available to the author as of September 2006. The author reviewed the annual reports for every partnership, thus providing a comprehensive examination of all of the awards. In addition, the study draws on primary sources of data including information collected during site visits conducted by MSP-PE in 2006 and data collected through the MSP-MIS. To date, the primary limitation of the MSP-MIS data is that in some instances data are not available for all of the MSPs.

The author would like to express gratitude to Dr. Gabriel Della-Piana and Dr. Diane Spresser, who provided valuable guidance and insights about the context of the program. This substudy is a continuation of two previous substudies addressing the MSP-PE partnerships.

The MSP-PE is led by COSMOS Corporation, with Robert K. Yin of COSMOS serving as Principal Investigator (PI) and Jennifer Scherer serving as one of three Co-Principal Investigators. Additional Co-Principal Investigators and their collaborating institutions (including discipline departments and math centers) are Patricia Moyer-Packenham of George Mason University and Kenneth Wong of Brown University. Other collaborating institutions include Vanderbilt University and The McKenzie Group.

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1. INTRODUCTION

1.1 BACKGROUND: THE SUSTAINABILITY OF PARTNERSHIPS AND INSTITUTIONALIZATION OF POLICY AND PRACTICE

The Math and Science Partnership (MSP) Program at the National Science Foundation (NSF) promotes the development, implementation, and *sustainability* of exemplary partnerships and the *institutionalization* of its effective programs, policies, procedures, and activities to advance high-quality mathematics and science education. NSF encourages the engagement of science, technology, engineering, and mathematics (STEM) faculty in these partnerships that also involve the departments or schools of education at institutions of higher education (IHEs). The MSP Program is about deepening the knowledge and understanding of mathematics and the sciences for K-12 students, for preservice students, and for in-service educators. It also is about making the changes needed to support and sustain that outcome (e.g., changes in teaching practice at all levels, curricular change at all levels, changes in institutional practice and policies, or increased use of evidence).

A Nation at Risk (National Commission of Excellence in Education, 1983) propelled and invigorated the development and formation of new partnerships between K-12 schools and IHEs to respond to its call for reform and additional resources. The education reform movement has been in the public discourse for more than two decades and has now been coupled with issues of heightened accountability. The No Child Left Behind Act of 2001 (NCLB) has helped to focus the nation's attention on how assessments may be used to structure improvements in teaching and learning for all students.

This new consciousness has been a "major stimulus for change" and contributed to moving more traditional K-12/IHE partnerships, which typically only included departments or schools of education, to partnerships that now also include disciplinary departments (Atkin, 1998, and Druckman, 2002). Sustainability of these types of partnerships is especially challenging because the partnerships bridge two very different organizations, culturally and otherwise. Sustainability in the broader sense applies not only to the partnership entity, but also to the institutionalization of the programs, policies, procedures, and activities developed by the partnership. The literature provides documented links between sustainability and specific practices of a partnership (Leviton et al., 2006). Sustainable educational partnerships may lead to changes in the educational landscape through the development of practices that are more responsive to the long-term needs of students and schools than short-term, stop-gap measures that usually do not endure. If effective, these practices may lead to institutional change.

Both K-12 schools and IHEs can benefit from these types of partnerships. K-12 schools and IHEs prepare, train, and recruit future teachers and instructors, many of whom will hopefully return to work in their own school systems. K-12 schools provide the student population for IHEs, which need students adequately prepared to take college-

level courses. Working in vertically aligned partnerships can facilitate these efforts, creating a coordinated response. The MSP Program is illustrative of this concept. Partnerships in the MSP Program must include a core partnership between an IHE or other eligible nonprofit organization (or consortium of such institutions or organizations) and one or more local education agencies (LEAs) that may also include a state educational agency (SEA) or one or more businesses. Core partners share responsibility and accountability for the MSP. All core partner organizations are required to provide evidence of their commitment to undergo the coordinated change necessary to sustain the partnership effort beyond the funding period. A non-core or supporting partner is *not* required to commit to the change necessary to sustain MSP activities beyond the funding period, but is an important stakeholder in K-12 mathematics and science education.

Osguthorpe et al. (1996) report that school-university (K-12/IHE) partnerships generally have four common components: 1) professional development (to provide teachers opportunities to strengthen pedagogical knowledge and skills); 2) curriculum development (to improve education materials for students); 3) education preparation (to prepare college students entering the education profession); and 4) research (to promote educational renewal). The MSP Program's partnerships are consistent with Osguthorpe et al's. findings in that they engage in a similar array of activities including:

- Providing professional development through workshops, training, seminars, etc.;

- Developing curriculum and textbook supplements for K-12 mathematics and science, pre-service, and professional development courses;

- Developing new courses and degree programs or certifications for pre- and in-service students; aligning school curriculum or university instruction; recruiting teachers, teacher leaders, professionals changing careers, or mentors (focused on diversity);

- Collecting data to assess their impact; and

- Furthering the field of knowledge by publishing and presenting research papers.

The NSF-MSP partnerships also are consistent with Gomez et al.'s (1993) research that says successfully sustained partnerships involving IHEs have three key attributes: 1) mutual objectives that guide planning; 2) new infrastructures that support collaborative goals; and 3) long-term evaluation. All of the NSF-MSP partnerships have developed goals and objectives that guide their planning, have the infrastructure to support such goals, and are engaged in evaluating both the partnership and/or its activities.

1.2 METHODOLOGY

This paper will focus on sustainability and institutional change issues related to core partners, non-core partners, and individuals within the partnerships and their activities.

This paper will not attempt to isolate the differences among the types of partners with regard to their work toward sustainability and institutional change.

The data sources in this study come from the partnerships awarded in three cohorts during FY2002, 2003, and 2004 in three categories: 12 *Comprehensive Partnerships*, 28 *Targeted Partnerships*, and 8 *Institute Partnerships (Teacher Institutes for the 21st Century)*. Comprehensive Partnerships are required to work across the K-12 continuum in mathematics, science, or both. Targeted Partnerships focus on a specific grade band or content domain (e.g., middle school mathematics). Institute Partnerships focus on the development of teacher intellectual leaders in mathematics or the sciences. This substudy used archival data submitted by the awardees as part of the MSP Program's management information system (MSP-MIS) and other secondary materials including available extant literature, awardees' annual reports, awardees' evaluation reports, documents available through the awardees' learning network (MSPnet), and Web site information reported by the individual partnerships in the MSP Program accessible through 2005.

Appendix A identifies items in the MSP-MIS surveys that pertain to partnership. Appendices B through E contain summarized information about the partnerships that contributed to this report. Much of this information first appeared in an earlier substudy, *Partnership Implementation in the MSP Program* paper (Scherer, July 2006).

The analysis focuses on the sustainability of educational partnerships and the institutionalization of policy and practice in the K-20 system and builds on a theoretical model that specifies outcome conditions (i.e., what it means for a partnership to be sustained) and input conditions (i.e., what forces help to produce and support partnership sustainability).

The primary research questions that will be addressed include:

1.   What approaches are the NSF-MSP partnerships pursuing to become sustainable and to institutionalize their activities?

2.   What are the precursors that appear to be associated with sustainability of the NSF-MSP partnerships and institutionalization of their programs, policies, procedures, and activities?

There are, of course, obvious limitations to this study. One important limitation derives from the use of annual progress reports from the awardees to NSF as the primary data source. MSP annual reports have as their purposes the reporting of work completed to date by the awardee, and the presentation of data and findings that document progress towards benchmarks that inform necessary changes in the work. Data from the MSP-MIS also are limiting in that there is no requirement to report to the MSP-MIS and not all of the awardees do so.

2. PRECURSORS ASSOCIATED WITH <u>SUSTAINABILITY</u> AND APPROACHES PURSUED BY THE NSF-MSP PARTNERSHIPS

2.1 DEFINING SUSTAINABILITY

Defining sustainability is similar to trying to define the concept of a partnership. The literature presents many different and widely varying definitions (Scheirer, 2005) and views of sustainability. Common elements of sustainability definitions include the concepts: to maintain, to keep in existence, to endure, to supply with necessities, and to keep from failing. Related to sustainability is the notion of the institutionalization of programs, policies, procedures, and activities. Definitions exist in the literature for sustainability in the general sense, sustainability of the partnership organization, and institutionalization (or institutional change) of a partnership's programs, policies, procedures, and activities—sometimes the definitions commingle all of these concepts (see discussion of institutional change in Section 3). The literature is beginning to make clearer distinctions between sustainability and institutional change.

For a partnership entity to be sustained, Cole (2001) writes that the partnership must be flexible and responsive to changing contexts and the overall goals of the partnership must mature accordingly. Funkhouser et al. (1997) further support this and state that, while flexibility is key to sustainability, diversity is a contributing factor as well (diversity in the sense that involvement takes many forms). Sustainable change involves collaborative relationship building among divergent partners and must include mutual growth, learning, and commitment (Fullan, 2001, and Hargreaves et al., 2003). Adding to this, Goldring et al. (2005) find that establishing mutual commitment and shared culture in the partnership relationship are two key partnership functions and that mutual commitment was sustained due to the "multiple layers of leadership." The leadership, in this case, involved a sharing of power and learning.

Nocon (2004) concludes that the process of sustainability is "collaborative, communicative, creative, and continuing." Consistent with this conclusion, Marlow et al. (2000) concur with the collaborative aspects of sustainability, but go further and include collegiality and the concept of responsibility. Knight et al. (2000) report that "the longevity of collaboration does not appear to depend solely on organizational structure, continuity of leadership, or individual rewards for participation…" They do recognize that these factors do contribute to sustaining successful partnerships. They further hold that partnership sustainability is related to satisfaction levels of individual partners in addition to similar levels of mutual interests. Leslie (2005) adds that collaborative partnerships take time to evolve, however.

Another way to consider sustainability is through a partnership's planning for its future through expected activities. For example, in terms of planning for the future, a partnership's sustainability plan may include a strategy for securing additional funding, a design for communication and dissemination, and a methodology for evaluating the partnership's activities and the partnership itself. Cassidy et al. (2006) propose that

program sustainability occurs "when elements essential to a program's effectiveness continue to operate over time, within a stable organization, at stable or increased organizational and service capacity." Pluye et al. (2004) posit that programs are sustainable when their core activities become reutilized in the organizations that house them.

For sustainability to occur, the relational world-view model holds that four primary forces must come together and be in balance (SAMHSA, 2003). These forces or factors include:

1) *Environment*. This force includes the social, political, and economic contexts under which a partnership operates and conducts its activities;

2) *Infrastructure*. This force includes a partnership's governing documents (operating guidelines, memorandum of understanding, etc.);

3) *Resources*. This force includes all types of resources such as financial, staffing, and facilities; and

4) *Mission*. This force includes a partnership's mission, vision, values, ethics, and organizational identity.

The definitions of sustainability are complementary, mutually supporting, but somewhat entangled and overlapping and in many cases arguably incomplete. Instead of using a single definition of sustainability to guide this paper, a set of precursors or characteristics supported by the literature will serve as a framework.

2.2 PRECURSORS ASSOCIATED WITH THE SUSTAINABILITY OF A PARTNERSHIP ENTITY

Stevens et al. (2006) organized a set of precursors or characteristics contributing to sustainability of a partnership as either project-related or environmental. These precursors are reflective of the many different definitions of partnerships. Examples of project-related precursors or characteristics include organizational sponsorship (drawing on the support of other organizations rather than the original funder), host organization's expertise (e.g., expertise in grant writing, etc.), charismatic leadership (who help sell the activities of the partnership), and survival tactics (e.g., strategic planning, building recognition, etc.). Environmental precursors or characteristics contributing to sustainability include public awareness of the problem targeted by the partnership, public recognition of the partnership as a solution (the partnership provides services that are viewed as a solution to a problem), external championship (someone outside the firm "champions" the partnership's cause), and involvement of local funders (they can provide value in other ways such as the provision of advice).

Sustaining the partnership entity can be a major challenge, but successfully sustained partnerships exhibit many similar characteristics. No one single set of criteria

exists and applies for sustaining all partnerships between K-12 schools and IHEs (Knight et al., 2000), but each in some way contributes to sustainability. Using Stevens's categorizations of project and environmental, some of the most commonly cited characteristics of successfully sustained partnerships in the literature are illustrated in Exhibit 1.

Exhibit 1

ILLUSTRATIVE PRECURSORS THAT CONTRIBUTE TO SUSTAINING PARTNERSHIP ENTITIES

Project

1. Led by qualified, diverse, well-positioned, and charismatic leaders (Stevens 2006)
2. Build on existing faculty, staff, and student relationships (Mihalynuk et al., 2002)
3. Commitment to and understanding of common goals, objectives, mission, and vision (Phillips et al., 1999)
4. Have mutual trust (that a partner is going to fulfill its commitment an carry out its responsibilities)
5. Accountability and adaptability of partners (Phillips et al., 1999)
6. Equality among partners (Health Canada, 1997)
7. Existence of a short- and long-term sustainability plan
8. Recognition of individual partners' accomplishments
9. Utilize open and regular communication (through many mediums such as e-mails, retreats, newsletters) (Phillips et al., 1999)
10. Development of multiple funding streams (Grobe, 2002) and commitment of resources (both financial and other types)
11. Adaptability to explore new strategies and procedures (Phillips et al., 1999)
12. Perseverance

Environmental

1. Dissemination of information about the partnership (through publications, presentations, brochures, media, etc.) and its activities
2. Communication of the value of the program (Fuller et al., 2005)
3. Identification of the partnership's niche and understanding of how it is unique
4. Recognition and support from the community (Health Canada, 1997)

While these factors are useful, they may not be practical as a checklist for all partnerships hoping to achieve sustainability. They provide little direct and specific guidance, but do provide insight to an overall approach. The partnerships still need a theory of action as to how sustainability is to be achieved.

2.3 FINDINGS ON SUSTAINABILITY[1]

At this point in time, data are not yet available to determine what components of the NSF-MSP partnership entities will be fully or partially sustained beyond the funding period (the configuration of the sustained partnership may be composed of the original partners or some different combination thereof). What is determinable, however, are the precursors (as described above) and the types of approaches the partnerships are pursuing to become sustainable. These include refining leadership roles, building and strengthening relationships, having a sustainability plan, having flexible approaches, being adaptable, having (and maintaining) common goals and vision, maintaining open communication, disseminating information and materials about the partnership and its activities, and identifying new funding streams. In addition to data from the MSP-MIS describing sustainability and institutional change, the awardees' annual and evaluation reports contain rich information about their efforts to sustain their partnerships and institutionalize their relevant programs, policies, procedures, and activities developed by the partnership. The reports often provide additional context to and confirmation of the content reported in the MSP-MIS[2].

Leadership

Working with key leaders is one way the partnerships are pursuing sustainability. Leaders are actively involved in the strengthening and building of the partnerships. The rationale is that the greater the number of leaders such as IHE staff and K-12 key staff (e.g., principals) involved in significant decision-making the greater likelihood of partnership sustainability. The partnerships report to the MSP-MIS about the partnerships' management structure and involvement that their lead PIs, co-PIs, and other partner leaders all have some degree of management responsibility for the project and serve in diverse capacities. Illustrative examples of their management responsibilities include: participation in general project management, coordination of staffing, development of implementation plans, development of long-term sustainability plans, development of strategic plans, establishment of priorities, participation at meetings, creation of formal links among partners, functioning as a liaison among partners, conducting data analysis, and provision of feedback to the partnership, etc. In addition, many of them serve on administrative councils, advisory boards, executive committees, and steering committees. Among other things, the partnership leaders explored issues of sustainability with these entities and sought guidance from them on recommended approaches and revisions to the partnership's original sustainability plan.

The MSP partnerships provide many examples of how they have refined leadership roles and are working toward sustainability. In recognition of the individual leaders' participation to the partnership they moved toward "ensuring global coherence and minimizing turbulence" so they redefined the roles and responsibilities of key leaders and

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[1] MIS data derived from the Annual Survey of Partnership Projects (2004-2005): n=40 and the Annual IHE Participant Survey for Comprehensive and Targeted MSPs (2004-2005): n=34 and data were derived from 2005-06 Annual and Evaluation Reports: n=48.
[2] Appendix F contains anonymous excerpts from the awardees' annual and evaluation reports.

now require these individuals to only function in leadership roles (as opposed to serving in a "worker" or "collaborator" role). The partnership's rationale is that overload is "inherently unsustainable" for leaders because it may lead to "blockages in communication and work flow." Yet another partnership redesigned the responsibilities of various leaders to be more efficient and complementary to their other leadership duties. This served to reduce their individual burden. One partnership believes that effective leadership with high credibility and visibility coupled with the appropriate support structures leads to sustainability. This partnership also finds this to be true with leadership at the teacher leader level and institutionalization of their roles and building of capacity in their particular schools. Structurally, leaders worked to integrate the goals and work of the partnership into the ongoing work of the partners and their organizations.

Relationship Building

The annual and evaluation reports provide evidence of the partnerships' efforts at relationship building, strengthening their existing partnership, reexamining their original missions, and building trust and respect as a byproduct. In pursuit of sustainability, partnerships also developed new relationships with additional partners and maintained their existing partnerships through various means, oftentimes building even stronger partnerships. Some partnerships adapted to unanticipated conditions or events by reaching out to new partners as needs changed and projects evolved. For instance, one partnership recognized the value of mentors in the form of experienced scientists, and thus increased their outreach efforts to broaden their constituency to include scientists and engineers from large corporations or other school districts. Another partnership broadened its core set of partners and is now working with two large corporations who presently support some of the partnership's activities and have promised to continue to do so.

Strengthening Partnerships

Partnerships used an array of approaches to strengthen their existing partnerships and improve communications. For example, to develop stronger working relationships and environments, partnerships conducted evaluations of the partnership (as opposed to just evaluating its activities) and used the findings to refine their efforts and improve the partnership overall[3]. Partnerships used other internal mechanisms to strengthen their partnering relationships. Among them, partnerships refined their communications systems (internally and externally), identified specific needs of the partners and worked to address them, and reexamined and then reaffirmed their original vision statement and goals to confirm amongst themselves that they believed the partnership should and is still working toward agreed upon goals in a jointly agreed upon and accountable manner. Partnerships reported that these types of activities contributed to an atmosphere of mutual respect and trust among the partners.

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[3] See Section 5 of this report for a further description of evaluation activities.

Policy Development and Implementation

In terms of helping to sustain the partnership entity (as opposed to institutionalizing polices for future faculty involvement), the partnerships also are attempting to develop policies that would reward their key leaders for their involvement with K-12 education. The higher number of IHE faculty involved in decision-making of policies, the more ownership of polices they have, and the more likely it is to endure beyond the lifetime of the MSP. To this end, partnerships have revised or developed university policies to count K-12 service toward tenure and promotion and are now providing stipends, course release, and other incentives to engage with K-12 education activities. A few of the partnerships have established new units within the university to deal solely with K-12 outreach and activities. Other partnerships are integrating K-12 activities into the university to help make the production of K-12 teachers a vital part of the university's responsibilities.

Funding and Dissemination Activities

Obtaining funding beyond the award period also plays a role in sustaining partnerships. Both the MSP-MIS and the partnerships' annual and evaluation reports demonstrate that the partnerships are leveraging their data to better understand the principles underlying their research and determining their effectiveness to more ably pursue their activities. They are further using data to help them and their partners make more informed decisions, such as what is working within the partnership or which curriculum to implement. To increase awareness of the partnership and the likelihood of getting more funding, the partnerships are publishing and presenting papers on MSP outcomes and, in one case, testifying before Congress. Additionally, the partnerships are writing and submitting additional proposals involving the improvement of mathematics and science education. The annual and evaluation reports also show that the partnerships are involved with a multitude of dissemination activities. Partnerships produced and disseminated materials and findings about the partnership to articulate the value-added of the partnership itself, its tools, and its strategies. Differentiating the partnership from other partnerships or agencies creates awareness about the importance of the partnership and what it does that would not be occurring if the partnership did not exist. Partnerships presented at national- and local-level conferences and other events, authored publications, created Web sites containing tools, instruments, and general information, contributed to MSPnet, and developed brochures.

Enlistment of External Support

As reported to the MSP-MIS, the partnerships enlist the support from STEM industry and business personnel who work in disciplinary fields. The more links with business created, the higher the likelihood of accessing additional resources and participating in joint ventures. Some of the partnerships maintain a large network of contacts to participate in MSP activities and use experts from the field to mentor students. Using this network, the partnerships have generated awareness about potential career paths for students. Other partnerships are working to increase awareness among potential

supporters such as university alumni, foundations, and for-profit entities. The partnerships have reported support in the form of office space, parking, resources, and monetary.

Increased Awareness

To increase awareness about the partnership and generate stakeholder buy-in, partnerships are engaging parents of students and other community members in the improvement of K-20 educational practices. As reported in the MSP-MIS, partnerships are pursuing a variety of approaches including:

- Hosting family nights or mathematics/science nights;

- Fostering awareness through the publication of articles, newsletters, advertisements, making of presentations, and participation on local cable television;

- Participating in science fairs, mathematics expos, or in outreach with museums and other local nonprofits; and

- Offering of mathematics courses, materials (handbooks) or training for parents.

Exhibit 2 provides a summary of the partnerships' sustainability efforts.

Exhibit 2

**ILLUSTRATIVE EXAMPLES OF NSF-MSP PARTNERSHIPS'
SUSTAINABILITY EFFORTS**

Precursors to Sustainability	Illustrative Partnership Examples
Is Led by Qualified, Diverse, Well-positioned Leaders	• Partnerships refined the role of key leaders (by defining their roles and responsibilities) to focus solely on leadership tasks. • Partnerships redesigned responsibilities of leaders to be more efficient and complementary. • Leaders guided partnerships by heading strategic committees (e.g. to develop a plan for sustainability). • Leaders served in multiple oversight capacities within the management structure of the partnership.
Builds upon and/or Strengthened Existing Partnership	• Partnerships conducted process evaluations to better understand the implementation and start-up phases of the partnership and made adjustments based on evaluation results. • Partnerships conducted outreach to acquire new partners as needs evolved. • Partnerships broadened partnership to include large corporations. • Partnerships worked to identify specific needs of their partners and then attempted through MSP activities to address the needs. • Partnerships convened meetings to reaffirm, review, and revise (when necessary) the partnership's founding principles.
Holds a Commitment to and Understanding of Partnership's Goals, Objectives, Mission, and Vision	• Partnerships convened meetings to revisit the partnership's goals, objectives, mission, and values (to make sure they were still relevant and to make sure the partnership's activities were "still on track"). • Partnerships adjusted goals, objectives, mission, and values when needed.
Has or Builds Mutual Trust Amongst Partners	• Partnerships reported that mutual trust was built among partners by "doing what they promised." • Partnerships reported that when they convened meetings to reaffirm their commitment to their founding principles or goals, objectives, mission, and vision that they built and/or maintained the trust of their partners (partners felt that their opinions continued to be of value).
Has Policies to Retain Partnership	• IHE partners report the implementation of policies that contribute to the sustainability of their participation (e.g., policies that encourage faculty participation in K-12 activities). • IHE partners report establishing new units within their departments that deal only with K-12 outreach and educational activities.
Has a Sustainability Plan	• Partnerships convened meetings to discuss, review, and revise (when necessary) their sustainability plans.

Precursors to Sustainability	Illustrative Partnership Examples
Has and Maintains Open and Regular Communication	• Partnerships reviewed their communication systems and revised them to broaden communications among the members. • Partnerships appointed liaisons to partner districts to maintain effective and timely communication. • Leaders participated in administrative meetings (planning, etc.) to communicate the partnership's mission and activities beyond the partnership.
Disseminates Information about the Partnership and Its Activities	• Partnerships produced and disseminated materials about the partnership. • Partnerships produced and disseminated materials about the partnership's activities demonstrating the uniqueness of the partnership and the value added of the partnership.
Receives Support from the Community	• Partnerships received support and encouragement from parents and other family members of the students participating in their partnership's activities. • Individuals from STEM industry positions, who were not originally partners, are now participating on the project as mentors.
Develops Multiple Funding Streams	• Partnerships have developed and submitted proposals and received additional funds that will continue supporting the partnership in some capacity. • Partnerships have identified corporate sponsors for some of their activities. • Partnerships have created nonprofit entities that will continue the work of the partnership (e.g., on a fee for service basis).

3. PRECURSORS ASSOCIATED WITH <u>INSTITUTIONAL CHANGE</u> ANDAPPROACHES PURSUED BY THE NSF-MSP PARTNERSHIPS

3.1 DEFINING INSTITUTIONAL CHANGE

Typical definitions of institutionalization or institutional change include the concepts: to make or treat as an institution, to make part of a structure, to become part of a well-established system, and to simply exist for a long period of time. Kramer (2002) writes that institutionalization or institutional change is the active process of establishing an initiative (as opposed to simply continuing a program) and developing relationships, practices, and procedures that become a lasting part of the community. Tyack and Cuban (1995) suggest that reforms that have been institutionalized "have typically been gradual and incremental—tinkering with the system."

Optimally, the focus of a partnership should be on the institutionalization of valued and effective programs, policies, procedures, and activities. In general, partnerships contemplate the value of continuing their activities (as opposed to sustaining the partnership entity as a whole) upon completion of an evaluation phase or near the conclusion of the funding period. The ideal is to delineate the value and determine or demonstrate the feasibility of sustainability or institutional change. One key element to successful institutionalization of valued activities is making systemic changes, which become integrated and ingrained into programs and services (UCLA, 2004). Compelling reasons for institutionalizing specific school-based activities with valued outcomes are often put in the context of strengthening and empowering schools, students, communities, and families. The argument becomes even more powerful when the activities align with the school's mission, vision, and priorities and a cost savings can be associated with them. Knight et al. (2000) reported that this occurred when the efforts of the partnership became embedded and associated with accountability and reward systems; essentially the culture of the organization changed to incorporate the partnership's activities.

Wills et al. (1997), find that "sustainability…is dependent upon history and resources of the sponsoring organizations and partners. The sponsoring organizations' capacity and willingness to support the ongoing effort is directly linked to the resources that can be tapped…The history of the industry also plays a major role in the sustainability equation…if the industry is predominately supported by the public sector…public funds may be required for a longer period of time than for those industries which are primarily controlled by the private sector."

Cuban (2001b) finds that the sustainability or institutional change of implemented activities (in the area of school reform) is influenced by "public deliberation and discourse…schools reflect what the public wants." Schools reflect the democratic ideals of society in that they contribute to the preparation of the nation's children to lead productive and fulfilling lives. So current societal norms, parents' desires, external pressures, politicians, and other stakeholders may strongly influence schools about what

is important and what they want to sustain. Often times, changes or reforms occur, "burn brightly for a few moments," and then cease to exist (Tyack and Cuban, 1995).

Further, with regard to the staying power (or institutionalization) of educational innovations, Cuban notes that innovations are most likely to be institutionalized when constituencies support them over a long period of time (Cuban 2001a and 2001b). The coalescence of a partnership entity takes time, and generally more than anticipated (Wills et al., 1997). Cuban (2001a and 2001b) points to the enduring Title I act (first appropriated in 1965) and to the development and institutionalization of kindergarten (first introduced in public schools in the 1870s) as key examples (each in existence for decades). Both of these innovations held strong constituency support and benefited from policy changes and the political climate of their time. This might suggest that many factors contribute to the continuation of educational innovations; these factors would include strong constituency support, the nature and impact of outside influences on the innovation (political climate, etc.), and the passage of a substantial amount of time before an innovation is recognized as institutionalized or sustained.

Funkhouser et al. (1997) reiterate this position, stating, "change takes time" and continued effort. Gomez et al. (1993) concur with the importance of policy on partnerships and write that states' policies play a vital role in sustaining partnerships and their programs, policies, procedures, and activities. Partnerships must work in cooperation with a range of agencies. "State policy can support this movement by reviewing teacher education, interagency collaboration, and funding formulas, and by considering policy levers such as incentives to foster multi-agency cooperation, coordination with federal programs, and expansion of existing partnerships," (Gomez et al., 1993). Wills et al. (1997) further support this and report, "Widespread adoption within education institutions is highly dependent upon the education/workforce development agendas of state government and most particularly how the states have organized their occupational cluster within the school-to-work and vocational education programs."

A final key component to institutional change is having the requisite capacity to do so. Capacity includes basic inputs to reach projected outcomes such as technical expertise, financial resources, and organizational management. Capacity can further be defined to mean the ability to carry out the partnership's mission with regard to the programs, policies, procedures, and activities and provide the intended services or treatments (Hunter et al., 2006). Routes or means to achieve capacity can be depicted in a partnership's logic model (also known as a conceptual framework or theory of change). The logic model provides the framework illustrating the types and levels of these resources projected to reach proximal and distal outcomes. They consist of a number of linked and testable hypotheses composed of "if-then" statements. These statements are used to track, review, refine, and improve the partnership's performance. Hunter (2006) noted that adopting a logic model is "imperative to promoting the building of organizational capacity and program sustainability." Some of the NSF-MSP partnerships have developed logic models (either as part of the proposal process or post-award as an

evaluation activity), while others are using their sustainability plans to guide them toward sustainability and institutionalization.

Common threads throughout the definitions of institutionalization or institutional change will be used to examine the issue in the NSF-MSP partnerships. These threads include the implementation of lasting policies, practices, and procedures that lead to systemic change and having the requisite capacity to continue activities. The factor of time is difficult to assess at this point, given that the partnerships received NSF-MSP funding less than five years ago.

3.2 FINDINGS ON INSTITUTIONAL CHANGE[4]

While it is not yet possible to determine which of the partnerships will be sustained in what manner, it is possible to examine the programs, policies, procedures, and activities they are beginning to institutionalize through implementation. The partnerships are attempting to bring about institutional change at both the university and the K-12 (or in some cases K-20) levels.

Institutional Change at the IHE Level

At the *IHE level*, data from the MSP-MIS reveal that partnerships are rewarding faculty for strengthening their teaching practices and participating in K-20 teacher preparation and professional development by creating new policies and practices. The most commonly cited means of doing so include:

- Development of policy statements on tenure, promotion, and merit increase based on K-12 activities to count MSP work toward teaching load;

- Provision of summer stipends or other financial incentives;

- Redesign (or improvement) of course content, courses in general, or degree programs; and

- Creation of new Professional Units/Partnership Institutes to organize all MSP activities such as teacher prep and K-12 programs under one roof.

Policy Development and Implementation. The partnerships developed or revised a number of policy statements on tenure and merit increases based on K-12 activities. For example, an IHE from one MSP partner issued the following policy statement:

"The faculty plays an important role in the administration of the university and in the formulation of its policies. Recognition should therefore be given to scholars who prove themselves to be able administrators and who participate

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[4] MIS data derived from the Annual Survey of Partnership Projects (2004-2005): n=40 and the Annual IHE Participant Survey for Comprehensive and Targeted MSPs (2004-2005): n=34 and data were derived from 2005-06 Annual and Evaluation Reports: n=48.

effectively and imaginatively in faculty government and the formulation of departmental, college, and university policies. Services by members of the faculty to the community, state, and nation, both in their special capacities as scholars and in areas beyond those special capacities when the work done is at a sufficiently high quality, should likewise be recognized as evidence for promotion. Faculty service activities related to the improvement of elementary and secondary education represent an example of this kind of service. Similarly, contributions to student welfare through service on student-faculty committees and as advisers to student organizations should be recognized as evidence, as should contributions furthering diversity and equal opportunity within the university through participation in such activities as recruitment, retention, and mentoring of scholars and students."

Partnerships report that recognition of improved teaching practices and support for K-20 efforts are now considered as one of the criteria in tenure and merit ratings. In one instance, the Dean, Associate Dean, and the Department Chairs in the College of Science took specific steps to developing a broader culture of valuing partnership and increasing faculty interaction with K-12 teachers and schools, as well as strengthening the mathematics and science courses specifically designed for pre-service teachers. At another partnership, the College of Engineering formalized a Guideline for Retention, Tenure, and Promotion. This policy has been printed and distributed to all tenured and tenure-track full-time faculty members. This document clarifies the role that high-quality instruction and educational research will play in administration decisions about retention, tenure, and promotion. In the past, no formal document of this type was available. One partnership's IHE partner uses the Boyer Model to assess IHE faculty for promotion and tenure review. The Boyer Model looks at the value of research on teaching-learning processes in STEM areas. This research is now being informed by participation in MSP activities. As yet a final example, an IHE partner implemented a new Academic Affairs Strategy Plan that specifically promotes participation of higher education faculty in K-12 schools. The IHE promotes a reward structure that encourages faculty, department, and college involvement in improving science and mathematics teaching and learning at the PK-16 levels. Partnerships also developed policies to count MSP-related K-12 work toward faculty members' teaching load. IHE partners stated in the MSP-MIS that their departments drafted new policies that say work on the MSP (in various capacities) now count as part of their teaching loads. Other partnerships report that IHE partners are offering stipends and other financial incentives as a reward for participating in MSP activities.

The partnerships' annual and evaluation reports provide further examples of how they are revising the roles and rewards structure in higher education so that faculty receive credit for sustained involvement with K-12. For example, one partnership created committees, conducted focus groups, and revised existing strategies based on evaluation. IHE partners also are revising their incentive structures to encourage faculty participation in K-12 activities. Among other things, IHEs have "equalized pay" for faculty involvement, provided "peer recognition," and had their MSP K-12 work considered in remuneration decisions. IHE partners are further demonstrating their commitment to

institutional change through the permanent hiring of some of the positions previously funded solely by the MSP award.

Modification or Creation of Courses or Programs. To further increase the likelihood of institutional change, some partnerships are actively involved in redesigning, modifying, creating, and strengthening higher education (pre-service) and STEM courses. Findings from the CACHÉ study on curriculum changes in the MSP Program suggest that course development and redesign "are not occurring in isolation, but rather as part of broader institutional change efforts" (The CASHÉ Project Team, 2006). MSP IHE partners have gone beyond course development and modification to the creation of new master's degrees programs. Another approach to achieving institutional change is to organize and streamline all of the MSP activities in one location. Two MSP partnerships reported in the MSP-MIS that they developed a Partnership Unit and a Partnership Institute to "house" all of the MSP activities.

Institutional Change at the K-12 Level

Policy Development and Implementation. At the *K-12 level*, the partnerships also are developing, adopting, and implementing new practices and policies at the K-12 level to bring about institutional change. Importantly, some of these involve working with administrators to build foundation for institutional change. These policies include working at the organizational level (e.g. new approaches to working with administrators) and at the staffing level (e.g., new policies on curriculum and release time and stipends for teachers participating in professional development). The annual and evaluation reports show that K-12 partners are convening meetings and committees to discuss approaches to institutionalization and to incorporate MSP activities into their strategic plan or school/district wide improvement plans. In some cases, the strategic or improvement plans outline how the school or district will staff (e.g., using leadership teams developed by the partnership, teacher leaders, students who participated in past activities) and fund the activities, and the plans further discuss adoption/adaptation of the activities.

New policies and practices include the adoption or reformation of curricula and the alignment of curricula to the state's standards. Through the MSP-MIS, partnerships report that in some cases all of the districts in the partnership have adopted new curricula in mathematics and science for at least one grade band. In conjunction with the curricular changes, some partnerships have or plan to purchase, refurbish, store, and distribute inquiry-based kits. The schools or the districts in some cases rented the kits prior to purchasing them. The purchasing of the kits may demonstrate a commitment to institutionalize the inquiry-based approach and the accompanying curricula change.

Data Collection. The partnerships also report in the MSP-MIS that the schools and districts are now using data collection and analyses for new purposes, and the data help to inform them in their decision-making process in guiding them on how to approach their long-term activities. For example, one partner used data to justify extending time for teaching mathematics and for other purposes. To assist at an administrative level, the

annual and evaluation reports reveal that some K-12 partners have learned from the partnership how to utilize data collection systems or data output provided by the state to make judgments about curriculum usage or evaluate student performance.

Staffing Issues. The MSP partnerships also are developing new policies and practices with regard to their staffing. To further ensure that the activities will be properly institutionalized, the annual and evaluation reports show that K-12 partners are training and hiring staff. For instance one K-12 partner is investing in formally training principals, staff developers, and instructional staff to ensure that professional development in coaching is institutionalized after the award concludes. As with the IHE partners, some K-12 partners have already hired or have plans to permanently hire positions previously funded by the award. To assist with staffing turnover issues and address continuity, partnerships have worked with K-12 partners during difficult staffing transition periods to help retain the priorities set by the partnership with the original administrators. The partnerships reported to the MSP-MIS that they are now providing release time and/or stipends for participation in professional development, whereas in the past they did not offer this. Others report that they have established and modified practices or policies to enhance and expand mathematics teacher leadership and provide job-embedded professional development.

Capacity Building. By far the greatest amount of effort toward institutional change has been directed to building capacity. Partners worked on creating capacity in a variety of ways to develop internal leadership capabilities and professional development expertise so that they can become the local experts on critical issues. The annual and evaluation reports provide several illustrative examples of the ways the partnerships are building capacity. Some partners focused on building capacity within districts to develop a better understanding of central mathematics or science concepts across district teachers through models of distributed leadership in which districts send teachers to professional development or courses with the expectation that they return and then share with others in the district. Other K-12 partners built capacity through the training of teacher leaders or of a leadership cadre within the district. Partners utilized a train-the-trainer model to educate the teachers about content or instructional methods and then trained them on techniques to train other teachers within their home district. Other K-12 partners developed specific positions for coordination of mathematics and science instruction. K-12 partners reported developing internal structures that allow teachers to serve as grade level mathematics and science teachers while maintaining their full-time teaching loads. K-12 partners also worked on relationship building among superintendents, principals, administrators, and teachers to create a more collegial and interactive working environment. In some cases, K-12 partners chose to provide mentors to assist with new teacher induction. The mentors bring and instill existing expertise in mathematics and science instruction to the new teachers for up to a period of two years.

Exhibit 3 provides a summary of the partnerships' institutional change efforts.

Exhibit 3

**ILLUSTRATIVE EXAMPLES OF NSF-MSP PARTNERSHIPS'
INSTITUTIONAL CHANGE EFFORTS**

Characteristic of Institutional Change	Illustrative Partnership Examples
Conducts Evaluation of Partnership's Activities	• Partnerships undertook many evaluation activities to better understand what components are effective.
Has Policies or Practices that Support Institutionalization	• IHE partners have developed policy statements on tenure, promotion, and merit increases based on faculty involvement with K-12. • IHE partners have developed policies to count MSP-related work toward the faculty members' teaching loads. • IHE partners have developed policies that now provide summer stipends and other financial incentives for faculty involvement with K-12. • K-12 partners have adopted, reformed, or aligned (with state standards) curricula. • K-12 partners purchased and refurbished inquiry-based teaching kits (and have developed plans to maintain them). • K-12 partners now utilize data collection systems to analyze the impact of changes to curriculum, etc. • K-12 partners are now providing release time and/or stipends for professional development. • K-12 partners have hired permanent replacements for some previously sponsored MSP roles . • K-12 partners are using mentors to assist with new teaching instruction.
Modifies Course Content	• IHE partners have redesigned, revised, or developed new courses. • K-12 partners have redesigned, revised, or developed new courses.
Creates New Degree Programs	• IHE partners have developed new master's degree programs (e.g., a new master's degree in middle school science).
Works with Administrators	• K-12 partners report convening meetings to discuss approaches to institutionalization. • K-12 partners have developed strategic plans that include continuing the MSP-related activities. • K-12 partners worked on relationship building among superintendents, principals, administrators, and teachers.
Continues MSP-sponsored Activities	• K-12 partners report that they are now using teacher leadership teams, students, mentors, and corporate sponsors to continue some of the activities originally sponsored by the partnership. • K-12 partners have developed resources to facilitate the continuation of knowledge sharing (e.g., online repositories or a materials library housed permanently at a partner's facility).
Builds Capacity	• K-12 partners have created leadership teams.

Characteristic of Institutional Change	Illustrative Partnership Examples
	• K-12 partners have adopted a train-the-trainer model whereby the training can continue without the assistance of the partnership.
	• K-12 partners have developed a better understanding of mathematics and science concepts across the districts through a model of distributed leadership.
Obtains Additional Funding or Other Types of Support	• Partnerships are utilizing their school- and project-level data to better understand what activities are working and which should be continued with additional funding.

4. ISSUES THAT MAY INHIBIT
SUSTAINABILITY AND INSTITUTIONAL CHANGE

4.1 CONSIDERATIONS ABOUT WHEN SUSTAINABILITY IS NOT THE GOAL AND ISSUES THAT INHIBIT SUSTAINABILITY

Not all partnerships or their activities are candidates for complete sustainability or institutional change. Some partnerships form with the understanding that the partnership is a short-term endeavor and will have a very limited lifespan and that the activities are short-lived. Others continue on in different capacities by developing strategies to sustain a limited partnership with a reduced number of partners, narrowing the focus and scope of the partnership, or by joining together with other existing partnerships to form a new network or coordinated response systemwide (Grobe, 2002).

Partnerships also may dissolve naturally. If a partnership fails, it tends to be not in the initial phases, but rather long after the initial impetus and excitement have faded. Partnerships are difficult to sustain for a many number of reasons (Phillips et al., 1999). First, partnerships are based on and guided by individuals and individual relationships; even though they often follow a formal set of rules or memoranda of understanding, it is these relationships that are key to its overall functionality and contribute to success or failure. Since the inter- and intra-relationships in partnerships are dependent upon the individuals who play significant roles, when staff change or turnover occurs, the partnership may end. When established and comfortable routines or practices change, partners can become uncomfortable. Partners are often accustomed to working in certain manners and accomplishing tasks with established procedures in a timely and linear fashion. A change in their usual routine can be disruptive and unproductive to the partnership as a whole.

Even a sudden change in the socio-cultural environment (for example, 9/11 impacted society in a multitude of unexpected ways) can affect a partnership. The environments in which the partnership operates and activities occur are dynamic in nature, sometimes resulting in unanticipated changes or outcomes (Cole, 2001) that are challenging to the partnership. If the partnership is unprepared or unwilling to deal with these changes then it is subject to failure. Other factors contributing to dissolution of the partnership include programmatic challenges such as a change in the focus, mission, or primary goals or a change in the needs (why the partnership was originally established). Changes to the core founding principles that alter the basic nature of the partnership too much may lead partners to resign from the partnership because the new direction does not complement their own internal goals or correspond with their mission.

Sometimes partnerships take on sensitive or emotional topics on which a diverse group of individuals needs to come to agreement upon. While inclusive and diverse partners are factors of success (Birkby, 2003; Drug Strategies, 2001; Kumpfer and Chavez, 2000; Wolff et al., 1997), arriving at mutually acceptable approaches and conclusions can be difficult given differing opinions and philosophies. Partnerships may

also face contextual challenges such as other partnerships (or individual partners) with competing agendas. This may diminish their opportunities in terms of both contribution and access to resources (human and financial capital). Partners may not view the partnership as an opportunity for mutual benefit under these circumstances (the partners might perceive that the other is receiving greater benefit for participation, more recognition, more favoritism, etc.).

Financial constraints may also impede a partnership through one of the partner's ability to provide continued financial support (due to their own financial difficulties) or through the partnership's inability to obtain continuation funding or new funding. The loss of federal resources and funding can severely impact a partnership if it does not have multiple funding streams (Grobe, 2002). This also can affect the number and type of populations served by the partnership, the level and type of activities, and the partners who can remain involved.

Finally, partnerships also require a significant investment of time and resources, sometimes more so than originally planned. The partners must agree to forego time initially in order to benefit at some later point in time. Some partners understand and are able to commit to this approach and others simply cannot because they need more expedient returns on their investments of time and resources.

4.2 FINDINGS ON INHIBITORS TO SUSTAINABILITY

The partnerships reported to the MSP-MIS that a variety of factors inhibited their partnerships' efforts to partner with the university and K-12 level partners. With regard to working with the IHEs, partnerships said that the most common inhibitors included:

- Faculty teaching loads were too high;

- Timeslots for faculty buy-outs were often mismatched with their actual availability;

- Faculty release time was inadequate to participate fully in MSP activities;

- Faculty grant seeking, research, and teaching competed with MSP activities (so had to provide opportunities for different levels of involvement);

- IHE calendars among the participating universities were not aligned making it difficult to collaborate and meet;

- "Tradition," in terms of long-standing approaches of doing things, is very difficult to change; and

- "Culture differences" between the IHE level and the K-12 level are often hard to bridge.

The partnerships cited a different set of problems they encountered in partnering with K-12 schools. These include:

- Teachers have too many competing demands on their time and are overcommitted (pressures to improve test scores, new standards, etc.);

- Teachers are barraged with new initiatives and trying to fit in one more program to their schedule is challenging;

- The MSP project is too small within the district to be perceived as important; and

- The school does not want the teachers spending time outside of the classroom or does not allow enough time for professional development.

Exhibit 4 shows the common inhibitors for K-12 and IHE partners.

Exhibit 4

**ILLUSTRATIVE EXAMPLES OF BARRIERS TO PARTNERING
AT THE K-12 AND IHE LEVELS**

K-12	IHE
• Teachers have too many competing demands on their time and are overcommitted (pressures to improve test scores, new standards, etc.). • Teachers are barraged with new initiatives and trying to fit in one more program to their schedule is challenging. • The MSP project is too small within the district to be perceived as important. • The school does not want the teachers spending time outside of the classroom or does not allow enough time for professional development.	• Faculty teaching loads were too high. • Timeslots for faculty buy-outs were often mismatched with their actual availability. • Faculty release time was inadequate to participate fully in MSP activities. • Faculty grant seeking, research, and teaching competed with MSP activities (so had to provide opportunities for different levels of involvement). • IHE calendars among the participating universities were not aligned, making it difficult to collaborate and meet. • "Tradition," in terms of long-standing approaches of doing things, is very difficult to change. • "Cultural differences" between the IHE level and the K-12 level are often hard to bridge.

4.3 LESSONS LEARNED

The partnerships also discussed the most significant lessons learned to date. These match closely with many of the characteristics mentioned in Exhibit 1. The partnerships cited having leadership expertise and the ability to cultivate leadership across the partnership as critical. Building upon a pre-existing partnership or relationship also helped to get the partnership or activity implemented more rapidly. The leaders play a critical role in providing a cohesive element across the many varied and diverse partners. Also central to lessons learned, is that the leaders must have a clear line and strong means of communications and be able to articulate a clear focus on goals, vision, and mission to which the partners can commit. The leaders must define expectations (through strong guidelines), roles, and responsibilities of all of the partners so each can anticipate what to expect in terms of their time, staff, and other resource commitments. Partnerships also said partners must respect the diversity of culture and opinions among the partners. Partnerships report that partners should be involved in key decision-making events and be recognized for their individual contributions. Finally, partnerships said that there is a need to have a flexible and dynamic approach and to be persistent.

5. EVALUATIONS CONDUCTED BY PARTNERSHIPS
RELATED TO SUSTAINABILITY AND INSTITUTIONAL CHANGE

5.1 EVALUATION ISSUES RELATED TO SUSTAINABILITY AND INSTITUTIONAL CHANGE

Ideally, a partnership should begin considering sustainability issues during the initial project implementation period (UCLA, 2004). The associated stressors of simply becoming operational, however, often mean that scant attention is given to sustainability at the outset. Evaluation is a critical component of a successful partnership (Gomez et al., 1993). However, evaluation can be a major challenge for some partnerships given their many endeavors, efforts, and management responsibilities. Overall, success of the school-university partnership and its activities can be measured through changes at the school level such as in the areas of student achievement or social competencies (Carroll et al., 2001). For sustainability purposes, however, evaluation of the partnership assists partners in determining what works, what is effective, and what is not so effective with respect to the functioning of the partnership and can help demonstrate the effectiveness of programs the partnerships supports, which ultimately assists in garnering additional funding and sustaining the effort.

Tyack and Cuban (1995) note but do not concur with, that there are three commonly used criteria for measuring success: 1) fidelity to the original model; 2) achievement of predetermined goals; and 3) longevity. They rebut the use of fidelity as a measure because unintended consequences or "by-products" may occur that could conceal mistakes. They also refute the simple use of achievement of predetermined goals as a measure, holding that some of the most important dimensions of the program may not be captured through the measurement of outcomes. Finally, they suggest that long-term existence does not always "equate with benefits to students." To develop proposals for sustaining a school-to-work partnership Dineva (2000) held that a partnership needs to determine the "most important, effective, and applicable activities of the initiative, how these activities were organized and implemented locally, what is the real participation and contribution of the partners involved in them, and what more is necessary to be done to increase and sustain the initiative."

It is important for partnerships to measure their performance in making change through their activities. Funkhouser et al. (1997) report "projects need to regularly assess the effects of the partnership using multiple indicators." The indicators they recommend include qualitative measures (e.g., quality of interactions) and quantitative measures (e.g., student educational progress). Some common indicators of this include: What is the level of awareness of the activity (both prior to the activity starting and after the implementation of the activity?); What is the attitude towards the issue the activity addressed (both prior to the activity starting and after the implementation of the activity)?; and How well is the activity working? (Boomer, 2003).

Exhibit 5 provides illustrative examples of the evaluation activities undertaken by the partnerships. Exhibit 6 illustrates the tools being used for self-assessment. Thirteen partnerships report evaluation tools or methodologies embedded within the reports such as interview guidelines, site visit protocols, and other project documents. One partnership reports that they are conducting a formal case study of the partnership. Two partnerships say they are conducting formal studies about how their partnerships work, while eight partnerships report that they are using formal partnership assessment instruments. Four partnerships mention that they are doing something in assessment but it is either in the preliminary stages, not reported well, or simply unclear as to what it is.

The partnerships draw upon an array of different methods of assessment and instruments to conduct evaluations. The methods employed include case studies, interviews, focus groups, surveys, secondary document analysis, and site visits. One partnership is developing a "suite of instruments" to carry out the assessment, while others rely on previously developed partnership instruments such as "The Partnership Analysis Tool" (originally developed by VicHealth), "The Wilder Collaboration Factors Inventory," or the "Building a Partnership Study" model.

5.2 EVALUATORS' FINDINGS

The partnerships are measuring both the effectiveness of their partnerships and are beginning to examine outcomes related to their activities. To attribute distal outcomes to the work of the partnership, it is important to have documented the partnership start-up process, identified key elements of the partnering relationship, and assessed the immediate effects of the partnership on major stakeholders: the members of the partnership, the partnership itself, and the targeted community. In the case of a university-K-12 partnership, the members are: 1) the researchers, faculty, and administrators at the university as well as the students (who may be termed "service learners"); 2) the K-12 teachers, administrators, and students; 3) other partnering organizations (such as SEAs or nonprofits) and community advocates; and 4) the members of the targeted community. In addition to looking at the overall outcomes, it is essential to assess the functioning partnership itself. Schulz et al. (2003) report "evaluators interested in evaluating partnerships find few assessment instruments available to them."[5]

Several of the partnerships are evaluating conditions that ultimately contribute to sustainability and the process of partnership "evolution." For example, partnerships are evaluating effective strategies, shared vision and goals, accountability, communication among partners, respect of contributions, relationships, and institutionalization. Some partnerships developed specific core questions relating to sustainability such as: "What factors enhance or limit the sustainability and impact of the partnerships?" with the goal of understanding what facilitates or impedes the partnership. Another partnership stated that their evaluation "recognizes partnership building as one of the keys to institutional change." Multiple partnerships report that they are or have plans to evaluate all of the

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[5] See Scherer, *A Review of Instruments to Evaluate Partnerships in Math and Science Education*, August 2006 for further discussion on available instruments for evaluating partnerships.

five key features, of which sustainability is one. Partnerships also are evaluating specific activities to determine what is effective and "what works." Many partnerships are using or intend to use the results of the evaluation to improve the functioning of the partnership and to plan for sustainability.

Exhibit 5

NSF-MSPs' PARTNERSHIP ASSESSMENT*

AWARD TYPE/COHORT/ Awardee No.	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED
COMPREHENSIVE: Cohort I		
1.	**Partnership:** Wants to have plans and revisions in place to improve the partnership.	Plans to meet with district and university partners on "The Quality of the Partnership and Ways to Improve."
2.	**Partnership:** Hopes to identify effective partnering strategies in previous and ongoing relationships.	Meetings, conversations.
	Evaluator: The evaluators wish to solicit reflections on the evolution of the partnership.	MSP Leadership Interview Guide – contains questions pertaining to interviewee's vision of the partnership and his thinking about what constitutes a partnership and how effective he thinks the partnership has been.
3.	**Partnership:** Will assess the partnership enhancing efforts of its Regional Program Coordinators and its Partnership Enhancement Projects (PEPs).	Review and summarize PEPs' quarterly reports, and are developing protocols with an emphasis on the partnering that enables activities and progress.
4.	**Evaluator:** Will investigate the way the partnership has changed over time, the challenges and benefits encountered by the partnership, and will contribute to the understanding of how partnerships develop and the necessary ingredients for a successful partnership.	Case study of the partnership involving interviews with key participants, observations of board meetings, review of minutes from meetings, tracking project communication, and staying apprised of partnership activities.
5.	**Evaluator:** The evaluation is framed in terms of the five key features—including Partnership-Driven Culture—and thus will examine the overall partnership.	The Partnership Analysis Tool (originally developed by VicHealth and also used by [another] MSP) involves three activities: 1) a discussion among all stakeholders to identify the purpose and common goals of the partnership; 2) a survey in which stakeholders individually reported their perceptions on the strengths and/or challenges of the partnership; and 3) a follow-up discussion among the stakeholders to discuss the results of the survey and develop action plans and next steps based on the survey and the discussion from the first activity. The evaluators also conducted reviews of project documents and a site visit to the project. The site visit included interviews, observations of meetings, and informal conversations. The evaluators developed and used interview protocols that asked questions pertaining to the partnership's goals, individuals' roles and responsibilities, structure and management, implementation and alignment, culture, and sustainability.
MSP-PE Award No. 6 is located in COMPREHENSIVE:		

* To remain anonymous, the names of the partnerships have been removed.

AWARD TYPE/COHORT/ Awardee No.	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED
Cohort II		
7.	**Partnership:** Gather and analyze information about how the partnership is evolving to enable the project to effectively catalyze and support change within the partner institutions.	Conduct the "Building a Partnership Study" (broken into four substudies: [MSP name] Views study, Mapping study, Network study, and Working Group Cross Case study) using interviews, observation of meetings, reviews of correspondence, administration of surveys, and readings of relevant articles and books on organizational development, leadership, and innovation.
COMPREHENSIVE: Cohort II 6.	**Partnership:** Providing documentation of what works and information about how to construct such a partnership to a wide audience of policy makers and university and school leaders.	None listed
MSP-PE Award No. 7 is located in Comprehensive: Cohort I		
8.	**Partnership:** Prior to the start of the grant, the partnership wanted to assess the existing partnership in order to improve for the MSP. **Evaluator:** Planning a process-based formative evaluation to assess the partnership's effectiveness in terms of expected institutional and student outcomes.	Core partner members took a partnership self-assessment. Observations, interviews, focus groups, annual retreats, and meetings.
9.	**Evaluator:** Defines a core question to guide the evaluation as, "What factors enhance or limit the sustainability and impact of the partnerships between [the university] and the participating districts?" hoping to uncover a wide variety of factors that impede or facilitate partnership implementation.	Site visits to districts (both districts that are perceived to be progressing well and those that are perceived to have faced obstacles to progress), interviews, surveys (developing different instruments for different groups of personnel), focus groups, observations, and job shadowing.
10.	**Partnership:** Plan to measure the degree to which a true effective partnership was established and identify the defining attributes of such a partnership. **Evaluator:** Addressing the key feature of being partnership driven by asking the following evaluation questions: "To what extent is the [MSP] partnership driven?" and "What are the key features of the [MSP] partnership that are critical for its success?"	None listed Reviewed background information and documents, conducted site visits, interviews, and focus groups.
11.	**Evaluator:** Evaluation recognizes partnership building as one of the keys to institutional change.	Interviews and surveys, including the Principal Survey, intended to capture changes in attitude and views toward many project aspects such as how the partnership is supporting districts and schools.
12.	**Partnership:** Developed defining questions that guide the direction and nature of the partnership. These questions include topics such as: shared vision of goals, communication between partners, respect of contributions, and	Using these questions, the partnership has developed a tool for monitoring progress towards actualizing the partnership driven key feature. The Leadership Team and Regional Coordinating Committees monitor this progress by determining if each practice or policy was met, in progress,

AWARD TYPE/COHORT/ Awardee No.	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED
	institutionalization of partnership.	or if no progress was made in the area.
TARGETED: Cohort I		
17.	**Partnership:** An objective of the partnership is to have all partners collaborating effectively to develop a successful partnership to provide continuing teacher education to improve teaching and learning in math and science.	Using the results of the Partnership Survey (administered by the evaluator using the adapted Partnership Analysis Tool) in organizational meetings and focus groups to discuss implications of the results for the partnership.
	Evaluator: The evaluators will assess the current status of the partnership and present results for the partnership to use to improve.	The Partnership Survey administered by the evaluator was adapted from the Partnership Analysis Tool developed by Victorian Health Promotion Foundation. The survey includes questions broken down into the following sections: "determining the need for the partnership, choosing partners, making sure partnerships work, planning collaborative action, implementing collaborative action, minimizing the barriers to partnerships, and reflecting on and continuing the partnership." The respondents indicate their level of agreement with various statements using a Likert-type scale. The results from these sections are then aggregated into a sum of all of the individual questions that corresponds to the following scale (total checklist score): 1) 0-49 points – The whole idea of the partnership should be rigorously questioned; 2) 50-91 – The partnership is moving in the right direction, but it will need more attention if it is going to be really successful; and 3) 92-140 – A partnership based on genuine collaboration has been established.
18.	**Evaluator:** Evaluators are examining the Program's five key features to "more closely connect project goals, research, and data collection" to these five key features ("expectations").	The evaluators assessed the key feature of being "partnership driven" through meeting agenda and minutes as well as data results describing participation and progress towards goals.
19.	**Evaluator:** The evaluation focuses on the area of building effective collaborations and which partner characteristics inhibit and support this collaboration.	The Wilder Collaboration Factors Inventory, in which 20 factors relating to collaboration are grouped into six categories: environment, membership characteristics, process and structure, communication, purpose, and resources. The Inventory consists of 40 statements reflecting these six factors. Respondents choose their level of agreement with the statements on a scale of 1 to 5 with 1 being strongly disagree and 5 being strongly agree. The results of the inventory are reported in the form of a "mean score for each factor and a composite score for each district."
21.	**Evaluator:** The evaluators are assessing how efficiently and effectively the partners work together, communicate, and capitalize on each other's strengths.	Interviews and attending meetings and teleconferences.
23.	**Evaluator:** Focus on how well district policies have been aligned to support the goals of the project.	Interviews with District Coordinators.
25.	**Evaluator:** Plans to evaluate the efficacy of the partnership.	None listed
TARGETED: Cohort II		
27.	**Evaluator:** A partnership goal is to have all partners in agreement with goals, responsibilities, and accountabilities.	Interviews with various project staff.

AWARD TYPE/COHORT/ Awardee No.	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED
30.	**Evaluator:** Evaluation will focus on various factors including the partnership itself, believing that the successful functioning of the MSP depends on an effective partnership.	Interviews, observations of meetings, and project communication. Indicators of successful partnerships are used to discuss findings.
31.	**Evaluator:** Evaluation questions in this area include: 1) To what extent is the [MSP] using existing resources and lessons from previous initiatives to their advantage? 2) How efficiently and effectively do the partners work together? Do they capitalize on each other's strengths in dividing the tasks? 3) To what extent are the resources and capacities of the [MSP] partners adequate for carrying out [MSP] goals with quality?	The evaluators plan to utilize interviews and observe meetings to inform these questions.
34.	**Partnership:** The partnership wants to determine critical items to consider when beginning a partnership. The partnership also has the goal of creating "a true partnership in which systemic alignment occurs across institutions, activities, and stakeholders."	With regard to determining critical items to consider when building a partnership, a member of the partnership has begun planning a survey of initial planning committee minutes and interviews with members of the project. The partnership also plans to analyze their goal of a systemically aligned partnership by performing an ethnographic analysis of the project with data sources such as interviews, observations, journaling, and analysis of project artifacts.
35.	**Evaluator:** Evaluation Components will evaluate goal of building a functional and healthy relationship.	Methods include: 1) Interview key leaders within each partner organization; 2) Attend a sample of SRT planning and cluster meetings; and 3) Conduct an annual partnership review of progress, issues, etc.
36.	**Partnership:** The partnership wanted to deepen understanding of partnerships and identify strengths and areas for improvement. **Evaluator:** The evaluators want to measure the success and growth of the partnership.	The team read and discussed "Effective School-College Partnerships, A Key to Education Renewal and Instruction Improvement" (Education, Summer 2001, p732-736). The evaluators are developing a suite of instruments to measure the partnership itself and have administered a preliminary survey to gain feedback for the development of these instruments.
TARGETED Cohort III		
38.	**Evaluator:** One of the key components to evaluate will be partnerships and culture changes including items such as: reward systems, district priorities and policies, IHE priorities and policies, lines and type of communication and participation.	None listed
45.	**Partnership:** Partnership wishes to gain information about the general progress and direction of the partnership.	Advisory Board will comment on the general progress and direction of the partnership.

Exhibit 6

MSPs' SELF-ASSESSMENT APPROACHES

EVALUATION TOOL	EXAMPLE (n=26)*
Case Study	Triangulation of multiple data sources (interviews, focus groups) (n=1 of 26)
MSP Study	Conducting the Building a Partnership Study (n=2 of 26)
Formal Partnership Assessment Instrument	Administering formal assessment instruments (n=8 of 26)
Embedded	Conducting interviews, site visits, etc. (n=13 of 26)
Informal/Unclear	Distributing literature to read re effective partnerships (n=4 of 26)

* n=26. MSPs may be coded more than one time if participating in multiple ways.

6. CONCLUSIONS AND NEXT STEPS

This paper addresses two initial research questions that explore issues related to the sustainability of partnership entities and the institutionalization of its effective programs, policies, procedures, and activities. First, it identified the approaches the partnerships are pursuing to become sustainable and to institutionalize their activities. Second, it examined the precursors that appear to be associated with sustainability of the partnerships and institutionalization of their programs, policies, procedures, and activities.

With regard to sustainability, the MSP partnerships reflect those precursors or characteristics typically associated with sustainability as shown in Exhibit 2. Some of the examples are mutually supportive of more than one of the basic characteristics. Some of the MSP partnerships also are beginning to institutionalize some of their programs, policies, procedures, and activities as shown in Exhibit 3. As with sustainability characteristics, some of the examples are mutually supportive of more than one of the basic characteristics. The partnerships experienced common barriers in their partnering activities. These occur along distinct lines of partnering with IHE partners and partnering with K-12 partners. Exhibit 4 shows the most frequently cited barriers.

The preliminary findings suggest that partnerships are exhibiting many signs that they will continue in some capacity.   Results also suggest that while the continuing availability of needed resources can play a prominent role, continuing partnership activities is strongly advanced by the institutionalization and implementation of relevant (not necessarily joint) policies, procedures, programs, and activities by the partnering organizations (e.g., an IHE's formalizing of new graduation requirements for its preservice students, with such requirements geared to the needs of a partnering K-12 system).

Because the majority of the partnerships are still in a funding phase, this paper reviews what the MSP partnerships are doing to pursue sustainability of the partnership entity as opposed to documenting which ones have been fully sustained. A subsequent paper at a later point in the award period will look specifically at which partnership entities have been sustained and in what capacity. As noted above, many rich examples of institutional change exist, but given more time, more will become apparent so any future paper on sustainability will also look at the issue of institutional change.   It will be important to understand and examine the extent to which IHE and K-12 partners have integrated their MSP work into their ongoing work.

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APPENDIX A

**Partnership Questions in the Math and Science Partnership Program
Management Information System (MSP-MIS)**

APPENDIX A

PARTNERSHIP QUESTIONS IN THE MATH AND SCIENCE PARTNERSHIP PROGRAM MANAGEMENT INFORMATION SYSTEM (MSP-MIS)[1]

Annual IHE Participant Survey, 2004-2005

Question	Response Options
Using the table below, identify the Management and other MSP-related Activities that you participated in during the 2004-05 school year. a) Serve as a member of the partnership management structure (e.g. help develop a strategic plan, participate in monthly MSP management meetings) e) Participate in the development of policies to reward IHE disciplinary faculty for their involvement in K-12 education (e.g., policies and incentives in support of promotion or tenure) f) Conduct research on teaching and learning in math and science (e.g., effective practices for pre-service and in-service education programs) g) Enlist support from STEM industry/business personnel who work in disciplinary fields related to your own	1. Yes 2. No

Annual IHE Participant Survey, 2003-2004

Question	Response Options
Using the table below, identify the Management and other MSP-related Activities that you participated in during the 2003-04 school year. a) Serve as a member of the partnership management structure (e.g. help develop a strategic plan, participate in monthly MSP management meetings) b) Help develop joint databases or facilitate data sharing between K-12 and IHE partners c) Help create formal links between all MSP core partners (e.g., establish connections between high school STEM departments and corresponding disciplinary fields at your IHE) d) Help align teacher certification program requirements among partner IHEs (e.g., adopt a common course numbering or sequencing system)	1. Yes 2. No

(Continued on next page)

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[1]No questionnaire items pertaining to partnerships were located in the Annual Institution of Higher Education (IHE) Survey, 2003-2004; the Annual Institution of Higher Education (IHE) Survey, 2004-05; and the Annual K-12 District Survey, 2004-05.

Partnership Questions (Continued)

Annual Project Survey, 2004-2005

Question	Response Options
Describe any steps that were taken during the [INSERT SCHOOL YEAR] school year to recruit STEM faculty and other disciplinary experts for the MSP.	N/A
To what extent did each of the following hinder your efforts to engage or organize your partners during the [INSERT SCHOOL YEAR] school year? a. Lack of time or other resources among *IHE* partners b. Lack of time or other resources among *K-12* partners	1. To a large extent 2. To a moderate extent 3. To a small extent 4. Not at all
What lessons have you learned regarding efforts to engage partners that would be of use to other MSP projects?	N/A
Describe any new practices or policies that your IHE partners implemented during the [INSERT SCHOOL YEAR] school year to reward IHE STEM faculty for (a) strengthening their own teaching practices or (b) participating in K-20 teacher preparation and professional development programs.	N/A
Describe any new practices or policies that your IHE partners implemented during the [INSERT SCHOOL YEAR] school year to encourage the IHE STEM faculty to take responsibility and accountability for MSP project goals *(e.g., tie bonuses or tenure to achievement of MSP goals).*	N/A
Describe any new practices or polices that your K-12 partners implemented during the [INSERT SCHOOL YEAR] school year to bring about institutional change (e.g., through the redirection of resources).	N/A
Describe any steps taken during the [INSERT SCHOOL YEAR] school year to encourage the long-term involvement and commitment of non-IHE mathematics, scientists, and/or engineers to participate in the improvement of K-20 educational practices.	N/A
Describe any steps taken during the [INSERT SCHOOL YEAR] school year to maximize the participation of parents and other community members in the improvement of K-20 educational practices.	N/A

Annual Project Survey, 2003-2004

Question	Response Options
Partnership organization name:_____	N/A
Is this organization a core or supporting partner?	1. Core partner (i.e., a partner that shares responsibility and accountability for the MSP project. All core partner organizations are required to provide evidence of their commitment to undergo the coordinated institutional change necessary to sustain the partnership effort beyond the funding period.) 2. Supporting partner (i.e., a partner that is not required to commit to the institutional change necessary to sustain project activities beyond the funding period, but is an important stakeholder/stakeholder organization in K-12 mathematics and science education.)

Partnership Questions (Continued)

Question	Response Options
Provide the following information for the primary MSP contact at this partnership organization.	1. Name 2. Title 3. Street Address 4. City 5. State 6. Zip code 7. Phone number 8. Fax number 9. E-mail 10. Web address
To what extent did each of the following hinder your efforts to engage or organize your partners during the [INSERT SCHOOL YEAR] school year? a. Lack of time or other resources among *IHE* partners b. Lack of time or other resources among *K-12* partners c. Lack of time or other resources among *other* partners d. Low levels of commitment or interest among *IHE* partners e. Low levels of commitment or interest among *K-12* partners f. Low levels of commitment or interest among *other* partners g. Lack of flexibility among *IHE* partners h. Lack of flexibility among *K-12* partners i. Lack of flexibility among *other* partners j. Conflicting goals or missions among all MSP partners k. Unbalanced levels or authority and decision making ability among core MSP partners l. Poor communication among all MSP partners	1. To a large extent 2. To a moderate extent 3. To a small extent 4. Not at all
What lessons have you learned regarding efforts to engage partners that would be of use to other MSP projects?	N/A
Describe any new practices or policies that your IHE partners implemented during the [INSERT SCHOOL YEAR] school year to reward IHE STEM faculty for (a) strengthening their own teaching practices or (b) participating in K-20 teacher preparation and professional development programs.	N/A
Describe any new practices or policies that your IHE partners implemented during the [INSERT SCHOOL YEAR] school year to encourage the IHE STEM faculty to take responsibility and accountability for MSP project goals *(e.g., tie bonuses or tenure to achievement of MSP goals).*	N/A
Describe any new practices or polices that your K-12 partners implemented during the [INSERT SCHOOL YEAR] school year to bring about institutional change (e.g., through the redirection of resources).	N/A
Describe any steps taken during the [INSERT SCHOOL YEAR] school year to encourage the long-term involvement and commitment of non-IHE mathematics, scientists, and/or engineers to participate in the improvement of K-20 educational practices.	N/A
To what extent did each of the following hinder your efforts to make use of data to assess the implementation and impact of your MSP during the [INSERT SCHOOL YEAR] school year? g. Lack of available funding at the project *or* partner level h. Lack of available expertise at the project *or* partner level	1. To a large extent 2. To a moderate extent 3. To a small extent 4. Not at all 5. Not applicable
(For projects currently working with one or more RETAs) To what extent did each of following hinder your ability to get involved with RETAs during the previous year? c. Convincing MSP partners that working with RETAs can benefit our project	1. To a large extent 2. To a moderate extent 3. To a small extent 4. Not at all

(Continued on next page)

Partnership Questions (Continued)

Question	Response Options
12. (For projects not working with any RETAs) Did any of the following hinder your ability to get involved with RETAs during the previous year? (Check all that apply)	1. Not knowing how to approach the RETAs (check *one* response) 2. Not knowing who to contact at the RETAs (check *one* response) 3. Convincing certain MSP **partners** that working with RETAs can benefit our project 4. Not being able to find a good match between our activities and those of certain RETAs 5. Other:_____ 6. None of the above

Annual K-12 District Survey, 2003-2004

Question	Response Options
Indicate the number of K-12 participants in your district who were involved in the development and/or delivery of MSP activities during the [INSERT SCHOOL YEAR] school year: *NOTE – Count only those K-12 participants who were involved in the development and/or delivery of MSP activities, such as:* • Co-teaching a pre-service course at a **partner** IHE • Revising challenging course curricula to align with state standards • Presenting at a summer institute *Do NOT count K-12 participants who were <u>recipients</u> of an MSP activity, such as:* • Guidance counselors who received professional development • New K-12 teachers who took part in an induction program • K-12 administrators who attended a weekend seminar	1. Number of teachers 2. Number of principals, vice principals, and assistant principals 3. Number of instructional coordinators and supervisors (e.g., curriculum specialists) 4. Number of guidance counselors 5. Number of district-level administrators/staff 6. Other (specify)

APPENDIX B

Overview of NSF-MSP Partnerships

APPENDIX B

OVERVIEW OF NSF-MSP PARTNERSHIPS

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
COMPREHENSIVE: Cohort I					
1. North Carolina Partnership for Improving Mathematics and Science (NC-PIMS) University of North Carolina	1. Brunswick County 2. Columbus County 3. Craven County 4. Cumberland County; (*Dr. William C. Harrison, Co-PI*) 5. Duplin County 6. Hoke County 7. Martin County 8. Onslow County 9. Pitt County 10. Wayne County 11. Wilson County 12. Weldon City **Total No. Districts:** (12) **Grade Level:** K-12 **Total No. of schools in partner districts:** 368 **Total No. of schools participating in MSP activities:** 368 **District Description:** The school districts have a student population in excess of 204,000 (40% classified as minority) and share common characteristics of being rural and poor relative to state averages.	1. East Carolina University; (*Dr. Sidney L. Rachlin, Co-PI; Professor -Math Education*) **10** 2. Fayetteville State University **13** 3. North Carolina State University; (*Dr. David Haase, Co-PI, Professor of Physics, Director of The Science House*) **8** 4. UNC Chapel Hill (*Dr. Verna L. Holoman, PI, Executive Director, NC Math & Science Education Network*) **8** 5. UNC at Greensboro **9** 6. UNC at Pembroke; (*Dr. Jose' J. D'Arruda, Co-PI; Chair – Department of Chemistry & Physics*) **12** 7. UNC Wilmington **11** **Total IHEs:** (7)	State: 1. North Carolina Department of Public Instruction; *(William J. Tucci, Co-PI)* 2. UNC-General Administration **Total Other:** (2)	Eastern North Carolina	**Total No. of partners**: **(21)**
2. New Jersey Math Science Partnership (NJ-MSP) Rutgers University	1. Union City 2. Roselle 3. Phillipsburg 4. Bound Brook 5. New Brunswick 6. Plainfield 7. South Bound Brook 8. Toms River 9. Bridgeton 10. Millville 11. Vineland **Total No. Districts:** (11) **Grade Level:** preK-12 **Total No. of schools in partner**	1. Rutgers University, New Brunswick (*William Firestone, PI, Professor, Graduate School of Education*) **8** 2. Rowan University (*Janet Caldwell, Co-PI, Professor of Mathematics*) **11** 3. ~~Kean University (Sharon Brendzel, Co-PI, Professor of Science Education)~~ **11** **Total IHEs:** (2)	None listed	State of New Jersey	**Total No. of partners (13)** 8 of the 12 school districts were among the 30 plaintiffs in NJ's 20-year long Abbott vs. Burke litigation, and have recently benefited from remedies ordered by the State Supreme Court.

* Classification code refers to The Carnegie Classification of Institutions of Higher Education, May 30, 2006 Edition. For legend, see last page of table.

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	districts: 110 **Total No. of schools participating in MSP activities:** 110 **District Description:** The 12 districts are characterized as small and medium-sized urban districts with poor, high minority, and low-achieving student populations. The schools enroll over 75,000 students of whom 27% are African American and 31% are Hispanic.				
3. Appalachian Mathematics and Science Partnership (AMSP) University of Kentucky	1. Bath County 2. Breathitt County 3. Carter County 4. Casey County 5. Clark County 6. Clay County 7. Clinton County 8. Corbin Independent 9. Estill County 10. Floyd County 11. Frankfort Independent 12. Garrard County 13. Harlan County 14. Jackson Independent 15. Jessamine County 16. Johnson County 17. Knott County 18. Lee County 19. Letcher County 20. Lewis County 21. Lincoln County 22. Madison County 23. Martin County 24.McCreary County 25. Montgomery County 26. Morgan County 27. Owsley County 28. Paris Independent 29. Pike County 30. Pikeville Independent 31. Powell County 32. Pulaski County 33. Rockcastle County 34. Rowan County 35. Washington County 36. Wayne County	1. University of Kentucky (*Paul Eakin, PI, Professor of Mathematics*); (*Ronald Atwood, Co-PI, Professor of Science Education*); (*Carl Lee, Co-PI, Professor of Mathematics*) **8** 2. Eastern Kentucky University **11** 3. Kentucky State University **15** 4. Morehead State University **11** 5. Pikeville College **14** 6. Union College **12** 7. University of Virginia College at Wise **14** 8. University of Tennessee, Knoxville **8** 9. Prestonsburg Community College **2** 10. Somerset Community College **1** **Total IHEs:** (10)	1. Kentucky Science and Technology Corporation (Appalachian Rural Systemic Initiative) (*Stephen Henderson, Co-PI, Director*) **2. Prichard Committee for Academic Excellence** **3. Kentucky Department of Education** 4. Inverness research Associates **Total Other:** (4)	Central and Eastern Kentucky; Eastern Tennessee; Western Virginia	**Total No. of partners (65)** Donald Long is also a Co-PI, although his institution and title are not named.

* Classification code refers to The Carnegie Classification of Institutions of Higher Education, May 30, 2006 Edition. For legend, see last page of table.

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	37. Whitley County 38. Woodford County 39. Alvin C. York Agricultural Institute 40. Anderson County 41. Campbell County 42. Cumberland County 43. Grainger County 44. Johnson County 45. Oneida Special School 46. Scott County 47. Dickenson County 48. Russell County 49. Scott County 50. Tazewell County 51. Wise County **Total No. Districts:** (51) **Grade Level:** preK-12 **Total No. of schools in partner districts:** 478 **Total No. of schools participating in MSP activities:** 478 **District Description:** The Appalachian regions of the three states are characterized by low socio-economic status (income rates are 62-81% of national average) with over one-third of children living in poverty. The student achievement for the almost 170,000 students is significantly lower than state averages.				
4. El Paso Math and Science Partnership (El Paso) University of Texas El Paso	1. El Paso Independent 2. Socorro Independent 3. Ysleta Independent **Total No. Districts:** (3) **Grade Level:** K-12 **Total No. of schools in partner districts:** 39 **Total No. of schools participating in MSP activities:** 39 **District Description:** Three urban school districts that encompass El Paso and nine rural districts in El Paso and Hudspeth Counties.	1. University of Texas at El Paso (*Susana Navarro, PI, Executive Director, The El Paso Collaborative for Academic Excellence*); (*Stephen Riter, Co-PI, Provost, Vice President for Academic Affairs, Professor of Electrical Engineering*) **9** 2. El Paso Community College (core) **6** **Total IHEs:** (2)	1. Region 19 Education Service Center (core), (*James Vasquez, Co-PI, Executive Director*) ~~2. Greater El Paso Chamber of Commerce (supporting)~~ ~~3. Hispanic Chamber of Commerce (supporting)~~ ~~4. Black Chamber of Commerce (supporting)~~ ~~5. Texas Business & Education Coalition (supporting)~~ ~~6. El Paso Interreligious Sponsoring Organization~~	El Paso, Texas and surrounding rural areas	**Total No. of partners (13)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
			~~(supporting) 7. Mayor of El Paso (supporting) 8. El Paso County Judge (supporting)~~ **2. Education Trust Expert and Advocate for K-16 Education Reform 3.Texas Higher Education Coordinating Board 4.Consortium for Policy Research in Education 5. Policy Studies Associates 6. Education Development Center 7.Achieve, Inc. 8. National Academies of Science** **Total Other:** (8)		
5. Faculty Outreach Collaborations Uniting Scientists, Students and Schools (FOCUS) University of California-Irvine	1. Compton Unified 2. Santa Ana Unified 3. Newport-Mesa Unified **Total No. Districts:** (3) **Grade Level:** preK-12 **Total No. of schools in partner districts:** 125 **Total No. of schools participating in MSP activities:** 125 **District Description:** The three districts serve 106,695 students of whom 82% are Hispanic and 11% are African American.	1. University of California-Irvine (*Juan Francisco Lara, PI, Asst. Vice Chancellor, Enrollment Services, Director, Center for Educational Partnerships; Susan Bryant, Co-PI, Prof., Developmental & Cell Biology, School of Biological Science; Manuel Gomez, Co-PI, Vice Chancellor, Student Affairs, Interim VP*) **8** 2. California State University-Dominguez Hills **11** 3. Santa Ana College **4** **Total IHEs: (3)**	None listed	Los Angeles, California and surrounding areas	**Total No. of partners (6)**
MSP-PE Award No. 6 is located in COMPREHENSIVE: Cohort II					
7. System-Wide Change for All Learners and Educators (SCALE) University of Wisconsin Madison	1. Denver Public (*Sally Mentor Hay, Co-PI, title not given*; *Rosanne Fulton, Co-PI, Executive Director*) 2. Los Angeles Unified (*Ronnie Ephraim, Co-PI, title not given*) 3. Madison Metropolitan (*Mary Ramberg, Co-PI, title not given*) 4. Providence Public (*Thomas Ramirez, Co-PI, title not given*)	1. University of Wisconsin Madison, Wisconsin Center for Education Research (*Terrence Millar, PI, Project Director, Assoc. Dean for the Physical Sciences Graduate School*) **8** 2. University of Pittsburgh, Pittsburgh Campus, Learning Research and Development	**1. FACET Innovations Total Other:** (1)	Madison, Wisconsin; Denver, Colorado; Los Angeles, California; and Providence, Rhode Island	**Total No. of partners (9)** Andrew Porter is also a Co-PI and is the Director of the Learning Sciences Institute. (not a SCALE partner)

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	Total No. Districts: (4) **Grade Level:** K-12 **Total No. of schools in partner districts:** 927 **Total No. of schools participating in MSP activities**:927 **District Description:** Districts range from mid-size to large central cities. * Los Angeles and Providence are the largest districts in their respective states, Denver and Madison are the second-largest districts in their states.	Center (*Lauren Resnick, Co-PI, Director and Senior Scientist; Christian Schunn, Co-PI, Asst. Professor, Instruction and Learning School*) **8** 3. California State University-Dominguez Hills **11** **4. Metropolitan State College of Denver 14** **Total IHEs:** (4)			
COMPREHENSIVE: Cohort II 6. University of Maryland-Baltimore County—Baltimore County Public Schools STEM Project (UMBC-BCPS) University of Maryland-Baltimore County (UMBC)	1. Baltimore County Public Schools (*Christine Johns, Co-PI, Deputy Superintendent for Curriculum and Instruction*, Hays Lantz, Jr., Co-PI, title not given) **Total No. Districts:** (1) **Grade Level:** K-12 **Total No. of schools in partner districts:** 170 **Total No. of schools participating in MSP activities**: 8 **District Description:** Located in the suburban region around Baltimore, BCPS enrolled 107,322 students during the 2001-2002 academic year. The county is rapidly shifting in ethno-racial characteristics such that in the most recent census indicates that the white students have decreased from 84.9 % in 1990 to 74.4% in 2000. Within BCPS, 33.7% of the students are African American, 59.7% are white, 4.0% are Asian American, and 2.0% are Hispanic.	1. University of Maryland, Baltimore County (UMBC); (*Anne Spence, PI, Assistant Professor, Mary Rivkin, Co-PI, title not given, Susan Blunck, Co-PI, title not given*) **9** **Total IHEs:** (1)	None listed	Suburban areas around Baltimore, Maryland.	**Total No. of partners (2)**
MSP-PE Award No. 7 is located in COMPREHENSIVE: Cohort I					
8. Puerto Rico Math and Science Partnership University of Puerto Rico	1. Puerto Rico Department of Education **Total No. Districts:** (1) **Grade Level:** K-12 **Total No. of schools in partner districts:** 1532	1. University of Puerto Rico, Rio Piedras (*Josefina Arce, PI, Professor of Chemistry*), Mayaguez (*Moises Orengo, Co-PI, Physics*), Cayey and Humacao campuses **9**	1. Arecibo Observatory 2. informal science education centers and industry partners (Texas Instruments, Inc., and Ford Motor Companies) **3. International Institute of**	Throughout Puerto Rico	**Total No. of partners (7)** The Puerto Rico Department of Education is the only district in Puerto Rico, with a student enrollment of 596,502.

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	Total No. of schools participating in MSP activities: 1532 **District Description:** PR MSP will impact directly more than 305,000 K-12 students, and all the other students in the Island's public system through sustained efforts by core partners.	**Total IHEs: (1)**	**Tropical Forestry 4. Puerto Rico Conservation Trust 5. Brookhaven National Laboratory Total Other: (5)**		Edwin Vazquez is also a Co-PI, although his organization is not named.
9. Promoting Rigorous Outcomes in Mathematics/Science Education (PROM/SE) Michigan State University	1. East China 2. Algonac 3. Capac 4. Memphis 5. Marysville 6. Yale 7. Port Huron 8. Cincinnati (Terry Joyner, Co-PI, Asst. Superintendent) 9. Deer Park Community City 10. Fairfield City 11. Finneytown Local 12. Forest Hills Local 13. Kings Local 14. Lakota Local 15. Loveland City 16. Madeira City 17. Mason City 18. Princeton City 19. Reading Community City 20. Calhoun Intermediate (11) 21. Ingham Intermediate (8) 22. St. Clair County Intermediate (7) 23. The High AIMS Consortium (12) 24. ideastream/SMART Consortium (26) **Total No. Districts:** (24) **Grade Level:** K-12 **Total No. of schools in partner districts:** 229 **Total No. of schools participating in MSP activities:** 229 **District Description:** Represent broad range of social, economic, and cultural characteristics found in the US as a whole since they are situated in large urban cities (Cleveland and Cincinnati), and in	1. Michigan State University (*Dr. Joan Ferrini-Mundy, PI, Prof. of teacher Ed. and Math, Assoc. Dean for science and Math Ed in the College of Natural Science, outreach and Director of the Div. of Science & Math Ed.;Peter Bates, Co-PI, Prof., Dept. of Math; George Leroi, Co-PI, Dean, College of Natural Science; William Schmidt, Co-PI, University Distinguished Prof.*) **8** **Total IHEs:** (1)	1. Manpower Research Corporation (external evaluation partner) 2. Ohio Aerospace Institute ~~3. National Science Foundation~~ 3. Biological Sciences Curriculum 4. LessonsLab, Inc. 5. Educational Development Center, Inc. **6. University of Michigan-Study of Instructional Improvement Total Other:** (6)	Cleveland and Cincinnati, Ohio; Lansing, Michigan	**Total No. of partners (31)**

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	their suburbs, in medium- sized cities with large minority populations such as Lansing, and in very rural areas such as St. Clair and Calhoun Counties. *In addition to the 19 partner districts, the awardee includes 2 school consortiums in Michigan and 1 consortium in Ohio. School district names and the number of schools in the consortium were not provided in the awardee report. The report did state that of the 69 districts that originally signed up to participate, 63 are still engaged.				
10. Milwaukee Mathematics Partnerships: Sharing in Leadership for Student Success University of Wisconsin-Milwaukee	1. Milwaukee Public Schools (*Henry Kranedonk, Co-PI, Computer Science Teacher, Rufus King High School, Part-time Instructor at Alverno College*) **Total No. Districts:** (1) **Grade Level:** PreK-16 **Total No. of schools in partner districts:** 218 **Total No. of schools participating in MSP activities:** 218 **District Description:** 100,000 K-12 Milwaukee Public Schools students	1. University of Wisconsin-Milwaukee (core), (*DeAnn Huinker, PI, Director, Center for Math and Science Ed. Research, Kevin McLeod, Co-PI, Assoc. Prof.*) **9** 2. Milwaukee Area Technical College (*Kimberly Farley, Co-PI, Assoc. Dean*) **6** **3. University of Illinois at Urbana-Champaign 8** **Total IHEs:** (3)	None listed	Milwaukee, Wisconsin	**Total No. of partners (4)**
11. Math and Science Partnership of Southwest Pennsylvania Allegheny Intermediate Unit	1. Albert Gallatin 2. Central Greene 3. Fort Cherry 4. Frazier 5. Avonworth 6. Baldwin-Whitehall 7. Chartiers Valley 8. Deer Lakes 9. Duquesne City 10. East Allegheny 11. Fox Chapel 12. Gateway 13. Hampton Township 14. Highlands 15. Northgate 16. Penn Hills 17. Quaker Valley 18. Riverview 19. South Allegheny	1. Carlow University (*Roberta Schomburg, Co-PI, Prof. of Ed.*) **12** 2. Chatham College (*Mary Kostalos, Co-PI, Biology Professor)* **12** 3. Robert Morris University (*Allen Lias, Co-PI, Asst. Dean, Engineering, Math & Science Professor)* **11** 4. Saint Vincent College **14** **5. University of Pittsburg, Oakland Campus 17** **Total IHEs:** (5)	1. Allegheny Intermediate Unit (*Nancy Bunt, PI, Program Director–Math & Science Collaborative, Carnegie Science Center; Sam Shaneyfelt, Co-PI, K-12 Project Director*) 2. Biological Sciences Curriculum Study, a critical participant for sharing of their National Academy of Curriculum Leadership; 3. The Education Development Center (provided off-site training to share their Developing Mathematical Ideas professional development curricula)	Southwest Pennsylvania	**Total No. of partners (50)** AIU is a publicly-funded service agency intermediary between local school districts and the State Dept. of Education In Years 4 and 5, project will broaden by adding 12 school districts and replicate the intervention efforts in two more Intermediate Units; in these latter two years a yet unselected college in the vicinity of these new K-12 additions will also be included. **Total No. of partners (54)**

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	20. South Fayette Township 21. Steel Valley 22. Sto-Rox 23. Wilkinsburg Borough 24. Woodland Hills 25. Farrell Area 26. Mohawk Area 27. Seneca Valley 28. Sharon City 29. Derry Area 30. Franklin Regional 31. Greensburg Salem 32. Monessen City 33. Beaver Area 34. Big Beaver Falls Area 35. Freedom Area 36. Hopewell Area 37. Riverside Beaver 38. Rochester Area 39. South Side Area 40. Indiana Area **Total No. Districts:** (40) **Grade Level:** K-16 **Total No. of schools in partner districts:** 185 **Total No. of schools participating in MSP activities**: 185 **District Description:** The 40 districts are also known as Intermediate Units: 1). Intermediate Unit 1 2). Allegheny Intermediate Unit 3 3). West Moreland Intermediate Unit 7 4). Beaver Valley Intermediate Unit 27 The project will involve 134,000 students in the districts and 8,500 students in higher education.		4. West Ed, which shared its VideoCases for Mathematics Professional Development; 5. Rand Corporation, serving as an outside evaluator of the Partnership's activities 6. Carnegie Science Center **7. Council of Chief State Schools Officers** **8. Pittsburg Council on Public Education** **9. Mid-Atlantic Eisenhower Consortium for Math and Science Education** **Total Other:** (9)		

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12. Partnership for Reform in Science and Mathematics (PRISM) University System of Georgia	1. Atlanta Public Schools 2. Clarke 3. Jackson 4. Oconee 5. Bulloch 6. Evans 7. Screven 8. Effingham 9. Savannah Chatham 10. Bryan 11. Camden 12. Candler County 13. Glynn County 14. Toombs County 15. Vidalia City **Total No. Districts:** (15)* **Grade Level:** PreK-12 **Total No. of schools in partner districts:** 291 **Total No. of schools participating in MSP activities**: 291 **District Description:** The PRISM partner districts enroll 170,000 plus students, within the districts, 39% of the students within are African American, 54% are White, * In April 2004, Liberty County District withdrew and was replaced by Candler, Toombs, and Vidalia Districts.	1. Georgia State University (core), (*Nydia Hanna, Co-PI, Asst. Professor of Science Education; Ronald Henry, Co-PI, Vice President of Academic Affairs, Provost*) **9** 2. Center for Education Integrating Science, Mathematics, and Computing (Georgia Institute of Technology outreach center) **8** 3. University of Georgia (core), (*Michael Padilla, Co-PI, Director, Office of Educator Partnerships*) **8** 4. Georgia Perimeter College **4** 5. Georgia Southern University (core), (*Frederick Rich, Co-PI, Professor of Geology*) **10** 6. Armstrong Atlantic State University (core), (*Sabrina Hessinger, Co-PI, Assoc. Professor of Math & Regional Co-PI, Southeast Georgia Region*) **11** 7. Coastal Georgia Community College **2** **8. Center for Proficiency in Teaching Mathematics (CPTM), University of Georgia 8** **Total IHEs:** (8)	State: 1. Board of Regents of the University System of Georgia (*Jan Kettlewell, PI, Assoc. Vice Chancellor, P-16 initiatives*) 2. Georgia Department of Education **3. Georgia's Leadership Institute (GLI)** **4. NEGA Regional Education Service Agency** **5. Georgia Youth Science and Technology** **6. Sandy Creek Nature Center** **7.Georgia Southern Museum** **8. Georgia Southern Botanical Garden** **9.The Center for Wildlife Education** **10. Magnolia Midlands Georgia Youth Science** **11. Canoochee Riverkeeper** **12. Okefenokee Education and Research Center** **13. First District RESA** **Total Other:** (13)	State of Georgia	**Total No. of partners (36)**
TARGETED: Cohort I 13. Mathematical ACTS University of California-Riverside	1. Jurupa Unified **Total No. Districts:** (1) **Grade Level:** 4-8 **Total No. of schools in partner districts:** 24 **Total No. of schools participating in MSP activities**: 5 **District Description:** The partner district has a student population of over 19,000 students of whom 57% are Hispanic and 5% are African American. Further, the district has sizeable English Learner (24%) and Free/Reduced Price Meals (52%)	1. University of California-Riverside (*Richard Cardullo, PI, Professor and Chair, Dept. of Biology; Pamela Clure, Co-PI, Executive Director for the Alpha Center, Lecturer in Mathematics Education*) **8** 2. Utah State University **9** 3. University of Michigan - Ann Arbor **8** 4. University of Wisconsin - Madison **8** 5. California State University–Fullerton **11**	None listed	Riverside, California	**Total No. of partners (7)**

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	student populations.	6. University of California—Irvine **8** **Total IHEs:** (6)			
14. Stark County Math and Science Partnership Stark County Educational Service Center	1. Alliance City 2. Canton City 3. Canton Local 4. Fairless Local 5. Jackson Local 6. Lake Local 7. Louisville City 8. Marlington Local 9. Massillon City 10. Minerva Local 11. North Canton 12. Northwest Local 13. Osnaburg Local 14. Perry Local 15. Plain Local 16. Sandy Valley Local 17. Tuslaw Local **Total No. Districts:** (17) **Grade Level:** 5-12 **Total No. of schools in partner districts:** 125 **Total No. of schools participating in MSP activities**: 125 **District Description:** The program will impact over 40,000 students in the districts.	1. Kent State University, Stark Campus **15** 2. Malone College (*Christine Krol, Co-PI; Dean–School of Education*) **13** 3. Mount Union College **14** 4. Walsh University **13** 5. Stark State College of Tech **1** **6. Utah State University 8** **Total IHEs:** (6)	Business/ Industry: 1. Stark Education Partnership (a business and community organization) **2. Horizon, Inc.** **3. WestEd** Other: 1. Stark County Educational Service Center (*Robert Bayer, PI, Mathematics Consultant; Richard Dinko, Co-PI, K-12 Administrator*) **2. East Regional Professional Development Center** **3. Stark County Tech Prep Consortium** **4. Stark Development Board** **5. EDC** **Total Other:** (8)	State of Ohio	**Total No. of partners (31)**
15. Teachers and Scientists Collaborating (TASC) Duke University	1. Harnett County Schools 2. Iredell/Statesville Schools 3. Alamance/Burlington Schools 4. Nash Rocky Mount Schools 5. Chatham County Schools 6. Public Schools of Robeson County 7. Roanoke Rapids Graded 8. Lee County **Total No. Districts:** (8)* **Grade Level:** K-8 **Total No. of schools in partner districts:** 203 **Total No. of schools participating in MSP activities**: 169 **District Description:** The project will serve 352,800 students in the districts.	1. Duke University, Pratt School of Engineering; (*Gary Ybarra, PI; Director of the Duke University Engineering K-Ph.D. Program, Associate Professor of the Practice and Director of Undergraduate Studies Duke University, Department of Electrical and Computer Engineering*) **8** **Total IHEs:** (1)	Business/Indus-try: ~~1. Progress Energy~~ 1. Glaxo SmithKline (not in original proposal) State: 1. North Carolina Department of Public Instruction 2. North Carolina Science, Mathematics, and Technology Education Center Other: ~~1. (Teacher Internships)~~ **Total Other:** (3)	North Carolina	**Total No. of partners (12)** To become a partner, school system must commit for at least 1 year and pay fees for at least 45 teachers per year and provide access to student performance data. Faced challenge in linking teachers and scientists for collaboration. (Year 2 Annual Rpt) GSK is shipping curriculum units at no charge, up to $30,000 in value for up to the lifetime of the project. GSK is also providing 3500 sq.

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	* Roanoke Rapids Graded District and Lee County Schools became partners in July 2004.				feet of warehouse space, with forklift, 3 training rooms, office space and phone service for 4 staff.
16. Vermont Mathematics Partnership (VMP) Vermont Institute of Science, Mathematics, and Technology	1. Barre City 2. Hartford 3. Milton Id 4. South Burlington 5. Rutland City 6. Rutland Northwest Supervisory Union 7. Bennington Rutland Supervisory Union **Total No. Districts:** (7) **Grade Level:** preK-12 **Total No. of schools in partner districts:** 15 **Total No. of schools participating in MSP activities**: 5 **District Description:** TBD	1. Castleton State College **13** 2. Norwich University **12** 3. University of Vermont (*Kenneth Gross, PI, Director of Vermont Mathematics Initiative, Professor of Mathematics and Education*) **9** **4. Saint Michael's College 12** **5. Stanford University 8** **6. Mettawee Community School 17** **Total IHEs:** (6)	State: 1. Vermont Department of Education Other: 1. Vermont Mathematics Initiative-2. Institute for Science and Math 3. IBM Corporation (*Douglas Harris, Co-PI, Executive Director, VT Institute for Science and Math Technology*) 4. Windham Foundation 5. Center for Assessment (NCIEA) **Total Other: (6)**	Vermont	**Total No. of partners (19)**
17. Cleveland Math and Science Partnership Cleveland Municipal School District	1. Cleveland Municipal School District (*William Badders, PI, Project Director*) **Total No. Districts:** (1) **Grade Level:** 6-12 **Total No. of schools in partner districts:** 129 **Total No. of schools participating in MSP activities**: 129 **District Description:** The Cleveland Municipal District is the largest school system in Ohio, enrolling over 74,000 preK to 12th grade students of whom 71% are African American and 8% are Hispanic. Majority of the teachers are not properly qualified and do not have the certification to effectively teach math and science.	1. John Carroll University (*Linda Gojak, Co-PI, title; Norman Schmidt, Co-PI, title*) **11** 2. Cleveland State University (*Joanne Goodell, Co-PI, title*) **10** 3. Case Western Reserve University (*James Bader, Co-PI; Director-Center for Science and Mathematics Education College of Arts & Sciences*) **8** **Total IHEs:** (3)	1. Education Development Center (*Marian Pasquale, Co-PI*) **2. Martha Holden Jennings Foundation** **3. Woodrow Wilson Foundation** **Total Other:** (3)	Cleveland, Ohio	**Total No. of partners (7)** CMSD has allocated funds for one mathematics teacher specialist and one science teacher specialist who will assist the Principal Investigator as program coordinators and be a link between the university coursework and the classroom. The Martha Holden Jennings Foundation is a Cleveland foundation that supports educational activities. They have committed monies to support a limited number of mentor teachers and are awarding an additional $50,000 in Year 3 of the award.
18. Alliance for Improvement of Mathematics Skills PreK-16 (AIMS)	1. Agua Dulce Independent 2. Calallen Independent 3. Flour Bluff Independent	1. Del Mar College (*Dr. Lee Sloan, PI; Dean of Occupational Ed & Tech*) **1**	1. Texas Engineering Experiment Station (*Walter Clore, Co-PI, title not given;*	Texas	**Total No. of partners (22)** Math Action Team (MAT)

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Texas Engineering Experiment Station/Del Mar College	4. Gregory-Portland Independent 5. Kingsville Independent (*Evanita Ramos, Co-PI, Director of Instruction*) 6. Robstown Independent 7. Sinton Independent 8. Taft Independent 9. Tuloso-Midway Independent **Total No. Districts: (9)** **Grade Level:** preK-16 **Total No. of schools in partner districts:** 67 **Total No. of schools participating in MSP activities**: 67 **District Description:** The partner districts serve roughly 30,000 students of whom, roughly 61% are minority and 50% are economically disadvantaged students.	2. Texas A & M University-Kingsville (TAMUK) (*Freddie Litton, Co-PI, title not given*) **10** **Total IHEs:** (2)	*Melana Silva, Co-PI, Elementary Curriculum Specialist*) **2. Agile Mind, Inc.** **3. Charles A. Dana Center** **4. Education Development Center in Newton, MA** **5. Education Service Center-Region 2** **6. Key Curriculum Press** **7. Coastal Bend Mathematics Collaborative** **8. South Texas Rural Systemic Initiative** **9. Texas Rural System Initiative** **10. TERC** **11. Texas Instruments Incorporated** **Total Other:** (11)		drives the partnership. MAT meets monthly to ensure implementation, provide direction, and assure participation from all partners.
19. St. Louis Inner Ring Cooperative: Intervention Case Studies in K-12 Math and Science Washington University	1. Ferguson-Florissant 2. Maplewood-Richmond Heights 3. University City 4. Riverview Gardens 5. Webster Groves **Total No. Districts: (5)** **Grade Level:** K-12 **Total No. of schools in partner districts:** 63 **Total No. of schools participating in MSP activities**: 63 **District Description:** Five near-urban districts in St. Louis, responsible for the education of approximately 28,000 students.	1. Washington University, St. Louis (*Edward Macias, PI, Exec. Vice Chancellor, Dean of Arts & Sciences*; *Victoria May, Co-PI, Outreach Director on Biology*) **8** **2. University of Minnesota 8** **Total IHEs:** (2)	1. St. Louis Zoo 2. St. Louis Science Center (*Carol Valentia, Co-PI, Vice President of Education, exhibits, & Programs*) 3. Informal science center (unnamed) 4. informal science center (unnamed) **3. WestEd** **4. Missouri Botanical Garden** **Total Other:** (4)	Near urban St. Louis, Missouri	**Total No. of partners (11)**
20. Texas Middle and Secondary Mathematics Project (TX-Math) Stephen F. Austin State University	1. Corrigan/Camden Independent 2. Henderson Independent 3. Jacksonville Independent 4. Longview Independent 5. Lufkin Independent 6. Martinsville Independent 7. Nacogdoches Independent 8. Palestine Independent 9. Silsbee Independent 10. Timpson Independent 11. Troup Independent 12. Tyler Independent	1. Stephen F. Austin State University (*Dr. Jasper Adams, PI, Chair-Dept. of Math and Statistics; Kimberly Childs, Co-PI, Project Director, Assoc. Prof. of Math; Deborah Pace, Co-PI, Assoc. Prof., Dept. of Math and Statistics*) **11** **Total IHEs:** (1)	**1. Texas Education Agency (TEA)** **2. Texas Higher Education Coordinating Board (THECB)** **3. State Board for Educator Certification (SBEC)** **Total Other:** (3)	East Texas	**Total No. of partners (31)** Teacher staffing does not match diversity in student population and many new teachers are not certified in the discipline and have not majored in math.

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	13. Burkburnett ISD **14. Coppell ISD** **15. Hemphill ISD** **16. Kennard ISD** **17. Lumberton ISD** **18. Irving ISD** **19. McKinney ISD** **20. Northland Christian** **21. Mt Enterprise** **22. Richardson ISD** **23. Rusk ISD** **24. Sabine Pass ISD** **25. Weatherford ISD** **26. Whitehouse ISD** **27. Woodville ISD** **Total No. Districts:** (27) **Grade Level:** 4-12 **Total No. of schools in partner districts:** 117 **Total No. of schools participating in MSP activities**: 117 **District Description:** The partner districts serve over 40,000 students, with variable percentages of minority students (non-white students range from 9% to 64% of student population in the different districts) and high percentages of economically disadvantaged students (28% to 67% of student population). *13 partnerships established but 1 district withdrew in Year 2. ** In addition to the partner schools identified, 15 non-partner districts were referred to as "collaborating districts with potential for future partnerships."				
21. E-Mentoring for Student Success (eMSS) National Science Teachers Association	1. East Side Union High 2. Gilroy Unified 3. Pajaro Valley Unified 4. Hayward Unified 5. Mount Diablo Unified 6. Great Falls 7. Billings 8. Wolf Point #45-45A 9. Medicine Lake #7	1. New Teacher Center at University of California Santa Cruz (*Ellen Moir, Co-PI, title not given*) **8** 2. Montana State University - Bozeman (*Elizabeth Swanson, Co-PI, Assoc. Professor, Dept. of Education*) **8** **3. Arizona State University 8**	1. National Science Teachers Association (*Gerald Wheeler, PI, Executive Director*) 2. Montana Science Teachers Association 3. Horizon Research, Inc. (*Iris Weiss, Co-PI, President*) **4. Montana Council of Teachers of Mathematics**	Urban California and rural Montana	**Total No. of partners (45)** Project Director position created to implement the vision of the three partners; creation of the eMSS Advisory Board

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	10. Outlook #23 11. Missoula County Curriculum Consortium 12. Golden Triangle Curriculum Cooperative 13. Alliance for Curriculum Enhancement 14. Montana Small Schools Alliance 15. Northwest Curriculum Cooperative 16. Prairie View Special Services Cooperative 17. Bellflower USD 18. Brentwood USD 19. Cupertino USD 20. El Ranch USD 21. Fresno USD 22. Montebello USD 23. Mountain View-Los Altos USD 24. Oakley Union Elementary 25. San Juan USD 26. San Mateo USD 27. Vista USD 28. William Hart UHSD 29. Freemont USD 30. Livermore Valley Joint USD 31. Tracy USD **Total No. Districts:** (31*) **Grade Level:** 6-12 **Total No. of schools in partner districts:** 165 **Total No. of schools participating in MSP activities**: 165 **District Description:** The 6 districts in California are urban, the Montana districts and consortiums are rural. * In addition to the partner districts in California, the awardee includes small rural districts and 5 district consortiums in Montana. District names and the number of schools in the consortium were not provided in the awardee report, but are estimated at around a hundred total for Montana.	**4. University of Massachusetts, Dartmouth 11** **Total IHEs:** (4)	**5. Los Angeles County Ed. BTSA Program** **6. Maine Mathematics and Science Alliance** **7. Wisconsin Science Network** **8. Alaska Statewide Mentor Project** **9. Louisiana Science Teachers Association** **10. NSF Center for Learning and Teaching in the West** **Total Other:** (10)		

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
22. **Deleted for Reconciliation** Learning to Teach, Teaching to Learn Oakland Unified School District	Never funded				
23. Indiana University–Indiana Mathematics Initiative Partnership (IMI) Indiana University	1. Anderson Community Schools 2. Bartholomew Consolidated Corp. 3. Elkhart Community Schools 4. Fort Wayne Community Schools 5. Metropolitan SD of Decatur Township 6. Metropolitan SD of Pike Township 7. School City of East Chicago 8. School City of Hammond 9. Vigo County School Corporation **Total No. Districts:** (9) **Grade Level:** K-12 **Total No. of schools in partner districts:** 196 **Total No. of schools participating in MSP activities**: 196 **District Description:** Nine urban districts serving over 115,000 students.	1. Indiana University, Bloomington (*Daniel Maki, PI, Chair of Mathematics Dept.; Frank Lester, Co-PI, Martha Lea & Bill Armstrong Chair in Teacher Education, Professor of Mathematics Education & of Cognitive Science*) **8** **2. Indiana University- South Bend 11** **Total IHEs:** (2)	**1. Indiana Education Network** **Total Other:** (1)	urban Indiana	**Total No. of partners (12)** District Coordinator meetings. Executive Advisory Committee Rio Grande Elementary (Vigo County) was named a No Child Left Behind Blue Ribbon School for 2004-2005.
24. Vertically Integrated Partnerships K-16 (VIP) University System of Maryland	1. Montgomery County Public Schools (*Michael Szesze, Co-PI, Science Supervisor, K-12*) **Total No. Districts:** (1) **Grade Level:** K-16 **Total No. of schools in partner districts:** 194 **Total No. of schools participating in MSP activities**:194 **District Description:** TBD	1. Univ. System of MD (service provider); (*Nancy Shapiro, PI, Associate Vice Chancellor for Academic Affairs; Donald Langenberg, Co-PI, Chancellor Emeritus, Professor of Electrical Engineering*) **17** 2. University of Maryland College Park (core) **8** 3. Univ. of MD, Baltimore County (core) **9** 4. Towson University (core) **11** 5. Montgomery College (core) **4** 6. Univ. of MD, Biotechnology Institute (service provider) **17** 7. Univ. of MD Shady Grove (service provider) **17** ~~7. Univ. of MD Center for Environmental Science (service provider) 17~~ **Total IHEs:** (7)	None listed	Maryland	**Total No. of partners (8)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
25. PRIME: Promoting Reflective Inquiry in Mathematics Education Black Hills Special Services Cooperative	1. Rapid City Area Schools (*Patricia Peel, Co-PI, Director of Student Achievement and Professional Development*) **Total No. Districts:** (1) **Grade Level:** PreK-12 **Total No. of schools in partner districts:** 25 **Total No. of schools participating in MSP activities**: 25 **District Description:** Rapid City Area Schools is in a mid-sized central city, with a large Native American population.	1. Black Hills State University (*Ben Sayler, Co-PI, Director and Associate Professor*) **15** **2. University of Wisconsin 8** **Total IHEs:** (2)	1. Black Hills Special Services Cooperative (*James Parry, PI, Director of Technology and Innovations in Education*) 2. Inverness Research Associates **3. MARS Project** **4. Concord Consortium** **5. Mathematical Perspectives** **6. Rural Systemic Initiatives** **7. EDC's Center for Development of Teaching** **8. EDC's K-12 Mathematics Curriculum Center** **9. EDC's Center for Mathematics Education** **10. Mathematics Education Collaborative** **11. TERC** **Total Other:** (11)	Rapid City, South Dakota	**Total No. of partners (14)**
26. Deepening Everyone's Mathematics Content Knowledge: Mathematicians, Teachers, Parents, Students, and Community University of Rochester	1. Penfield Central 2. Rush-Henrietta Central 3. Batavia City 4. Byron-Bergen Central 5. Dansville Central 6. Geneseo Central 7. Keshequa (Dalton-Nunda CSD) 8. Letchworth Central 9. Livonia Central 10. Mt. Morris Central 11. Pavilion Central 12. Warsaw Central 13. Avon Central **Total No. Districts:** (13) **Grade Level:** K-12 **Total No. of schools in partner districts:** 56 **Total No. of schools participating in MSP activities**: 56 **District Description:** Penfield and Rush- Henrietta districts are suburban, while the other districts are considered rural.	1. University of Rochester (*Judith Fonzi, PI, Asst. Professor, Teaching and Curriculum, Director of the Warner Center for Professional Development and Education Reform*) **8** **Total IHEs:** (1)	None listed	Western New York	**Total No. of partners (14)** In December 2003, Greece Central Schools (largest K-12 partner) withdrew from the partnership to keep their primary focus on curriculum implementation rather than foregrounding the deepening of all constituencies' mathematics content knowledge.

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27. SUNY-Brockport College and Rochester City (SCOLLARCITY) Math and Science Partnership: Integrative Technology Tools for Preservice and Inservice Teacher Education SUNY College at Brockport	1. Rochester City (core) 2. Brighton Central (core); (*Henry Peris, Co-PI, Superintendent*) **Total No. Districts: (2*)** **Grade Level:** 7-12 **Total No. of schools in partner districts:** 188 **Total No. of schools participating in MSP activities**: 17 **District Description:** Rochester City District is the third largest in New York state with the lowest achievement scores, and Brighton Central District is one of the best ranked nationally. * In addition to the partner schools identified by the awardee, 19 non-partner districts and 21 non-partner schools participated in MSP activities.	1. SUNY College of Brockport (core), (*Osman Yasar, PI, Professor and Chair, Dept. of Computational Science*) **11** **Total IHEs:** (1)	Business: 1. XEROX Corporation (supporting) 2. Texas Instruments (supporting) Other: 1. Shodor Education Foundation (supporting); (*Robert Panoff; Co-PI, Founder and Executive Director*) 2. The Krell Institute (supporting), (*Barbara Helland, Co PI, Associate Director for Programs*) 3. Monroe County School Boards Association (supporting) 4. Research Foundation of SUNY (supporting) **Total Other:** (6)	Rochester, New York	**Total No. of partners (9)** Paul Helberg is also listed as a Co-PI but his title and organization are not given.
28. Revitalizing Algebra (REAL) San Francisco State University	1. San Francisco Unified 2. San Lorenzo 3. South San Francisco Unified 4. Berkeley Unified 5. Jefferson Elementary **Total No. Districts:** (5) **Grade Level:** 8-10 **Total No. of schools in partner districts:** 177 **Total No. of schools participating in MSP activities**: 8 **District Description:** TBD	1. San Francisco State University (*Diane Resek, PI, Professor of Mathematics*; *Erik Hsu, Co-PI, Asst. Professor, Math Dept.*; *Judith Kysh, Co-PI, Asst. Professor, Secondary Education Dept.*) **11** **Total IHEs:** (1)	None listed	San Francisco, California	**Total No. of partners (6)** At insistence of new district coordinator and teachers, middle school teachers collaborate as equals. (Proposal called for top-down approach)
29. Teachers Assisting Students to Excel in Learning Mathematics (TASEL-M) California State University-Fullerton	1. Buena Park 2. Fullerton Joint Union High 3. Orange Unified 4. Garden Grove Unified **Total No. Districts:** (4) **Grade Level:** 6-12 **Total No. of schools in partner districts:** 124 **Total No. of schools participating in MSP activities**: 14 **District Description:** 14,000 students (approximately 70% of	1. California State University–Fullerton Foundation (*Dr. David Pagni, PI, Professor–Math*; *Patricia Howard, Co-PI, K-12 Administrator*) **11** **Total IHEs:** (1)	1. Orange County Department of Education (*Dianne DeMille, Co-PI, Coordinator, Mathematics*) **Total Other:** (1)	Orange County, California	**Total No. of partners (6)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	these students are from under represented minority groups) at 4 low-performing high schools and 7 feeder middle schools.				
TARGETED: Cohort II					
30. Focus on Mathematics Boston University	1. Arlington (*Kathleen Bodie, Co-PI, K-12 Administrator*) 2. Chelsea 3. Lawrence 4. Waltham 5. Watertown **Total No. Districts:** (5) **Grade Level:** 5-12 **Total No. of schools in partner districts:** 56 **Total No. of schools participating in MSP activities**:56 **District Description:** The five districts are all fairly small and located in the greater Boston area.	1. Boston University (core) (*Dr. Glenn Stevens, PI; Professor-Dept. of Math & Statistics*) **8** 2. Department of Mathematical Sciences at the University of Mass– Lowell (supporting) **10** 3. Center for Industrial Mathematics and Statistics at Worcester Polytechnic Institute (supporting) **11** 4. Program Evaluation & Research Group at Lesley University (supporting) **11** **Total IHEs:** (4)	1. Education Development Center (non-profit R & D organization), (*Wayne Harvey, Co-PI, Project Director, Vice President*) **Total Other:** (1)	Greater Boston, Massachusetts area	**Total No. of partners (10)** Submitted draft, incomplete report. Project expects to impact over 19,000 students across the 5 school districts.
31. Consortium for Achievement in Mathematics and Science (CAMS) Merck Institute of Science Education	1. Elizabeth City 2. Hillside Township 3. Linden City 4. Rahway City **Total No. Districts:** (4) **Grade Level:** 6-8 **Total No. of schools in partner districts:** 49 **Total No. of schools participating in MSP activities**: 14 **District Description:** Urban districts in New Jersey	1. Kean University (core) **11** **Total IHEs:** (1)	1. Merck Institute for Science Education (*Carlo Parravano, PI, Executive Director; Susan Brady, Co-PI, Director, Education Programs*) 2. Educational Testing Service **3. New Jersey Department of Education** **4. Biological Science Curriculum Study** **5. Education Development Center** **6. Institute for Advanced Study** **7. National Research Council** **8. Nation Research Resource Center** 9.TERC, Inc. **10. Consortium for Policy Research in Education** **11. Organiza-tion of Mathematics Teachers of NJ**	Urban New Jersey	**Total No. of partners (23)** Multi-tiered organizational system has been established to allow for partner collaboration and communication. This includes a Consortium Management and Oversight Committee (C-MOC) and Consortium Planning and Implementation Team (C-PIT).

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			12. NJ Association of Mathematics Supervisors **13. NJ Math Science Partnership** **14. NJ Mathematics Coalition** **15. NJ Science Education Leadership Association** **16. NJ Science Teachers Association** **17. Show-Me Center** **18. New Teacher Center** **Total Other:(18)**		
32. The Mathematics and Science Partnership of Greater Philadelphia (MSPGP) LaSalle University	1. Allentown 2. Bangor Area 3. Bensalem (*Victoria Gehrt, Co-PI, Superintendent*) 4. Bethlehem 5. Bristol Township 6. Centennial 7. Cheltenham 8. Colonial 9. Easton 10. Hatboro-Horsham 11. Haverford Township 12. Interboro 13. Lancaster 14. Nazareth Area 15. New Hope-Solebury 16. Norristown 17. North Hampton Area 18. North Penn 19. Octorara 20. Palisades 21. Penn Delco 22. Pennridge 23. Quakertown Community 24. Radnor 25. Ridley 26. Rose Tree Media 27. Saucon Valley 28. Southeast Delco 29. Springfield Township 30. Wallingford/ Swarthmore 31. William Penn 32. Berlin Borough	1. La Salle University (core), (*F. Joseph Merlino, PI, MSPGP*) **10** 2. Arcadia University (core), (*Deborah Pomeroy, Co-PI, Assoc. Professor and Coordinator of the Science Education Program*) **11** 3. Bryn Mawr College (core), (*Victor Donnay, Co-PI, Professor - Mathematics*) **14** 4. Cedar Crest College (core) **14** 5. Haverford College (core) **14** 6. Lehigh Carbon County Community College (core) **5** 7. Lincoln University (core) **12** 8. Moravian College (core) **14** 9. Muhlenberg College (core) **14** 10. Northampton Community College (core) **6** 11. Villanova University (core) **11** 12 West Chester University (core) **11** 13. Widener University (core) **10** **Total IHEs:** (13)	None listed 1. Da Vinci Discovery Center (supporting) 2. Math Forum at Drexel University (supporting) 3. Research for Better Schools (supporting) 4. MAGPI Power Networking 5. WHYY, Inc. **Total Other: (5)**	Pennsylvania and New Jersey counties in the region outside of Philadelphia	**Total No. of partners (59)**

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	33. Camden County Vocation 34. Cherry Hill Public 35. Collingswood Public 36. Eatern Camden County 37. Gloucester City 38. Gloucester Technical School 39. Haddon Township 40. Haddon Heights Public 41. Lindenwold 42. Northern Burlington Regional 43. Riverton Public 44. Phillipsburg 45. Pennsauken 46. Winslow Township **Total No. Districts:** (46) **Grade Level:** 6-12 **Total No. of schools in partner districts:** 354 **Total No. of schools participating in MSP activities**: 354 **District Description:** TBD				
33. The MSTP Project: Mathematics across the MST Curriculum Hofstra University	1. Amityville Union Free (core) 2. Brentwood Union Free (core) 3. Freeport Central (core) 4. Roosevelt Union Free 5. Hempstead Union Free (core) 6. Longwood Central (core); (*Candee Swenson, Co-PI, Superintendent*) 7. Riverhead Central (core) 8. Uniondale Union Free (core) 9. William Floyd Central (core) 10. Wyandanch Union Free (core) **Total No. Districts:** (10) **Grade Level:** 6-8 **Total No. of schools in partner districts:** 84 **Total No. of schools participating in MSP activities**: 14 **District Description:** All ten districts are in Long Island, with large percentages of minorities.	1. Hofstra University (core) (*David Burghardt, PI, Prof. of Mechanical Engineering and Dept. Chair, Engineering; Sharon Whitton, Co-PI, Assoc. Professor of Mathematics Education*) **10** 2. State University of New York at Stony Brook (core) (*Thomas Liao, Co-PI, Professor of Science and Technology*) **8** **Total IHEs:** (2)	1. New York State Education Department (core) (*James Butterworth, Co-PI, Asst. Commissioner*) 1. Long Island Regional School Support Center (supporting) 3. Boards of Cooperative Educational Services (supporting) 4. professional teacher associations in science, mathematics, and technology (supporting) 2. Brookhaven National Laboratory (supporting) 6. Eisenhower Regional Alliance for Mathematics and Science Education (supporting) **Total Other:** (2)	Long Island, New York	**Total No. of partners (14)**
34. The East Alabama Partnership for the Improvement of Mathematics Education (TEAM-Math)	1. Chambers County 2. Lee County (*John Painter, Co-PI Superintendent*) 3. Macon County 4. Russell County	1. Auburn University (core); (*W. Gary Martin, PI, Professor, Mathematics Education; Christopher Rodger, Co-PI, Professor, Discrete and Statistical*	1. Appalachian Center for Collaborative Learning, Assessment, and Instruction in Mathematics 1. Blue Cross/Blue Shield of	East Alabama	**Total No. of partners (15)** Two levels of leadership to be built within participating school districts: Instructional

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Auburn University	5. Tallapoosa County 6. Alexander City 7. Auburn City 8. Lanett 9. Opelika 10. Phenix City 11. Tallahassee 12. Elmore **Total No. Districts:** (12) **Grade Level:** K-12 **Total No. of schools in partner districts:** 104 **Total No. of schools participating in MSP activities**: 104 **District Description:** The districts pool their resources and are able to operate, in some respects, as one large district. The districts serve 56,000 students who are growing up in an environment that is rural, very poor, and heavily African-American (48% of the student population).	*Science; Marilyn Strutchens, Co-PI, Associate Prof., Mathematics Education;* *Stephen Stuckwisch, Co-PI Asst. Professor, Dept. of Math and Statistics*) **9** 2. Tuskegee University (core) **15** **Total IHEs:** (2)	Alabama ~~3. East Alabama Regional Inservice Center~~ **Total Other:** (1)		Support Specialist (ISS) and a School-based Teacher Leader (STL).
35. Partnership for Student Success in Science (PS3) Palo Alto Unified School District	1. Palo Alto (Cynthia Pino, Co-PI, Assoc. Superintendent of Educational Services & Student Services) 2. Cupertino 3. Los Altos 4. Menlo Park 5. Mountain View- Whisman 6. Redwood City 7. Santa Clara 8. Newark Unified 9. San Mateo- Foster City **Total No. Districts:** (9) **Grade Level:** K-8 **Total No. of schools in partner districts:** 139 **Total No. of schools participating in MSP activities:** 47 **District Description:** TBD	1. San Jose State University, Colleges of Engineering and Education (*Kurt McMullin, PI, Assoc. Professor of Civil Engineering & Applied Mechanics;* *Carolyn Nelson, Co-PI, Elementary Education Dept. Chair*) **11** **2. Northeastern University 9** **Total IHEs:** (2)	Business/ Industry: 1. Agilent Technologies 2. Synopsis Other: **1. The Technology Museum of Innovation** **2. The Exploratorium** **Total Other:** (4)	Central California School districts are all within Silicone Valley	**Total No. of partners (15)** Jan Hustler and Nancy Thomas are additional Co-PIs but their organization is not named. Will allow the formation of formal links between K-8 instructors and national content institutions. Once established, links should be sustainable due to support from content institutions. Project logistics were agreed upon and communicated such as the use of logs and sign-in reporting forms. Management plan, org chart, and communication plan were developed.
36. North Cascades and Olympic Science Partnership (NCOSP)	1. Anacortes (core) 2. Bainbridge Island (core) 3. Bellingham #501 (core)	1. Western Washington University (*George Nelson, PI, Director of Science, Mathematics, and*	State: 1. Washington State Educational Service Districts	Northwest Washington State	**Total No. of partners (39)** Communication between

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Western Washington University	4. Blaine (core) 5. Bremerton (core) 6. Brinnon (core) 7. Burlington-Edison (core) 8. Chimacum (core) 9. Concrete (core) 10. Conway (core) 11. Cape Flattery (core) 12. Crescent (core) 13. Ferndale (core) 14. LA CONNER (core) 15. Portland Area office (core) 16. Lynden (core) 17. Meridan (core) 18. Mount Baker (core) 19. Mount Vernon (core) 20. Nooksack (core) 21. North Mason (core) 22. Port Angeles (core) 23. Port Townsend (core) 24. Queets-Clearwater (core) 25. Quilcene (core) 26. Quillayute (core) 27. Seedro-Wolley (core) 28. Sequim (core) **Total No. Districts:** (28) **Grade Level:** K-12 **Total No. of schools in partner districts:** 187 **Total No. of schools participating in MSP activities**: 187 **District Description:** The districts serve over 72,000 students. The districts are primarily located in rural communities, many with low socioeconomic status. *2 new districts added (Cape Flattery, Conway)	*Technology Education programs; Scott Linneman, Co-PI, Asst. Professor of Geology & Science Education; Chris Ohana, Co-PI, Asst. Professor of Elementary Education*) 2. Everett Community College (core) **7** 3. Whatcom Community College (core) **2** 4. Skagit Valley College (core) **1** 5. Northwest Indian College (core) **16** (core) **11** **Total IHEs:** (5)	(supporting) 2. Washington State MESA (Mathematics, Engineering, and Science Achievement) 3. Washington State LASER (Leadership and Assistance for Science Education Reform) (supporting) Other: 1. Naval Undersea Museum Foundation (supporting) **2. Northwest Regional Education Laboratory (NWREL) 3. Center for Strengthening and Teaching Professionals (CSTP) Total Other:** (6)		partners has been a large issue although a functional communication infrastructure early on has laid the groundwork. Leadership is responsive and continues to address this challenge. Dennis Schatz (VP of Education & Exhibits, Pacific Science Center) is also listed as a Co-PI although his organization is not a partner.
TARGETED: Cohort III 37. Boston Science Partnership University of Massachusetts-Boston	1. Boston Public (Core) (*Marilyn Decker, Co-PI, Senior Program Director, Science*) **Total No. Districts:** (1) **Grade Level:** 6-12 **Total No. of schools in partner districts:** 135	1. University of Massachusetts Boston (Core), (*Dr. Hannah Sevian, PI; Asst. Professor of Curriculum & Instruction, Graduate College of Education; Dept. of Chemistry, College of Science and*	1. College Board (supporting) **2. Education Development Center Total Other:** (2)	Massachusetts	**Total No. of partners (6)**

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	Total No. of schools participating in MSP activities: 42 **District Description:** The Boston Public School system serves a diverse, urban population; 86% of the students are non-white.	*Mathematics*; *Robert Chen, Co-PI, Professor, Organic Geochemistry, Marine Organic Chemistry*; *Arthur Eisenkraft, Co-PI, Distinguished Professor of Science Education*) **10** 2. Northeastern University (core); (*Christos Zahopoulos, Co-PI, Research Professor*) **9** 3. Harvard Medical School (supporting) **8** **Total IHEs:** (3)			
38. Math and Science Partnership in New York City (MSPinNYC) City University of New York	1. NYC Public Schools **Total No. Districts:** (1) **Grade Level:** 6-12 **Total No. of schools in partner districts:** 1429 **Total No. of schools participating in MSP activities**: 136 **District Description:** 68% of public school students qualify for free/reduced lunch. The awardee is focusing on secondary schools in 2 of 10 regions in New York City, Region 3 (Queens), and Region 9 (Manhattan and South Bronx).	1. CUNY, Hunter College (*Pamela Mills, PI, Professor of Chemistry*) **11** 2. Lehman College (core) **11** 3. ~~Queens College (core)~~ **11** 3. Hostos Community College (core) **6** 5. ~~Queensborough Community College (core)~~ **6** 4. Bronx Community College (core) **6** **Total IHEs:** (4)	1. New York City Board of Education **Total Other:** (1)	New York City, New York	**Total No. of partners (6)** Policy Committee
39. Project Pathways: A Math and Science Partnership Program for Arizona Targeted Project Track Arizona State University	1. Chandler (core); (*Melinda Romero, Co-PI, Executive Director of Staff Development and Instructional Services*) 2. Mesa (core) 3. Tempe (core) 4. Tolleson (core) **Total No. Districts:** (4) **Grade Level:** 9-12 **Total No. of schools in partner districts:** 129 **Total No. of schools participating in MSP activities**: 37 **District Description:** Demographics of partner districts mirror those of Arizona, where 45% of students are persons of color, and the Hispanic population is expanding rapidly.	1. Arizona State University (*Marilyn Carlson, PI, title not given*) **12** 2. Center for Research on Education in Science, Mathematics, Engineering and Technology (CRESMET) at Arizona State University (core), (*Marilyn Carlson, PI, Associate Professor of Math*) **12** 3. Maricopa Community College faculty (supporting) **17** **Total IHEs:** (2)	1. Intel Corporation (supporting); (*Eugenia Echols, Co-PI, Education Manager*) **2. Boeing Corporation 3. Arizona Department of Education 4. Arizona Board of Regents Total Other:** (4)	Arizona	**Total No. of partners (10)**

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	*The proposal states that 4 additional Arizona districts (Paradise Valley, Gilbert, Phoenix Union, and Casa Grande) will be participating in Professional Development in Years 4 and 5.				
40. Rocky Mountain Middle School Math Science Partnership: 15 Months to Highly Qualified University of Colorado at Denver	1. Jefferson County (core) 2. Brighton Public (core) 3. Mapleton Public (core) 4. Adams County (supporting) 5. Englewood (supporting) 6. Elizabeth (supporting) 7. Gilpin County (supporting) **Total No. Districts:** (7) **Grade Level:** 6-8 **Total No. of schools in partner districts:** 227 **Total No. of schools participating in MSP activities**: 33 **District Description:** TBD	1. University of Colorado at Denver (core); (*Doris Kimbrough, PI, Associate Professor, Chemistry*) **8** 2. University of Denver (supporting) **9** 3. Metropolitan State College of Denver (supporting) **14** 4. Colorado State University (supporting) **8** **5. Ft. Lewis College** **Total IHEs:** (4)	None listed 1. Front Range Board of Cooperative Educational Services (supporting) **Total Other:** (0)	Denver, Colorado	**Total No. of partners (11)**
41. A Greater Birmingham Mathematics Partnership (GBMP) University of Alabama-Birmingham	1. Bessemer City (core) 2. Fairfield City (core) 3. Homewood City (core) 4. Hoover City (core) 5. Jefferson County (core) 6. Mountain Brook City (core) 7. Shelby County (core) 8. Vestavia City School System (core) **Total No. Districts:** (8) **Grade Level**: 6-8 **Total No. of schools in partner districts:** 145 **Total No. of schools participating in MSP activities**: 22 **District Description:** The eight districts are all within a 30-mile radius of Birmingham.	1. Birmingham-Southern College (core); **14** 2. University of Alabama at Birmingham (core) (*John Mayer, PI, Professor, Dept. of Mathematics*) **8** **Total IHEs:** (2)	1. Math Education Collaborative **2. Alabama Mathematics, Science and Technology Initiative (AMSTI)** **3. Alabama Mathematics, Science and Technology Education Coalition (AMSTEC)** **4. Mobile Mathematics Initiative** **Total Other:** (4)	greater Birmingham, Alabama	**Total No. of partners (14)**
INSTITUTE: Cohort II 42. Institute for Advanced Study/Park City Mathematics Institute (PD3) Institute for Advanced Study	1. McAllen Independent 2. Cincinnati Public (2 of the high schools) 3. Seattle Public (3 of the high schools) **Total No. Districts:** (3)	1. Michigan State University (core) **8** 2. University of Washington (core), (*Ilana (Lani) Seidel Horn, Co-PI, Asst. Professor of Mathematics Education*) **8**	Other: 1. Institute for Advanced Study (*Phillip Griffiths, PI, Dir. IAS Dept. of Mathematics, School of Arts and Sciences, Duke*	Cincinnati, Ohio; McAllen, Texas; and Seattle, Washington (location of school districts)	**Total No. of partners (12)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	Grade Level: 6-12 **Total No. of schools in partner districts:** 251 **Total No. of schools participating in MSP activities**: 17 **District Description:** TBD	3. Texas State University – San Marcos (formerly Southwest Texas State University) **11** 4. University of Texas-Pan American (core) **11** 5. University of Cincinnati Main Campus **8** 6. Boston University (core) **8** **Total IHEs:** (6)	*University*) 2. Education Development Center **3. Math Forum at Drexel University** **Total Other:** (3)		
INSTITUTE: Cohort III 43. The Rice University Mathematics Leadership Institute William Marsh Rice University	1. Aldine Independent (core) 2. Houston Independent (core) **Total No. Districts:** (2) **Grade Level:** 9-12 **Total No. of schools in partner districts:** 372 **Total No. of schools participating in MSP activities**: 36 **District Description:** Diverse, ever-changing student population: 57% are Hispanic and 31% are African-American, Over 25% have limited in English proficiency	1. William Marsh Rice University, (core); (*John Polking, PI; Professor– Math, Site Director IAS/Park City Math Institute*) **8** **Total IHEs:** (1)	None listed	Texas	**Total No. of partners (3)**
44. NSF Institute: Preparing Virginia's Mathematics Specialist (PVMS) Virginia Commonwealth University	1. Arlington County Public School (core) 2. Fairfax County Public School (core) 3. Hanover County Public School (core) 4. Stafford County Public School (core) 5. Norfolk County Public School (core) 6. Alexandria City Public School (supporting) 7. Richmond City Public School (supporting) 8. Roanoke County Public School (supporting) 9. An unnamed district **Total No. Districts:** (9) **Grade Level:** K-5 **Total No. of schools in partner districts:** 441 **Total No. of schools participating**	1. Virginia Commonwealth University (core); (*William Haver, PI, Professor, Math*) **9** 2. Norfolk State University (core) 11 3. University of Virginia (core) 8 4. James Madison University 11 5. Virginia Tech 8 **Total IHEs:** (1)	1. Virginia Mathematics and Science Coalition **Total Other:** (1)	state of Virginia	**Total No. of partners (11)** Partnership management team, Partnership Institute Advisory Committee

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	in MSP activities: 0* **District Description:** TBD *Proposal states that the MSP will target students from a sample of schools from the 8 districts, yet to be selected.				
45. Standards Mapped Graduate Education and Mentoring Florida Atlantic University	1. Broward County **Total No. Districts:** (1) **Grade Level:** 5-8 **Total No. of schools in partner districts:** 259 **Total No. of schools participating in MSP activities**: 41 **District Description:** nation's fifth largest and largest fully accredited district. Represents an extremely large and diverse population. Of the nearly 61,000 middle schools students, 40.8% are on free/reduced lunch, 5.2% are gifted, 8.4% LEP, and 10.4 with disabilities (ESE). Projected growth rate to be an average of 8% per year over the next 5 years.	1. Florida Atlantic University (*Heinz-Otto Peitgen, PI, Professor of Mathematics and Biomedical Science*; *Richard Voss, Co-PI, Professor of Complex Systems and Brian Science, Prof. of Physics, Prof. of Mathematical Sciences*) **9** **Total IHEs:** (1)	None listed	Boca Raton, Florida	**Total No. of partners (2)**
46. University of Pennsylvania Science Teachers Institute University of Pennsylvania (Penn)	1. Philadelphia 2. Camden County Technical Schools 3. Cheltenham Township 4. Christina 5. Clearview Regional 6. Eugenio Maria de Hostos Comm. Bilingual Charter 7. Franklin Towne Charter School 8. Garnet Valley 9. Haddonfield Public Schools 10. Haverford 11. Lower Merion 12. Maritime Academy Charter 13. Marple Newtown 14. Moorestown Township Public Schools 15. Springfield 16. West Chester Area 17. William Penn 18. World Communication Charter 19. Young Scholars Charter **Total No. Districts:** (19)	1. University of Pennsylvania (*Hai-Lung Dai, PI, Professor of Chemistry*) **8** **Total IHEs:** (1)	**1. Rohm and Haas Company** **2. American Chemical Society** **Total Other:** (2)	Philadelphia, Pennsylvania and districts in the Mid-Atlantic region	**Total No. of partners (22)** Steering Committee will be formed to oversee the implementation and continuing operations.

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	Grade Level: 5-12 **Total No. of schools in partner districts:** 375 **Total No. of schools participating in MSP activities**: 375 **District Description:** Philadelphia is one of the largest and most troubled urban school districts in the country. The overwhelming majority of students are from low-income (~72% qualifying for free/reduced lunch) and historically under-served racial minority (~79% African-American or Latino) backgrounds. Approximately 23,000 have been diagnosed with a disability severe enough to require special education services, and more than 12,000 have limited English proficiency.				
47. The Fulcrum Institute for Education in Science Tufts University	1. Malden Public Schools 2. Boston Public Schools 3. Lowell 4. Acton 5. Natick 6. Somerville **Total No. Districts:** (6) **Grade Level:** K-8 **Total No. of schools in partner districts:** 141 **Total No. of schools participating in MSP activities**: 6 **District Description:** TBD	1. Tufts University (*Judah Schwartz, PI, Visiting Professor of Education, Research Professor of Physics and Astronomy*) **8** **Total IHEs:** (1)	1. TERC (*Sue Doubler, Co-PI*) **Total Other:** (1)	Boston, Massachusetts and Malden, Massachusetts	**Total No. of partners (8)**
48. Math in the Middle Institute Partnership (M^2) University of Nebraska-Lincoln	1. Lincoln Public Schools (core), (*Barb Jacobson, Co-PI, Director of Curriculum*) 2. Alliance Public Schools (core) 3. Columbus Public Schools (core) 4. David City Public Schools (core) 5. Gering Public Schools (core) 6. Waverly School District 145 (core) 7. Bayard PS (core) 8. Blue Hill Community Schools (core) 9. Butler County Community Cooperative (core) 10. Centennial PS (core)	1. University of Nebraska - Lincoln (core); (*Jim Lewis, PI, Professor, Dept of Mathematics; Ruth Heaton, Co-PI, Associate Prof., Center for Curriculum and Instruction; Tom McGowan, Co-PI, Chair and Professor, Dept. of Teaching, Learning and Teacher Education*) **8** **Total IHEs:** (1)	None listed	rural Nebraska	**Total No. of partners (31)** Management Team which will oversee the awardee and ensure leadership and coordination among all partners.

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	11. Crete PS (core) 12. East Butler PS (core) 13. Friend PS (core) 14. Gordon PS (core) 15. Hastings PS (core) 16. Kearney PS (core) 17. Keya Paha District #100 (core) 18. Lakeview Community Schools (core) 19. Leigh Community Schools (core) 20. Lexington Community Schools 21. Madison PS (core) 22. Osceola PS (core) 23. Red Cloud Community Schools (core) 24. Scottsbluff PS (core) 25. St. Paul PS (core) 26. Unified District #1 (core) 27. Wallace District #60 (core) 28. Wallace PS District #65R (core) 29. South Platte #95 District Schools 30. Shickley Public Schools **Total No. Districts:** (30) **Grade Level:** K-12 **Total No. of schools in partner school districts:** 121 **Total No. of schools participating in MSP activities**: 121 **District Description:** Nebraska has 515 public school districts. Nebraska Legislature established 18 Educational Service Units (ESUs) to provide innovative leadership and quality services for districts in their service area. For all but the largest district, (e.g. LPS), the ESUs are an essential partner in providing professional development for Nebraska teachers.				
49. Oregon Mathematics Leadership Institute Partnership Oregon State University	1. Beaverton (core) 2. Bend (core) 3. Crook County (core) 4. Molalla River (core) 5. North Clackamas (core) 6. Redmond (core) 7. Reynolds (core) 8. Roseburg (core)	1. Oregon State University (core); (*Thomas Dick, PI, Coordinator of Collegiate Mathematics Education*) **8** 2. Portland State University (core) **10** 3. George Fox University (supporting) **10**	1. Teachers Development Group (core) 2. Oregon Council of Teachers of Mathematics (OCTM) (supporting) 3. Teachers of Teachers of Mathematics(TOTOM) (supporting)	State of Oregon	**Total No. of partners (28)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
	9. South Lane (core) 10. Woodburn (core) **Total No. Districts:** (10) **Grade Level:** K-12 **Total No. of schools in partner districts:** 166 **Total No. of schools participating in MSP activities**: 0* **District Description:** Diverse group representing a cross section of Oregon's student population. Beaverton, N. Clackamas, and Reynolds have faced recent rapid growth. *The proposal states that the MSP will target students from a sample of schools from the 10 districts, which has yet to be selected.	4. Central Oregon Community College (supporting) **2** 5. Chemeketa Community College (supporting) **1** 6. Clackamas Community College (supporting) **4** 7. Mt. Hood Community College (supporting) **5** 6. Umpqua Community College (supporting) **3** **7. Willamette University (supporting) 12** **8. Linfield College (supporting) 14** **9. Pacific University (supporting) 10** **10. Southern Oregon University (supporting) 11** **11. University of Portland (supporting) 12** **12. Western Oregon University (supporting) 11** **Total IHEs:** (12)	4. Oregon Collaborative for Excellence in the Preparation of Teachers (OCEPT) (supporting) **5. RMC Research Corporation (for Project Evaluation) (supporting) 6. Oregon Department of Education (supporting) Total Other:** (6)		
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort I 50. ***Deleted for Reconciliation*** Bridging Research and Practice in the MSPs: Technical Assistance for Use of Research and Data-Based Decision Making Education Development Center					
51. Building Evaluation Capacity of STEM Projects Utah State University	None listed	**1. Utah State University** *(Cathy Callow-Heusser, PI, Project Director, Evaluator)* **9** **2. Western Michigan University 9** **3. University of Minnesota 8** **4. University of Kentucky 8** **5. Rutgers University-New Brunswick 8** **6. University of Wisconsin-**	**1. Council of Chief State School Officers 2. TERC, Inc. 3. Stark County Educational Service Center 4. Black Hills Special Services Cooperative 5. American Evaluation Association Total Other:** (5)	Logan, Utah	**Total No. of partners (19)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
		Madison 8 7. **University of California – Irvine 8** 8. **University of California-Riverside 8** 9. **Indiana University 17 (campus not specified)** 10. **University System of Maryland 17** 11. **Duke University 8** 12. **University of Puerto Rico-Rio Piedras 9** 13. **University of Wisconsin-Milwaukee 9** 14. **Boston University 8** **Total IHEs:** (14)			
52. ***Deleted for Reconciliation*** STEM-HELP (Higher Education Liaison Project) Northeastern University					
53. Adding Value to the Mathematics and Science Partnerships Evaluations University of Wisconsin Madison	None listed	1. University of Wisconsin-Madison *(Norman Webb, PI, Senior Research Scientist, National Institute for Science Education)* **8** **Total IHEs:** (1)	None listed	Madison, Wisconsin	**Total No. of partners (1)**
54. ***Deleted for Reconciliation*** Incorporating High Quality Interventions into a Broader Strategy for Sustained Mathematics/Science Education Reform Horizon Research Inc.	Not Active				
55. ***Deleted for Reconciliation*** MSP-Network: A Technical Assistance Design Project TERC Inc.	Not Active				
56. Longitudinal Design to Measure Effects of MSP Professional Development	None listed	None listed	1. Council of Chief State School Officers (*Rolf Blank, PI, Director of Education*	Washington, D.C.	**Total No. of partners (3)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
in Improving Quality of Instruction in Mathematics and Science Education Council of Chief State School Officers			*Indicators*) 2. American Institutes for Research Washington 3. Wisconsin Center for Education Research **Total Other:** (3)		
57. ***Deleted for Reconciliation*** MSP Assessments SRI International	Not Active				
58. Facilitating Mathematics/Science Partnerships (See Awardee No. 59) National Academy of Sciences	None listed	None listed	1. National Academy of Sciences *(Jay Labov, PI, Senior Advisor for Education and Communication)*	Washington, D.C.	**Total No. of partners (1)**
59. Building from the Research: Envisioning Quality Science Assessments (See Awardee No. 58) National Academy of Sciences	None listed	None listed	1. National Academy of Sciences (*Stuart Elliot, PI, Dir., Board on Testing and Assessment*)	Washington, D.C.	**Total No. of partners (1)**
60. Alternative Approaches to Evaluating STEM Education Partnerships: A Review of Evaluation Methods and Application of an Inter-organizational Model Georgia Institute of Technology	None listed	**1. Georgia Institute of Technology** *(Gordon Kingsley, PI, Assoc. Professor)* **8** **2. Pennsylvania State University 17 (no campus specified)** **Total IHEs:** (2)	None listed	Atlanta, Georgia	**Total No. of partners (2)**
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort II					
61. Redesign of the AP Biology Course, Examination, and Teacher Professional Development Experience The College Board	None listed	None listed	1. College Board *(Howard Everson, PI, VP for Academic Initiatives and Chief Research Scientist)* **Total Other:** (1)	New York City, New York	**Total No. of partners (1)**
62. Assessing Teacher Learning About Science Teaching	**1. Orange County Schools** **2. San Diego Unified School District**	**1. Western Washington University 11** **2. MSEN Pre-College Program,**	**1. Horizon Research, Inc.** *(Patrick Smith, PI, Senior Research Assoc.)*	Chapel Hill, North Carolina	**Total No. of partners (8)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
Horizon Research, Inc.	**Total No. Districts:** (2)	**University of North Carolina at Chapel Hill 8** **Total IHEs:** (2)	**2. American Association for the Advancement of Science** **3. National Science Teachers Association** **4. Teachers and Scientists Collaborating** **Total Other:** (4)		
63. TERC MSPnet: An Electronic Community of Practice Facilitating Communication and Collaboration TERC, Inc.	None listed	**1. Utah State University 9** **2. Harvard University 8** **3. University of Rochester 8** **4. University of California-Los Angeles 8** **5. Indiana University 17 (no campus specified)** **6. University of North Carolina at Chapel Hill 8** **7. Drexel University 9** **8. Swarthmore College 14** **Total IHEs:** (8)	**1. TERC, Inc.** *(Joni Falk, PI, Co-director of the Center for School Reform)* **2. National Research Council** **3. Patricia Seybold Group** **4. IBM** **Total Other:** (4)	Cambridge, Massachusetts	**Total No. of partners (12)**
64. Online Technologies to Enhance MSP Teacher Quality Programs (See Awardee No. 66) Education Development Center	None listed	None listed	**1. Education Development Center** *(Glenn Kleiman, PI)* **Total Other**: (1)	Newton, Massachusetts	**Total No. of partners (1)**
65. MSP Motivation Assessment Program (See Awardee No. 67) University of Michigan-Ann Arbor	**1. Milwaukee Public Schools** **Total No. Districts:** (1)	**1. University of Michigan - Ann Arbor** *(Martin Maehr, PI, Professor)* **8** **2. Auburn University 9** **3. California State University-Fullerton 11** **4. University of California-Riverside 8** **5. University System of Georgia 17** **6. University System of Maryland 17** **7. Institute for Social Research, funded by University of Michigan** **8. University of California-Riverside 8** **Total IHEs:** (8)	None listed	Ann Arbor, Michigan	**Total No. of partners (9)**
66. Leadership Content Knowledge and Mathematics Instructional	None listed	None listed	**1. CNA Corporation** **2. Education Development Center** (*Barbara Nelson, PI,*	Newton, Massachusetts	**Total No. of partners (2)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
Quality in the MSPs: A Study of Elementary and Middle School Principals (See Awardee No. 64) Education Development Center			*Sen. Scientist and Dir., Center for the Development of Teaching*) **Total Other:** (2)		
67. Design, Validation, and Dissemination of Measures of Content Knowledge for Teaching Mathematics (See Awardee No. 65) University of Michigan - Ann Arbor	None listed	1. University of Michigan - Ann Arbor *(Heather Hill, PI, Assistant Research Scientist)* **8** **Total IHEs:** (1)	**1. Institute for Social Research** **Total Other:** (1)	Ann Arbor, Michigan	**Total No. of partners (2)**
68. Developing Distributed Leadership: Understanding the Role Boundary Tools in Developing and Sustaining Leadership for Learning Networks Northwestern University	1. Chicago Public 2. Minneapolis Public **Total No. Districts:** (2) **Grade Level:** TBD **Total No. of schools in partner school districts:** TBD **Total No. of schools participating in MSP activities**: TBD **District Description:** Urban school districts	1. Northwestern University *(James Spillane, PI, Assoc. Professor, Learning Sciences; Human Development and Social Policy Faculty Fellow)* **8** **Total IHEs:** (1)	None listed	Minneapolis, Minnesota; and Chicago, Illinois	**Total No. of partners (3)**
69. Research on MSP Teacher Recruitment, Induction, Retention WestEd	None listed	None listed	1. WestEd *(Edward Britton, PI, Associate Director NCISE)*	San Francisco, California	**Total No. of partners (1)**
70. Causal Inference in Instructional Workforce Research Michigan State University	None listed	1. Michigan State University *(Mary Kennedy, PI, Professor)* **8**	None listed	East Lansing, Michigan	**Total No. of partners (1)**
71. The Effect of STEM Faculty Engagement in MSP: A Longitudinal Perspective Westat Inc.	None listed	None listed	1. Westat Inc. *(Xiaodong Zhang, PI, Research Assoc.)*	Rockville, Maryland	**Total No. of partners (1)**
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort III					
72. Mathematician Study Group of State Standards in Mathematics	None listed	None listed	1. Institute for Advanced Study *(Phillip Griffiths, PI, Dir., IAS, Dept. of*	New Jersey	**Total No. of partners (1)**

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AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	DISTRICT PARTNERS	IHE PARTNERS/ CLASSIFICATION CODE*	OTHER PARTNERS	PRIMARY GEOGRAPHIC LOCATION	NOTES
Institute for Advanced Study			*Mathematics, School of Arts and Sciences, Duke University*)		
73. MOSART: Misconception Oriented Standards-based Assessment Resource for Teachers Harvard University	None listed	None listed 1. Harvard University (*Philip Sadler, PI, Director*) **8** 2. MIT **8** 3. Framingham State College **11** 4. Lesley University **11** 5. University of Massachusetts **8** **Total IHEs:** (1) * With the exception of Harvard, all IHEs are proposed partners only.	**1. Smithsonian Astrophysical Observatory** **Total Other:** (1)	Massachusetts	**Total No. of partners (2)**
74. Distributed Leadership for Middle School Mathematics Education: Content Area Leadership Expertise in Practice Northwestern University	**1. Chicago Public Schools** **2. Evanston Public Schools** **3. Savannah Public Schools** **Total No. Districts:** (3)	1. Northwestern University (*James Spillane, PI, Assoc. Professor, Learning Sciences; Human Development and Social Policy Faculty Fellow*) **8** **Total IHEs:** (1)	None listed	Chicago, Illinois	**Total No. of partners (4)**
75. Knowledge Management for the MSPs Horizon Research Inc.	None listed	None listed	None listed 1. Center for Leadership and Learning 2. Center for Science Education at Education Development Center, Inc. 1. Horizon Research, Inc. (*Iris Weiss, PI, President, Horizon Research, Inc.*) **Total Other:** (1)	Chapel Hill, North Carolina	**Total No. of partners (1)**
76. Florida Science and Mathematics Education Summit University of South Florida	None listed	None listed 1. University of South Florida (*Gerry Meisels, PI, Professor of Chemistry, Director, Coalition for Science Literacy*) **8** **Total IHEs:** (1)	None listed State: 1. Florida Department of Education Business/ Industry: 1. Radiation Technologies, Inc. **Total Other:** (2)	Tampa, Florida	**Total No. of partners (1)**
77. Mathematics and Science Partnership Program Evaluation COSMOS Corporation	N.A.	N.A.	N.A.	N.A.	N.A.

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Carnegie Classification Code Legend:

1 = Assoc/Pub-R-L: Associate's--Public Rural-serving Large
2 = Assoc/Pub-R-M: Associate's--Public Rural-serving Medium
3 = Assoc/Pub-R-S: Associate's--Public Rural-serving Small
4 = Assoc/Pub-S-MC: Associate's--Public Suburban-serving Multicampus
5 = Assoc/Pub-S-SC: Associate's--Public Suburban-serving Single Campus
6 = Assoc/Pub-U-MC: Associate's--Public Urban-serving Multicampus
7 = Assoc/Pub-U-SC: Associate's--Public Urban-serving Single Campus
8 = RU/VH: Research Universities (very high research activity)
9 = RU/H: Research Universities (high research activity)
10 = DRU: Doctoral/Research Universities
11 = Master's L: Master's Colleges and Universities (larger programs)
12 = Master's M: Master's Colleges and Universities (medium programs)
13 = Master's S: Master's Colleges and Universities (smaller programs)
14 = Bac/A&S: Baccalaureate Colleges--Arts & Sciences
15 = Bac/Diverse: Baccalaureate Colleges--Diverse Fields
16 = Tribal: Tribal Colleges
17 = Unknown

Source: Carnegie Foundation for the Advancement of Teaching, *Carnegie Classifications Data File*, May 30, 2006 edition.

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APPENDIX C

NSF-MSPs' Partnership Assessment

APPENDIX C

NSF-MSPs' PARTNERSHIP ASSESSMENT*

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
COMPREHENSIVE: Cohort I 1. North Carolina Partnership for Improving Mathematics and Science (NC-PIMS) University of North Carolina	Partnership	Wants to have plans and revisions in place to improve the partnership.	Plans to meet with district and university partners on "The Quality of the Partnership and Ways to Improve."	None listed
2. New Jersey Math Science Partnership (NJ-MSP) Rutgers University	Partnership	The partnership hopes to identify effective partnering strategies in previous and ongoing relationships.	Meetings, conversations.	None listed
	Evaluator	The evaluators wish to solicit reflections on the evolution of the partnership.	MSP Leadership Interview Guide – contains questions pertaining to interviewee's vision of the partnership and his thinking about what constitutes a partnership and how effective he thinks the partnership has been.	None listed
3. Appalachian Mathematics and Science Partnership (AMSP) University of Kentucky	Partnership	The partnership will assess the partnership enhancing efforts of its Regional Program Coordinators and its Partnership Enhancement Projects (PEPs).	Review and summarize PEPs' quarterly reports, and are developing protocols with an emphasis on the partnering that enables activities and progress.	None listed
4. El Paso Math and Science Partnership (El Paso) University of Texas El Paso	Evaluator	Will investigate the way the partnership has changed over time, the challenges and benefits encountered by the partnership, and will contribute to the understanding of how partnerships develop and the necessary ingredients for a successful partnership.	Case study of the partnership involving interviews with key participants, observations of board meetings, review of minutes from meetings, tracking project communication, and staying apprised of partnership activities.	The interviews emphasized the quality and value of the high-level relationships that the partnership has nurtured, and revealed that the quality of the partnership is contributing to the alignment of MSP work with district priorities.

* Based on a review of MSP Awardees' Proposals and Annual and Evaluator's reports (2002-03, 2003-04, 2004-05).

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
5. Faculty Outreach Collaborations Uniting Scientists, Students and Schools (FOCUS)

University of California-Irvine | Evaluator | The evaluation is framed in terms of the five key features—including Partnership-Driven Culture—and thus will examine the overall partnership. | The Partnership Analysis Tool (originally developed by VicHealth and also used by the Cleveland MSP) involves three activities: 1) a discussion among all stakeholders to identify the purpose and common goals of the partnership; 2) a survey in which stakeholders individually reported their perceptions on the strengths and/or challenges of the partnership; and 3) a follow-up discussion among the stakeholders to discuss the results of the survey and develop action plans and next steps based on the survey and the discussion from the first activity.

The evaluators also conducted reviews of project documents and a site visit to the project. The site visit included interviews, observations of meetings, and informal conversations. The evaluators developed and used interview protocols that asked questions pertaining to the partnership's goals, individuals' roles and responsibilities, structure and management, implementation and alignment, culture, and sustainability. | The results from the evaluation are being used to inform the project of ways to adapt and improve the partnership. |
| MSP-PE Award No. 6 is located in COMPREHENSIVE: Cohort II | | | | |
| 7. System-Wide Change for All Learners and Educators (SCALE)

University of Wisconsin-Madison | Partnership | Gather and analyze information about how the partnership is evolving to enable the project to effectively catalyze and support change within the partner institutions. | Conduct the "Building a Partnership Study" (broken into four substudies: SCALE Views study, Mapping study, Network study, and Working Group Cross Case study) using interviews, observation of meetings, reviews of correspondence, administration of surveys, and readings of relevant articles and books on organizational development, leadership, and innovation. | The study has found that many characteristics of an effective partnership are present: for example, improvements in communication and shared understanding of project goals. |

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
COMPREHENSIVE: Cohort II 6. University of Maryland-Baltimore County—Baltimore County Public Schools STEM Project (UMBC-BCPS) University of Maryland-Baltimore County (UMBC)	Partnership	The partnership is providing documentation of what works and information about how to construct such a partnership to a wide audience of policy makers and university and school leaders.	None listed	None listed
MSP-PE Award No. 7 is located in COMPREHENSIVE: Cohort I				
8. Puerto Rico Math and Science Partnership University of Puerto Rico	Partnership	Prior to the start of the award, the partnership wanted to assess the existing partnership in order to improve for the MSP.	Core partner members took a partnership self-assessment.	Resulted in the conceptualization of a comprehensive strategy for the MSP.
	Evaluator	Planning a process-based formative evaluation to assess the partnership's effectiveness in terms of expected institutional and student outcomes	Observations, interviews, focus groups, annual retreats, and meetings.	None listed
9. Promoting Rigorous Outcomes in Mathematics/Science Education (PROM/SE) Michigan State University	Evaluator	The evaluators define a core question to guide the evaluation as, "What factors enhance or limit the sustainability and impact of the partnerships between MSU and the participating districts?" hoping to uncover a wide variety of factors that impede or facilitate partnership implementation.	Site visits to districts (both districts that are perceived to be progressing well and those that are perceived to have faced obstacles to progress), interviews, surveys (developing different instruments for different groups of personnel), focus groups, observations, and job shadowing.	None listed

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
10. Milwaukee Mathematics Partnerships: Sharing in Leadership for Student Success University of Wisconsin-Milwaukee	Partnership	Plan to measure the degree to which a true effective partnership was established and identify the defining attributes of such a partnership.	None listed	None listed
	Evaluator	The evaluators are addressing the key feature of being partnership driven by asking the following evaluation questions: "To what extent is the MMP partnership driven?" and "What are the key features of the MMP partnership that are critical for its success?"	Reviewed background information and documents, conducted site visits, interviews, and focus groups.	The partnership was found to operate on multiple levels resulting in a partnership philosophy that is pervasive throughout the project and not simply structural. The evaluator also determined seven key features of the partnership that will determine its success: 1) a shared vision; 2) shared belief that involving discipline faculty is beneficial; 3) long-term working relationship of key leaders; 4) alignment of efforts across institutions; 5) frequent, open communication; 6) risk taking by individuals in key roles; and 7) early success.
11. Math and Science Partnership of Southwest Pennsylvania Allegheny Intermediate Unit	Evaluator	Evaluation recognizes partnership building as one of the keys to institutional change.	Interviews and surveys, including the Principal Survey, intended to capture changes in attitude and views toward many project aspects such as how the partnership is supporting districts and schools.	The evaluators identify institutional and support structures, willingness and ability of partners to become or stay engaged, and recognizing and addressing cultural differences among partners as keys to the partnership's success. They find that most principals agreed that these issues were being addressed from the Principal Survey.
12. Partnership for Reform in Science and Mathematics (PRISM) University System of Georgia	Partnership	The partnership has developed defining questions that guide the direction and nature of the partnership. These questions include topics such as: shared vision of goals, communication between partners, respect of contributions, and institutionalization of partnership.	Using these questions, the partnership has developed a tool for monitoring progress towards actualizing the partnership driven key feature. The Leadership Team and Regional Coordinating Committees monitor this progress by determining if each practice or policy was met, in progress, or if no progress was made in the area.	The majority of practices and policies identified in the tool either have been met or are in progress.
TARGETED: Cohort I 13. Mathematical ACTS University of California-Riverside	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
14. Stark County Math and Science Partnership Stark County Educational Service Center	None	N/A	N/A	N/A
15. Teachers and Scientists Collaborating (TASC) Duke University	None	N/A	N/A	N/A
16. Vermont Mathematics Partnership (VMP) Vermont Institute of Science, Mathematics, and Technology	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
17. Cleveland Math and Science Partnership Cleveland Municipal School District	Partnership	An objective of the partnership is to have all partners collaborating effectively to develop a successful partnership to provide continuing teacher education to improve teaching and learning in math and science.	Using the results of the Partnership Survey (administered by the evaluator using the adapted Partnership Analysis Tool) in organizational meetings and focus groups to discuss implications of the results for the partnership.	None listed
	Evaluator	The evaluators will assess the current status of the partnership and present results for the partnership to use to improve.	The Partnership Survey administered by the evaluator was adapted from the Partnership Analysis Tool developed by Victorian Health Promotion Foundation. The survey includes questions broken down into the following sections: "determining the need for the partnership, choosing partners, making sure partnerships work, planning collaborative action, implementing collaborative action, minimizing the barriers to partnerships, and reflecting on and continuing the partnership." The respondents indicate their level of agreement with various statements using a Likert-type scale. The results from these sections are then aggregated into a sum of all of the individual questions that corresponds to the following scale (total checklist score): 1) 0-49 points – The whole idea of the partnership should be rigorously questioned; 2) 50-91 – The partnership is moving in the right direction, but it will need more attention if it is going to be really successful; and 3) 92-140 – A partnership based on genuine collaboration has been established.	The evaluators found that all individual sections of the survey positively increased from 2003-2004. The two sections in which the highest level of agreement was found were "determining the need for the partnership" and "choosing partners." Even though all sections positively increased, the evaluators note that the areas of "making sure partnerships work," "planning collaborative action," "implementing collaborative action," "minimizing the barriers to partnerships," and "reflecting on and continuing the partnership" still need to be addressed. 9 out of 16 partners had a checklist score in the 92-140 range ("A partnership based on genuine collaboration has been established") in 2004 compared to 2 out of 11 partners in 2003.
18. Alliance for Improvement of Mathematics Skills PreK-16 (AIMS) Texas Engineering Experiment Station/Del Mar College	Evaluator	Evaluators are examining the Program's five key features to "more closely connect project goals, research, and data collection" to these five key features ("expectations").	The evaluators assessed the key feature of being "partnership driven" through meeting agenda and minutes as well as data results describing participation and progress towards goals.	The evaluators conclude that "some partners appear less than fully committed," indicating the need for those partners to reaffirm their commitment and support.

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
19. St. Louis Inner Ring Cooperative: Intervention Case Studies in K-12 Math and Science (SIRC) Washington University	Evaluator	The evaluation focuses on the area of building effective collaborations and which partner characteristics inhibit and support this collaboration.	The Wilder Collaboration Factors Inventory, in which 20 factors relating to collaboration are grouped into six categories: environment, membership characteristics, process and structure, communication, purpose, and resources. The Inventory consists of 40 statements reflecting these six factors. Respondents choose their level of agreement with the statements on a scale of 1 to 5 with 1 being strongly disagree and 5 being strongly agree. The results of the inventory are reported in the form of a "mean score for each factor and a composite score for each district."	The evaluators calculated the average rating for each category and found that 1 out of 5 districts averaged an agreement level over 4.0 (the "Agree" level), although 4 of 5 districts increased in average rating. One district decreased in average rating and the evaluators suggest that this may indicate "staff concern that [the district] is moving in the wrong direction and may require more intensive intervention."
20. Texas Middle and Secondary Mathematics Project (TX-Math) Stephen F. Austin State University	None	N/A	N/A	N/A
21. E-Mentoring for Student Success (eMSS) National Science Teachers Association	Evaluator	The evaluators are assessing how efficiently and effectively the partners work together, communicate, and capitalize on each other's strengths.	Interviews and attending meetings and teleconferences.	None listed
22. *Deleted for Reconciliation* Learning to Teach, Teaching to Learn Oakland Unified School District	Never funded			
23. Indiana University– Indiana Mathematics Initiative Partnership (IMI) Indiana University	Evaluator	Focus on how well district policies have been aligned to support the goals of the project.	Interviews with District Coordinators.	None listed

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
24. Vertically Integrated Partnerships K-16 (VIP) University System of Maryland	None	N/A	N/A	N/A
25. PRIME: Promoting Reflective Inquiry in Mathematics Education Black Hills Special Services Cooperative	Evaluator	Plans to evaluate the efficacy of the partnership.	None listed	None listed
26. Deepening Everyone's Mathematics Content Knowledge: Mathematicians, Teachers, Parents, Students, and Community University of Rochester	None	N/A	N/A	N/A
27. SUNY-Brockport College and Rochester City (SCOLLARCITY) Math and Science Partnership: Integrative Technology Tools for Preservice and Inservice Teacher Education SUNY College at Brockport	Evaluator	A partnership goal is to have all partners in agreement with goals, responsibilities, and accountabilities.	Interviews with various project staff.	Various interviews with district superintendents revealed findings such as satisfaction with how the partnership was aligned with the district's strategic plan and the support between partners with respect to goals, as well as satisfaction with the MSP's support of teachers. Partners agreed that the PI fostered good communication and strengthened decision-making/teamwork. Staff interviews revealed effective project leadership that supports enthusiasm and broad participation. The partnership as a whole "has formed a strong and beneficial relationship with all partners."
28. Revitalizing Algebra (REAL) San Francisco State University	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
29. Teachers Assisting Students to Excel in Learning Mathematics (TASEL-M) California State University-Fullerton	None	N/A	N/A	N/A
TARGETED: Cohort II				
30. Focus on Mathematics Boston University	Evaluator	Evaluation will focus on various factors including the partnership itself, believing that the successful functioning of the MSP depends on an effective partnership.	Interviews, observations of meetings, and project communication. Indicators of successful partnerships are used to discuss findings.	The evaluators observed open and frequent sharing of ideas. They also found some agreement between partners on project goals, but also found that "not all district leaders consider that their district's philosophy of professional development…is aligned with that of [the MSP]" (although the evaluators indicate there is some evidence of improvement in this area).
31. Consortium for Achievement in Mathematics and Science (CAMS) Merck Institute of Science Education	Evaluator	Evaluation questions in this area include: 1) To what extent is the Consortium using existing resources and lessons from previous initiatives to their advantage? 2) How efficiently and effectively do the partners work together? Do they capitalize on each other's strengths in dividing the tasks? 3) To what extent are the resources and capacities of the Consortium partners adequate for carrying out Consortium goals with quality?	The evaluators plan to utilize interviews and observe meetings to inform these questions.	None listed
32. The Mathematics and Science Partnership of Greater Philadelphia (MSPGP) LaSalle University	None	N/A	N/A	N/A
33. The MSTP Project: Mathematics across the MST Curriculum Hofstra University	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
34. The East Alabama Partnership for the Improvement of Mathematics Education (TEAM-Math) Auburn University	Partnership	The partnership wants to determine critical items to consider when beginning a partnership. The partnership also has the goal of creating "a true partnership in which systemic alignment occurs across institutions, activities, and stakeholders."	With regard to determining critical items to consider when building a partnership, a member of the partnership has begun planning a survey of initial planning committee minutes and interviews with members of the project. The partnership also plans to analyze their goal of a systemically aligned partnership by performing an ethnographic analysis of the project with data sources such as interviews, observations, journaling, and analysis of project artifacts.	None listed
35. Partnership for Student Success in Science (PS3) Palo Alto Unified School District	Evaluator	Evaluation Components will evaluate goal of building a functional and healthy relationship.	Methods include: 1) Interview key leaders within each partner organization; 2) Attend a sample of SRT planning and cluster meetings; and 3) Conduct an annual partnership review of progress, issues, etc.	None listed
36. North Cascades and Olympic Science Partnership (NCOSP) Western Washington University	Partnership	The partnership wanted to deepen understanding of partnerships and identify strengths and areas for improvement.	The team read and discussed "Effective School-College Partnerships, A Key to Education Renewal and Instruction Improvement" (Education, Summer 2001, p732-736).	None listed
	Evaluator	The evaluators want to measure the success and growth of the partnership.	The evaluators are developing a suite of instruments to measure the partnership itself and have administered a preliminary survey to gain feedback for the development of these instruments.	None listed
TARGETED: Cohort III				
37. Boston Science Partnership (BSP) University of Massachusetts-Boston	None	N/A	N/A	N/A
38. Math and Science Partnership in New York City (MSPinNYC) City University of New York	Evaluator	One of the key components to evaluate will be partnerships and culture changes including items such as: reward systems, district priorities and policies, IHE priorities and policies, lines and type of communication and participation.	None listed	None listed

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
39. Project Pathways: A Math and Science Partnership Program for Arizona Targeted Project Track Arizona State University	None	N/A	N/A	N/A
40. Rocky Mountain Middle School Math Science Partnership: 15 Months to Highly Qualified University of Colorado at Denver	None	N/A	N/A	N/A
41. A Greater Birmingham Mathematics Partnership (GBMP) University of Alabama-Birmingham	None	N/A	N/A	N/A
INSTITUTE: Cohort II				
42. Institute for Advanced Study/Park City Mathematics Institute (PD3) Institute for Advanced Study	None	N/A	N/A	N/A
INSTITUTE: Cohort III				
43. The Rice University Mathematics Leadership Institute William Marsh Rice University	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
44. NSF Institute: Preparing Virginia's Mathematics Specialist (PVMS) Virginia Commonwealth University	None	N/A	N/A	N/A
45. Standards Mapped Graduate Education and Mentoring Florida Atlantic University	Partnership (Advisory Board)	Partnership wishes to gain information about the general progress and direction of the partnership.	Advisory Board will comment on the general progress and direction of the partnership.	None listed
46. University of Pennsylvania Science Teachers Institute University of Pennsylvania	None	N/A	N/A	N/A
47. The Fulcrum Institute for Education in Science Tufts University	None	N/A	N/A	N/A
48. Math in the Middle Institute Partnership (M^2) University of Nebraska-Lincoln	None	N/A	N/A	N/A
49. Oregon Mathematics Leadership Institute Partnership Oregon State University	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort I				
50. *Deleted for Reconciliation* Bridging Research and Practice in the MSPs: Technical Assistance for Use of Research and Data-Based Decision Making Education Development Center	Not Active			
51. Building Evaluation Capacity of STEM Projects Utah State University	None	N/A	N/A	N/A
52. *Deleted for Reconciliation* STEM-HELP (Higher Education Liaison Project) Northeastern University	Not Active			
53. Adding Value to the Mathematics and Science Partnerships Evaluations University of Wisconsin-Madison	N/A (no partners)	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
54. **Deleted for Reconciliation** Incorporating High Quality Interventions into a Broader Strategy for Sustained Mathematics/Science Education Reform Horizon Research Inc.	Not Active			
55. **Deleted for Reconciliation** MSP-Network: A Technical Assistance Design Project TERC Inc.	Not Active			
56. Longitudinal Design to Measure Effects of MSP Professional Development in Improving Quality of Instruction in Mathematics and Science Education Council of Chief State School Officers	None	N/A	N/A	N/A
57. **Deleted for Reconciliation** MSP Assessments SRI International	Not Active			
58. Facilitating Mathematics/Science Partnerships (See Awardee No. 59) National Academy of Sciences	N/A (no partners)	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
59. Building from the Research: Envisioning Quality Science Assessments (See Awardee No. 58) National Academy of Sciences	N/A (no partners)	N/A	N/A	N/A
60. Alternative Approaches to Evaluating STEM Education Partnerships: A Review of Evaluation Methods and Application of an Inter-organizational Model Georgia Institute of Technology	None	N/A	N/A	N/A
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort II 61. Redesign of the AP Biology Course, Examination, and Teacher Professional Development Experience College Board	N/A (no partners)	N/A	N/A	N/A
62. Assessing Teacher Learning About Science Teaching Horizon Research, Inc.	None	N/A	N/A	N/A
63. TERC MSPnet: An Electronic Community of Practice Facilitating Communication and Collaboration TERC, Inc.	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
64. Online Technologies to Enhance MSP Teacher Quality Programs (See Awardee No. 66) Education Development Center	N/A (no partners)	N/A	N/A	N/A
65. MSP Motivation Assessment Program (See Awardee No. 67) University of Michigan-Ann Arbor	None	N/A	N/A	N/A
66. Leadership Content Knowledge and Mathematics Instructional Quality in the MSPs: A Study of Elementary and Middle School Principals (See Awardee No. 64) Education Development Center	None	N/A	N/A	N/A
67. Design, Validation, and Dissemination of Measures of Content Knowledge for Teaching Mathematics (See Awardee No. 65) University of Michigan-Ann Arbor	None	N/A	N/A	N/A
68. Developing Distributed Leadership: Understanding the Role Boundary Tools in Developing and Sustaining Leadership for Learning Networks Northwestern University	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
69. Research on MSP Teacher Recruitment, Induction, Retention WestEd	N/A (no partners)	N/A	N/A	N/A
70. Causal Inference in Instructional Workforce Research Michigan State University	N/A (no partners)	N/A	N/A	N/A
71. The Effect of STEM Faculty Engagement in MSP: A Longitudinal Perspective Westat Inc.	N/A (no partners)	N/A	N/A	N/A
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort III 72. Mathematician Study Group of State Standards in Mathematics Institute for Advanced Study	N/A (no partners)	N/A	N/A	N/A
73. MOSART: Misconception Oriented Standards-based Assessment Resource for Teachers Harvard University	None	N/A	N/A	N/A
74. Distributed Leadership for Middle School Mathematics Education: Content Area Leadership Expertise in Practice Northwestern University	None	N/A	N/A	N/A

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ENTITY ENGAGED IN ASSESSMENT	EVALUATION CONCEPTS/QUESTIONS/GOALS	METHOD OF ASSESSMENT AND INSTRUMENTS USED	RESULTS OF ASSESSMENT
75. Knowledge Management for the MSPs Horizon Research Inc.	N/A (no partners)	N/A	N/A	N/A
76. Florida Science and Mathematics Education Summit University of South Florida	N/A (no partners)	N/A	N/A	N/A
77. Mathematics and Science Partnership Program Evaluation COSMOS Corporation	N/A	N/A	N/A	N/A

APPENDIX D

**Description of MSPs' Targeted Subjects and Grades,
and Project Goals and Objectives as Stated in Awardee Documents**

APPENDIX D

DESCRIPTION OF MSPs' TARGETED SUBJECTS AND GRADES, AND PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS[1]

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
COMPREHENSIVE: Cohort I		
1. North Carolina Partnership for Improving Mathematics and Science (NC-PIMS) http://www.ncpims.org	mathematics (K-12)	1. Develop leadership and policies to support instruction in science and mathematics; 2. Create and deliver high quality professional development to teachers; and 3. Design and implement activities that encourage students to remain engaged in science and mathematics learning
2. New Jersey Math Science Partnership (NJ-MSP) http://njmsp.rutgers.edu	mathematics and science (PreK-12)	1. Increase achievement and reduce achievement gaps in mathematics and science between children from families that differ in wealth and ethnicity; 2. Increase and sustain the number, quality, and diversity of Pre-K-12 teachers of mathematics and science; and 3. Evaluate the work done and document outcomes in order to support the partnership in a formative manner.
3. Appalachian Mathematics and Science Partnership (AMSP) http://www.appalmsp.org	mathematics and science (PreK-12)	1. Eliminate the "achievement gap" in mathematics, science, and technology (MST) for regional preK-12 students; and 2. Build an integrated preK-12 and higher education system in this underserved area to insure the selection, development, and career-long support of a diverse and high quality mathematics and science teacher workforce.
4. El Paso Math and Science Partnership (El Paso) http://epcae.org/msp	mathematics and science (K-12)	1. Increase and sustain the quantity and quality of preK-12 mathematics and science teachers; 2. Build school and district capacity to provide the highest quality curriculum, instruction and assessment, and ensure the highest-level achievement in mathematics and science; 3. Align curriculum, instruction, and assessment of mathematics and science education; 4. Increase college-going rates and majors in math, science and engineering; and 5. Implement a research agenda that advances knowledge and understanding about the systemic improvement of mathematics and science education.
5. Faculty Outreach Collaborations Uniting Scientists, Students and Schools (FOCUS) http://focus.web.uci.edu/	mathematics and science (PreK-12)	1. Construct a "future teacher highway" to increase the number, quality and diversity of preK-12 teachers of mathematics and science; 2. Involve math and science professionals in "Discipline Dialogues" that cross segmental boundaries; and 3. Create systemic reform in the professional development of preK-12 teachers of mathematics and science.
MSP-PE Award No. 6 is located in COMPREHENSIVE: Cohort II		
7. System-Wide Change for All Learners and Educators (SCALE) http://scalemsp.wceruw.org	mathematics and science (K-12)	1. Implement strategies to transform core STEM teaching system-wide in each of the four partner school districts so that every student experiences deep, conceptually based instruction on core mathematics and science concepts on a continuing basis; 2. Develop and implement immersion STEM learning experiences to ensure that every student in our partner districts experiences the process of engagement in an extended (e.g., four-week) scientific investigation at least once a year; 3. Design a new environment for and implement new teacher preparation and development programs that give teachers a deeper grasp of STEM content and effective pedagogical strategies for engaging students in learning; 4. Increase the participation of minority and female students in high school mathematics and science courses and send more of them to college as students in these fields, thus building a more diverse pool of potential STEM teachers; and 5. Ensure that a culture of evidence permeates all lines of work in the partnership through a program of research and evaluation.

[1] Information based on review of awardees' annual reports, evaluation reports, or proposals. The goals for awardees number 16, 30, and 36 are stated in terms of results.

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
COMPREHENSIVE: Cohort II		
6. University of Maryland-Baltimore County—Baltimore County Public Schools STEM Project (UMBC-BCPS) http://www.bcps.org/offices/science/nsf/default.html	mathematics and science (K-12)	1. Enhance the capacity of Baltimore County Public Schools to provide all students with challenging math and science curricula to increase system wide student STEM achievement and reduce the race and poverty achievement gaps; 2. Increase the number, quality, and diversity of preK-12 math and science teachers, especially in low-performing underserved schools through professional development and alternative performance-based certification; and 3. Conduct ongoing assessments of the Project's outcomes and contribute to the development of national capacity to introduce and sustain successful math and science education reform including hosting and presenting at conferences.
MSP-PE Award No. 7 is located in COMPREHENSIVE: Cohort I		
8. Puerto Rico Math and Science Partnership http://www.prmsp.org/	mathematics and science (K-12)	1. Enhance student achievement through challenging curricula and teacher empowerment; 2. Increase and sustain K-12 math and science teachers through a professional education continuum; 3. Improve knowledge base on math & science teaching and learning by means of assessment, evaluation, and research; and 4. Create sustainable K-20 partnerships that leverage maximum support for K-12 math and science education.
9. Promoting Rigorous Outcomes in Mathematics/Science Education (PROM/SE) http://www.promse.msu.edu	mathematics and science (K-12)	1. Establish a base of empirical evidence to direct the reform efforts and build capacity in all partner sites to use data in revising content standards; 2. Improve mathematics and science educational opportunities for all students across the K-12 partner sites by developing more coherent, focused, and challenging content standards; aligning K-12 standards with instructional materials; and eliminating tracking in grades K-8; 3. Improve mathematics and science teaching so it is aligned with K-12 standards through professional development, focused on disciplinary content and subject knowledge for teaching; and 4. Reform the preparation of future teachers so that content and context are central, and teachers at all levels are ready to teach challenging mathematics and science to diverse student populations.
10. Milwaukee Mathematics Partnerships: Sharing in Leadership for Student Success No External Website	mathematics (K-12)	1. Implement and utilize the Comprehensive Mathematics Framework to lead a collective vision of deep learning and quality teaching of challenging mathematics across the Milwaukee Partnership; 2. Institute a distributed mathematics leadership model that engages all partners and is centered on school-based professional learning communities; 3. Build and sustain the capacity of teachers, from initial preparation through induction and professional growth, to understand mathematics deeply and use that knowledge to improve student learning; and 4. Ensure that all students, PK-16, have access to, are prepared and supported for, and succeed in challenging mathematics.
11. Math and Science Partnership of Southwest Pennsylvania http://www.aiu3.net/msc	mathematics and science (K-12)	1. Increase the K-12 students' knowledge of mathematics and science through an increase in the breadth and depth of their participation in challenging courses within coherent curricula; 2. Increase the quality of K-16 educator workforce through leadership-guided, data-based decision-making, and the effective implementation of challenging courses within coherent curricula; and 3. Create sustainable coordination of partnerships in IUs that build intentional feedback loops between K-12 and IHE to tap the discipline-based expertise of IHE and to improve the mathematics and science learning experience for all undergraduates.

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
12. Partnership for Reform in Science and Mathematics (PRISM) http://www.usg.edu/p16/prism	mathematics and science (PreK-12)	1. Raise expectations and achievement in science and mathematics in preK-12 schools while closing the achievement gap among demographic groups (*by providing challenging science and mathematics curricula and materials for all students; raising the awareness of students, parents, and the community of the need for all preK-12 students to complete challenging courses and curricula in science and mathematics);* 2. Raise student achievement in science and mathematics in preK-12 schools through increasing and sustaining the number, quality, and diversity of preK-12 teachers teaching science and mathematics *(by providing high quality professional development to current preK-12 teachers who teach science and mathematics; strengthening the content and pedagogy in science and mathematics for future preservice teachers; ensuring a sufficient pipeline of highly qualified and diverse teachers to meet demand; and providing incentives for teacher assignment and retention to ensure access to highly qualified and experienced science and mathematics teachers by students who need them most);* and 3. Raise student achievement in preK-12 schools through increasing the responsiveness of higher education to the needs of preK-12 schools *(by increasing the participation of science and mathematics faculty in teacher preparation and professional development; and providing incentives for science and mathematics faculty members to engage in research with preK-12 schools on effective practices in science and mathematics).*
TARGETED: Cohort I		
13. Mathematical ACTS http://mathacts.ucr.edu	mathematics (4-8)	1. Increase academic achievement of middle school students in mathematics in participating schools. *Objectives:* *a. Decrease the existing mathematics achievement gaps between poverty and non-poverty students by raising achievement among poverty students by 25%;* *b. Increase the number of all students receiving a B- or better in 8th grade Algebra by 25%;* *c. Increase the number of students seeking extended learning opportunities in mathematics; and* *d. Increase the number of students enrolling in Geometry and higher-level mathematics courses.* 2. Increase the number of teachers with mathematics credentials and instructional competencies. *Objectives:* *a. Triple enrollment in mathematics credential programs from preservice candidates;* *b. Increase by half the percentage of inservice teachers with mathematics credentials or specialization;* *c. Increase the mathematical proficiency of inservice teachers to Algebra II-Trigonometry competence; and* *d. Increase commitment of teachers to community of learners' career approach.*
14. Stark County Math and Science Partnership http://www.sparcc.org/msp	mathematics and science (5-12)	Increase student achievement and reduce the achievement gap for all students in secondary mathematics and science. 1. Develop urban centers in collaboration with area colleges to increase student achievement and reduce the achievement gap; 2. Increase inquiry teaching and real world problem solving skills of secondary math and science teachers; and 3. Improve communication and collaboration between public schools (secondary mathematics and science teachers and administrators) and area college/university educational/content professors to promote a seamless transition between preservice preparation, induction year, and inservice training.
15. Teachers and Scientists Collaborating (TASC) http://tasc.pratt.duke.edu	science (K-8)	1. Improve students' skills in science process and content, and exercise their skills in computation and written communication; 2. Improve student readiness for high schools science; and 3. Raise math and language arts end-of-grade test performance through inquiry-based science.

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
16. Vermont Mathematics Partnership (VMP) http://www.vermontmathematics.org/index.htm	mathematics (PreK-12)	1. Teachers and teachers in training deeply understand mathematics and can translate their knowledge into high levels of student learning; 2. School support systems are rich with learning opportunities for students and teachers; 3. Partner schools and districts use valid and reliable ongoing assessments and feedback systems to continuously improve mathematics learning for all students; 4. Mathematicians and educators collaborate to develop high-quality professional development materials and protocols for teachers and teachers in training to build understanding of mathematics content, instructional practices, equity strategies and educational leadership; and 5. Mathematicians and mathematics education faculty support collaborative research efforts among preK-12 educators, contributing to the state and national research base in the teaching and learning of mathematics.
17. Cleveland Math and Science Partnership http://www.cwru.edu/artsci/csm/ CMSP.html	mathematics and science (6-12)	1. Increase and sustain the number, quality and diversity of middle grades (6-8) mathematics and science teachers within the Cleveland Municipal School District through the creation of a continuing education initiative linked to restructured graduate programs at local universities, and a mentoring program within the district; 2. Increase the quality of high school (9-12) math and science teachers within the Cleveland Municipal School District through the creation of a continuing education initiative linked to new graduate-level courses at Case Western Reserve University (CWRU); 3. Expand the mathematics and/or science content knowledge and use of inquiry-based methods of middle and high school teachers in the Cleveland Municipal School District. (NCTM standards, NRC Science Standards, ODE Academic Content Standards, Cleveland Municipal School District Mathematics and Science Standards; 4. Increase collaboration within each university in order to align continuing education and professional development to the applied needs of CMSD teachers of math and science in grades 6-12; and 5. Positively impact student outcomes in math and science in grades 6-12 in the Cleveland Municipal School District.
18. Alliance for Improvement of Mathematics Skills PreK-16 (AIMS) http://www.delmar.edu/aims	mathematics (PreK-16)	Prepare all students for success in college level math courses by the time they graduate from high school. 1. Enhance professional learning for preK-16, administrators, teachers (preK-12), faculty (higher education), and counselors; 2. Provide a challenging curriculum for all students; 3. Enhance the application of technology for instruction and collaboration; and 4. Conduct research on effectiveness of interventions.
19. St. Louis Inner Ring Cooperative: Intervention Case Studies in K-12 Math and Science No External Website	mathematics and science (K-12)	1. Enhance capacity to provide a challenging math and science curriculum for every student, particularly targeted at grades 4-8; 2. Develop an exemplary program to support teachers from preservice education through the induction years of teaching; 3. Develop a progression of professional development for teachers of grades 4-8 that impacts student achievement; and 4. Narrow gaps between achieving and underachieving students in math and science.
20. Texas Middle and Secondary Mathematics Project (TX-Math) http://www.faculty.sfasu.edu/ kchilds/nsf2.html	mathematics (4-12)	1. Improve the capacity of teachers in 4-12 grade-level mathematics classrooms to impact student performance in mathematics; and 2. Improve the awareness and involvement of mathematics higher education faculty regarding preparation and professional development of teachers.

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
21. E-Mentoring for Student Success (eMSS) http://www.newteachercenter. org/emss	science (6-12)	Develop a national on-line, content-rich, mentoring system to improve the skills of, and provide support for, novice middle and high school science teachers. 1. Improve middle and high school student achievement in science by developing e-mentoring networks of new teachers, mentors, and current and future faculty; 2. Prepare a cadre of administrators to support beginning teachers and their mentors for improving student learning; 3. Meet a national need by developing standards for the mentoring and induction of beginning science teachers; and 4. Develop a national e-mentoring network to disseminate the model developed by eMSS as it supports teachers of science nationwide.
22. Learning to Teach, Teaching to Learn	Never Funded	
23. Indiana University–Indiana Mathematics Initiative Partnership (IMI) http://www.indiana.edu/~iucme	mathematics (K-12)	1. Provide comprehensive professional development for leadership cadres of teachers and administrators; and 2. Insure that all Indiana Mathematics Initiative (IMI) districts derive permanent benefits from a major effort currently underway at the IU-Bloomington campus to revise and supplement the mathematics courses taken by preservice elementary and secondary school teachers. These linked courses will be created and delivered by teams consisting of faculty from the mathematics department, mathematics education, and experienced secondary teachers in IMI districts. *Specifically the partnership is to establish linkages between IU's preservice program and IMI districts to enhance the ability of the districts to both attract and retain qualified mathematics teachers.*
24. Vertically Integrated Partnerships K-16 (VIP) http://www.scienceinquiry.org	science (9-12)	1. Enrich science teacher knowledge in order to improve high school science instruction to better enable students to meet rigorous state science standards as measured on the Maryland Science High School Assessments; and 2. Improve the teaching skills of college science faculty in order to improve the quality of undergraduate general education science courses. *a. Improve student learning outcomes, as measured by high school assessments; b. Improve teacher content knowledge in the sciences by providing high quality professional development to inservice high school teachers; c. Improve college faculty teaching skills by providing them with expert mentor/master teacher during summer institutes; d. Enhance graduate student teaching skills by exposing them to expert mentor/master teachers during summer workshops, and having them complete teaching portfolios; and e. Increase the number of undergraduate science students who choose teaching as a career.*

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25. PRIME: Promoting Reflective Inquiry in Mathematics Education http://www.primeproject.org	mathematics (PreK-12)	1. Improve student achievement in mathematics for all pre-K-12 students in the Rapid City School District; and 2. Increase and sustain the quality of pre-K-12 teachers of mathematics in the Rapid City School District over time. *Objectives:* *a. Raise the mathematics achievement of all pre-K-12 students in the Rapid City School District according to criteria established by the state of South Dakota;* *b. Reduce the achievement gap between Native American and non-native students in the Rapid City School District;* *c. Reduce the number of high school students taking non college-preparatory math by a minimum of 20% over the five-year duration of Project PRIME;* *d. Increase the number of students taking upper level mathematics courses in middle school (Algebra) and high school by a minimum of 20% over the five-year duration of Project PRIME;* *e. Increase the number of students scoring 20 or above in the mathematics section of the ACT by a minimum of 20% over the five-year duration of Project PRIME;* *f. Improve the ability of preservice teachers graduating from Black Hills State University College of Education to teach mathematics effectively as measured by the Horizon Classroom Observation Protocol; and* *g. Improve the ability of inservice teachers in the Rapid City School District to teach mathematics effectively as measured by the Horizon Classroom Observation Protocol.*
26. Deepening Everyone's Mathematics Content Knowledge: Mathematicians, Teachers, Parents, Students, and Community No External Website	mathematics (K-12)	Develop effective ways to foster the mathematical content knowledge necessary for a successful implementation of reform mathematics curricula. 1. Work toward institutional change and increased mathematics achievement of all K-12 students; and 2. Enhance the capacity of schools to provide challenging curriculum for all students by developing a shared understanding of new goals and expectations about students' learning of mathematics, and increasing mathematical content knowledge among multiple constituencies (i.e., K-12 teachers, school support staff, and parents/community members) involved in the partnering K-12 districts. A cadre of teacher leaders from these districts will serve as the primary vehicle for capacity building and the institutionalization of mathematics reform.
27. SUNY-Brockport College and Rochester City (SCOLLARCITY) Math and Science Partnership: Integrative Technology Tools for Preservice and Inservice Teacher Education http://www.brockport.edu/cmst	mathematics and science (7-12)	1. Improve student outcomes in math and science at grades 7-12 in Rochester City School District and Brighton Central School District through an integrated technology approach to math and science education; 2. Increase retention of high quality math, science and technology (MST) teachers through professional development (workshops, year-long coaching and graduate education); 3. Increase the number of students majoring or seeking teacher certifications in MST programs at SUNY Brockport through scholarships and internships; 4. Strengthen relationship with the local industry such as Xerox Corporation through internships to MST students; 5. Foster collaboration between industry such as Texas Instruments through the use of new instructional technology; and 6. Promote collaboration between national programs and organizations funded by NSF and DOE (through dissemination, building evidence, and sharing results and training materials).
28. Revitalizing Algebra (REAL) http://math.sfsu.edu/hsu/msp/index.html	mathematics (8-10)	1. Improve the teaching of Algebra in middle schools and high schools; 2. Create new teacher leaders at the middle school and secondary school level; 3. Change the climate in each school so that teachers continue to work on improving the teaching of algebra; 4. Encourage mathematics majors to seek a career in secondary education; 5. Help math majors to believe that underrepresented students from any socio-economic class can excel in mathematics with a good teacher and a good curriculum; 6. Improve graduate students' effectiveness as teachers; and 7. Increase graduate students' interest in K-12 education.

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29. Teachers Assisting Students to Excel in Learning Mathematics (TASEL-M) http://taselm.fullerton.edu	mathematics (6-12)	1. Increase students' mathematical content knowledge and achievement; 2. Create a collaborative culture in schools that focuses on assessing student knowledge and implementing curriculum in pedagogically appropriate ways that addresses the students' needs; and 3. Increase teachers' mathematics content knowledge. A combination of site-based and summer institute professional development and mini-courses in mathematics forms the foundation of the program.
TARGETED: Cohort II		
30. Focus on Mathematics http://www.focusonmath.org	mathematics (5-12)	1. A coherent, content-based professional development program that deepens teachers' mathematical understanding; 2. Increased student achievement and students' development as lifelong mathematical thinkers and users of the discipline; 3. A research experience: All students develop and present a mathematics research at least once in grades 8-11; 4. An integrated preservice program connecting content and pedagogy that emphasizes the connection between mathematical content, the process of doing mathematics, and the process of students' learning of mathematics; and 5. A mathematical community among teachers, students, administrators, mathematicians, and mathematics educators who work together to put mathematics at the core of 5-12 mathematics education.
31. Consortium for Achievement in Mathematics and Science (CAMS) No External Website	mathematics and science (6-8)	Provide intensive, sustainable, systemic reform in four urban school districts, with the vision that all middle school students will understand and be able to apply key concepts in mathematics and science. 1. Implement challenging instructional programs; 2. Build professional capacity in schools, the University, Educational Testing Service (ETS), and Merck Institute for Science Education (MISE); 3. Develop leadership among teachers, administrators, and university faculty; 4. Develop a student-centered learning climate in every classroom; and 5. Build parent and community support.
32. The Mathematics and Science Partnership of Greater Philadelphia (MSPGP) http://www.brynmawr.edu/mspgp	mathematics and science (6-12)	Facilitate and grow partnerships between grades 6-12 teachers, administrators, and faculty from higher educational institutions. 1. Ensure that all students have access to, are prepared for, and are encouraged to participate and succeed in, challenging and advanced mathematics and science courses; 2. Enhance the quality, quantity and diversity of the 6-12 mathematics and science teacher workforce; and 3. Develop evidence-based outcomes that contribute to our understanding of how students effectively learn mathematics and science.
33. The MSTP Project: Mathematics across the MST Curriculum http://www.hofstra.edu/Academics/SOEAHS/tec/tec_mstp.cfm	mathematics (6-8)	1. Enhance mathematical understanding of middle school students in participating schools; 2. Enhance mathematical content and pedagogical understanding of middle school teachers of mathematics, science, and technology in project schools; 3. Enhance higher education stem curricula and faculty pedagogical skills; 4. Align and improve mst curricula in project schools with respect to nys mathematics standards and assessments; 5. Increase the number of underrepresented minorities entering the mst teaching workforce in new york state; 6. Enhance the capacity of the nysed, partner universities, schools, and districts to engage in ongoing improvement of middle school mathematics; and 7. Disseminate an innovative middle school mathematics program model.
34. The East Alabama Partnership for the Improvement of Mathematics Education (TEAM-Math) http://TEAM-Math.net	mathematics (K-12)	1. Improve the mathematics achievement of students in partnership school districts; 2. Reduce gaps in performance between subpopulations of those students; 3. Increase the content and pedagogical knowledge of teachers in partnership school districts through intensive, sustained inservice, and increasing the understanding of school administrators of effective mathematics instruction; 4. Increase the supply of qualified teachers through improved retention in partner school districts and recruitment of new teachers into teacher preparation programs at the institutions of higher education; 5. Redesign the preparation of teachers at partnership higher education institutions to better provide new teachers with the content and pedagogical knowledge needed to effectively teach mathematics; 6. Align district curriculum, instructional materials, and assessment practices to support instructional improvement; and 7. Improve parental and community knowledge about mathematics education.

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35. Partnership for Student Success in Science (PS3) http://www.basee.org	science (K-8)	1. Build a sustainable long-term teacher development model for science in the region that leads to an increase in the pool of well-prepared K-8 science teachers; 2. Develop regional leadership capacity that provides and sustains high quality science teaching and learning; 3. Ensure that all children have an outstanding science program that prepares them for complex decision making, technological careers and productive citizenry; and 4. Establish science as the vehicle for underrepresented minorities and English Language Learners (ELL) to become successful students. *Specifically:* *a. Raise the overall science achievement in all PS3 targeted schools and narrow the achievement gap between PS3 high priority schools and their higher performing counterparts;* *b. Improve the capacity of preservice and inservice teachers to deliver high quality science instruction;* *c. Build the critical system supports necessary to help teachers achieve improved instruction and student success; and* *d. Build a functional and healthy partnership.*
36. North Cascades and Olympic Science Partnership (NCOSP) http://www.ncosp.smate.wwu.edu	science (3-10)	1. All students succeed in challenging courses aligned with standards; 2. Administrators understand and support science education reform goals and programs; 3. Knowledgeable and confident teachers use curriculum with integrity and fidelity; 4. Increase the quantity, quality, and diversity of science teachers entering the workforce through effective preparation, recruitment, and retention; and 5. Science education research provides evidence-based contributions to the learning and teaching knowledge base.
TARGETED: Cohort III		
37. Boston Science Partnership (BSP) http://www.bostonscience.org/	science (6-12)	1. Raise Boston Science Partnership (BSP) student achievement in science; 2. Significantly improve the quality of BSP science teachers; 3. Increase the number of students who succeed in higher-level courses in science and who are admitted to and retained in university science and engineering programs; 4. Improve science teaching both in BSP and at the universities; and 5. Institutionalize these changes so that the Boston Science Partnership and its work will be sustained.
38. Math and Science Partnership in New York City (MSPinNYC) No External Website	mathematics and science (9-12)	1. Develop partnerships and change cultures among a number of CUNY's senior colleges, community colleges, and two of ten Regions within the New York City Public School System; 2. Create, scale-up, implement, and field test student support, teacher recruitment, and a Collaborative Teaching Laboratory (CTL) professional development model; 3. Improve student understanding of content and performance on examinations; 4. Ensure that research characterizing the scientific method permeates every aspect of the project; and 5. Institutionalize and sustain project outcomes.

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39. Project Pathways: A Math and Science Partnership Program for Arizona Targeted Project Track No External Website	mathematics and science (9-12)	1. Produce a model that generates a new professional enhancement delivery system for supporting secondary STEM teachers' continued professional growth; 2. Generate improved mathematics and science learning and achievement in grades 9-12; 3. Institutionalize the support structures, personnel development, and instructional sequences of a content-focused professional development system supported by professional learning communities; and 4. Develop adaptable, transportable research-based tools to support and assess the Pathways professional development system and its components. *Objectives:* *a. Increase secondary student achievement in math and science;* *b. Close the achievement gap of minority students in each school by no less than 10%;* *c. Improve students' problem solving, scientific inquiry and engineering design strategies and confidence in their STEM abilities;* *d. Deepen teachers' understanding of mathematics, their knowledge of mathematical connections, and their ability to use mathematics in science applications;* *e. Shift teachers' practice to inquiry and project-based methods;* *f. Gradually increase teachers' ability to reflect on, monitor, and adjust their classroom practices;* *g. Measure shifts in teacher practice and student conceptual learning in ASU's introductory precalculus, calculus, physics, engineering, and other STEM courses; and* *h. Improve the success rate in ASU introductory precalculus, calculus, physics, and biology courses by no less than 15%.*
40. Rocky Mountain Middle School Math Science Partnership: 15 Months to Highly Qualified http://rmmsmsp.cudenver.edu/	mathematics and science (6-8)	1. Enhance teacher quality through intensive professional development that is grounded in scientifically-based research and tightly linked to quality instructional materials, and which results in certification for teaching mathematics or science in the middle grades and a corresponding endorsement in mathematics and science at the state level; 2. Enhance access to challenging curriculum ensuring that all middle school students in the partner districts will have equitable access to challenging curriculum by supporting teachers and their districts in the implementation of challenging, research-based curriculum and providing outreach, intervention and research in "differentiated instruction," particularly as it relates to Native American and Hispanic students; and 3. Enhance the teacher pipeline through institutionalized improvements in preservice preparation and recruitment focusing on expanding the supply and diversity of highly qualified middle grades teachers of mathematics and science.
41. A Greater Birmingham Mathematics Partnership (GBMP) http://www.math.uab.edu/GBMP	mathematics (6-8)	Build a partnership that jointly increases mathematics achievement levels for all students (K-12) and narrows differences between diverse student populations. 1. Increase the effectiveness of middle school mathematics teachers within GBMP school systems; 2. Increase the leadership capacity of middle school mathematics teachers within GBMP school systems; 3. Unite the GBMP stakeholders (teachers, administrators, parents, IHEs and the public) in support of mathematics education programs that are high-quality and effective; 4. Increase the mathematics achievement of all middle school students in partnership schools and reduce discrepancies of disaggregated mathematics achievement data within these schools.

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INSTITUTE: Cohort II		
42. Institute for Advanced Study/Park City Mathematics Institute (PD3) http://www.mathforum.org/pcmi/msp	mathematics (6-12)	1. Provide a national model program for mathematics-based career-long professional development for middle and secondary mathematics teachers; 2. Effect systemic improvement of secondary mathematics teaching and learning in three school districts through a transfer mechanism designed with district principals, math specialists and teachers themselves; 3. Form a national cadre of "teacher-professionals," whose role is to partner with university and school district personnel in preparing teacher-leaders in mathematics, pedagogy and resource-building, to conduct content-based professional development for their fellow secondary teachers; 4. Expand the PCMI National Network of Professional Development and Outreach groups; and 5. Adapt the professional development model to the needs of local school districts where PCMI Professional Development and Outreach groups now exist or will be established, and implement the transfer mechanism to allow PDO teacher-leaders to reach all secondary mathematics teachers in their districts.
INSTITUTE: Cohort III		
43. The Rice University Mathematics Leadership Institute http://nsfmli.rice.edu/	mathematics (9-12)	1. Develop a cadre of 80 lead teachers in mathematics (two per high school in each of the school districts) with experience and expertise in providing content and pedagogical support to their mathematics departments. Lead teachers will serve as the intellectual leaders in mathematics and mathematics advocates on their campuses. They will act as change agents responsible for catalyzing reform in mathematics instruction at their schools; 2. Establish a leadership program at individual campuses that will provide mathematics content and pedagogical support for the entire mathematics department at that campus; 3. Develop entire campus mathematics departments as cadres of highly qualified mathematics teachers who have the content and pedagogical knowledge to engage all students in rich and challenging learning activities; 4. Ensure that all high school students have access to, are prepared for, and encouraged to participate in challenging and advanced mathematics courses at their schools; and 5. Impact the instructional practices of CAAM/MATH/STAT faculty, post-docs, and graduate students.
44. NSF Institute: Preparing Virginia's Mathematics Specialist (PVMS) http://www.vamsc.org/	mathematics (K-5)	Ensure a well-prepared mathematics specialist actively engaged in every elementary school in Virginia. 1. Prepare a group of 50 exemplary elementary school teachers to provide intellectual leadership as school-based Mathematics Specialists who combine: a profound understanding of the mathematics studied in the elementary grades; an enthusiasm for mathematics and its applications; the special knowledge needed for effective teaching of mathematics; and the leadership skills needed to serve as inspirations and resources for their peers and the mathematics education profession; and 2. Determine the extent to which a quality institute experience results in transforming the participating teachers from effective classroom teachers to disciplinary leaders who can infuse their schools and the broader profession with a commitment to taking the steps that enable all students to develop a deep understanding of mathematics and a capacity to be successful in advanced mathematics and science courses in subsequent years.
45. Standards Mapped Graduate Education and Mentoring http://brain.math.fau.edu/tiki	mathematics (5-8)	1. Facilitate a district-university partnership that raises the level of middle grade math and science achievement, teacher professional development, and involvement by university faculty. Provides the groundwork for subsequent extensions of the partnership to other grade levels, disciplines, and school districts; 2. Empower teachers to be fully cognizant of the framework of the standards and their impact on their day to day teaching; 3. Generate a network of teachers which can sustain and propagate this knowledge in all middle schools of the Broward County School District; 4. Enrich teachers with mathematics, pedagogy and technology integration specifically connected to the framework of standards that they must teach, so that their classroom becomes a rich and productive learning environment; 5. Empower teachers with new learning strategies derived from creativity and discovery strategies; and 6. Create a hierarchical community of teacher leaders and mentors that includes more than 50% of all middle grade math teachers. Over 20% will receive advanced graduate credit.

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46. University of Pennsylvania Science Teachers Institute http://www.sas.upenn.edu/PennSTI/	science (5-12)	1. Improve the academic science content preparation of the current grade 5-12 science teacher workforce in the Philadelphia School District in particular and the mid-Atlantic region in general; 2. Improve the knowledge base of the current grade 5-12 science teacher workforce in using instructional strategies, practices and materials consistent with a research-based approach to teaching and learning; 3. Improve the 5-12 student science achievement in the classrooms of participating teachers and through their leadership activities in the classrooms of colleague teachers as well; 4. Increase the number of 5-12 students who continue to pursue course work and/or are able to seek employment in the sciences and science related fields; 5. Develop and continue to nurture science educators who are catalytic at the department, building, and district level; 6. Provide technology, print, audio-visual, and laboratory resources for use in the teaching and learning of teacher-participants in their Penn STI courses and on-loan in their own classrooms; 7. Provide the opportunity for building and district level administrators to study science education research, work with hands-on science materials in a research-based teaching and learning environment and to work with other administrators on the leadership issues associated with improving math and science education in their schools; 8. Adopt the same research-based teaching and learning models into the teaching of the sciences and mathematics at the university level; and 9. Make the Penn STI's accessible to all qualified teachers through the necessary infrastructure for stipends, scholarships, appropriate course scheduling, and other logistics with might otherwise deter potential applicants.
47. The Fulcrum Institute for Education in Science http://fulcrum.tufts.edu	science (K-8)	1. Develop a multi-year science leadership institute for K-8 educators (The Fulcrum Institute); 2. Engage 130 teachers of science in a long-term learning process (over 400 hours) through face-to-face and online learning communities; 3. Produce leaders in the classroom, school, and profession; 4. Involve the scientists from Tufts University, TERC, and from the External Advisory Board in doing what they do best: providing (a) insight into the science for the developers of the institute and online courses (b) vivid (videotaped) examples of how scientists reason about, discuss, and do science, and (c) expertise that institute participants can learn from during the online courses and face-to-face workshops; 5. Develop online technologies that: (a) immensely ease professional communication among practitioners, (b) encourage educators to think about science as something that takes place throughout the day, including outside of the classrooms they teach, and (c) to provide models of effective standards-based science learning in diverse classrooms; 6. Dramatically restructure the university-school district relations with regard to the supervision and induction of preservice teachers; 7. Transform the institute into a CAGS (Certificate of Advanced Graduate Studies degree) for teachers holding Masters degrees; 8. Develop the institute (both online and face-to-face components) in such a way that it can be adopted by other universities; and 9. Track a wide range of measures related to the impact of the present project on teachers, their students and schools, and university faculty; promote the teachers' own research in their schools about student reasoning in science, and investigate the scientific reasoning of students, teachers, and scientists on the tasks integral to the institute.

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48. Math in the Middle Institute Partnership (M^2) http://www.math.unl.edu/~jump/ Center1/M2.html	mathematics (5-8)	Improve student achievement in mathematics and to significantly reduce achievement gaps in the mathematical performance of diverse student populations. 1. Enrich participating teachers' mathematical knowledge; 2. Assist teachers in transferring mathematical knowledge learned in M2 courses into the middle level mathematics courses taught by M2 lead teachers and the teachers in their learning team; 3. Develop participants' ability to teach diverse groups of students with different learning styles; 4. Develop teachers' ability to engage in action research with colleagues as they strive to increase the mathematical learning in their own schools; 5. Facilitate ways to embed mathematics into other curricula, especially in the sciences; 6. Create communities of professionals (linking mathematics teachers to each other and to university mathematicians and mathematics educators) who communicate regularly with one another; and 7. Develop intellectual leaders who mentor their colleagues' efforts to strengthen mathematics courses and curricula.
49. Oregon Mathematics Leadership Institute Partnership http://omli.org/	mathematics (K-12)	Establish collaborative professional learning communities that engage in an ongoing cycle of reflection, dialogue, inquiry, and instructional action centered on meaningful data about students' mathematics learning needs. 1. Increase mathematics achievement of all students in core partner schools; 2. Close achievement gaps for underrepresented groups of students; and 3. Provide challenging mathematics coursework that support state and national standards through coherent evidence-based programs.
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort I 50. ***Deleted for Reconciliation*** Bridging Research and Practice in the MSPs: Technical Assistance for Use of Research and Data-Based Decision Making	Not Active	
51. Building Evaluation Capacity of STEM Projects http://www.usu.edu/cbec	n.a.	Develop state-of-the-art evaluation models that are context-sensitive. 1. Establish collaborations that develop and test more sophisticated evaluation models (working through evaluation associations to obtain input from a wide array of evaluation experts); and 2. Work with directors and other stakeholders of STEM projects to implement and iteratively refine these models. *Objectives:* *a. Advance evaluation theory to yield models more useful in evaluating STEM and related projects;* *b. Improve evaluations of STEM projects; and* *c. Develop improved evaluation capacity in the United States.*

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52. **Deleted for Reconciliation** STEM-HELP (Higher Education Liaison Project)	Not Active	
53. Adding Value to the Partnerships Evaluations http://www.addingvalue.org	n.a.	1. Increase the knowledge of MSP evaluators about design, indicators, and conditions needed to successfully measure change in student learning over time; 2. Develop useful tools and designs for evaluators to attribute outcomes to MSP activities; and 3. Apply techniques for analyzing the relationship between student achievement and MSP project activities to evaluate the success of MSP projects.
54. **Deleted for Reconciliation** Incorporating High Quality Interventions into a Broader Strategy for Sustained Mathematics/Science Education Reform	Not Active	
55. **Deleted for Reconciliation** MSP-Network: A Technical Assistance Design Project	Not Active	
56. Longitudinal Design to Measure Effects of MSP Professional Development in Improving Quality of Instruction in Mathematics and Science Education http://www.ccsso.org/projects/ surveys_of_enacted_curriculu m/index.cfm	n.a.	1. Determine whether PD activities supported by MSP programs are consistent with research-based definitions of quality PD; 2. Determine the effects of PD on mathematics/science instructional practices and content; and 3. Determine how MSP programs use study findings to improve PD effectiveness.
57. **Deleted for Reconciliation** MSP Assessments	Not Active	
58. Facilitating Mathematics/Science Partnerships (See Awardee No. 59) http://www7.nationalacademies .org/msp	n.a.	1. Conduct workshops to assist the Mathematics/Science Partnership awardees, future applicants, and the NSF and Department of Education staffs in improving K-16 STEM education programs; 2. Design the workshops to address critical areas for improving the effectiveness of MSP projects; 3. Focus the content of these workshops on recent and future reports published by the National Academies that are directly relevant to the work being conducted by the leaders of the MSP projects; and 4. Provide the attendees the opportunity to gain a deeper understanding of research and issues contained in these reports, examine emerging best practices representing effective, evidence-based applications of the research to K-16 mathematics and science education programs, and apply these findings to their overall project designs and implementation work.
59. Building from the Research: Envisioning Quality Science Assessments (See Awardee No. 58) No External Website	n.a.	Convene a committee with the following goals: 1. Provide guidance and make recommendations that will be useful to states in designing and developing quality science assessments to meet the 2007-2008 NCLB implementation requirement; 2. Foster communication and collaboration between the NRC committee and key stakeholders in the states and in schools so that the guidance provided by the NRC committee's report is responsive and can be practically implemented; and 3. Result in a consensus report that provides guidance to states about criteria to use in the development of new science assessments.

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60. Alternative Approaches to Evaluating STEM Education Partnerships: A Review of Evaluation Methods and Application of an Inter-organizational Model http://www.prism.gatech.edu/~gk18/STEM	n.a.	1. Review how partnership performance is evaluated in the STEM educational community and also in a variety of other settings drawn from other policy contexts, industry, and not-for-profits; and 2. Develop and test a model exploring how degrees of embeddedness among partners influence the process by which STEM educational outcomes are pursued and achieved.
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort II		
61. Redesign of the AP Biology Course, Examination, and Teacher Professional Development Experience No External Website	science (9-12)	Dramatically improve the quality of learning and teaching in Advanced Placement (AP) science courses. 1. Collect, analyze, and synthesize information from a wide range of sources (input from scientists and educators, recent reports and studies on effective science instruction, etc.) on the most promising, effective, and up-to-date courses, teaching strategies, and inquiry-based approaches to learning in undergraduate introductory-level biology courses; 2. Plan a redesign of the AP Biology course, examination and teacher professional development that reflects the knowledge and resources acquired from this process; 3. Identify promising strategies and approaches to increase access and success in AP Biology among underrepresented students, particularly in urban and rural schools; and 4. Design a program for field-testing the new course, exam and professional development offerings after the completion of this initial phase of work.
62. Assessing Teacher Learning About Science Teaching No External Website	n.a.	1. Create and disseminate instruments that assess teacher opportunities to learn, and that measure changes in teacher science content knowledge, teacher pedagogical content knowledge, classroom practice, and student achievement; and 2. Develop and disseminate a process for creating these measures that can be used by others. By refining, carefully documenting, and disseminating the processes used to create the tools, ATLAST will enable the creation of tools for any science content area.
63. TERC MSPnet: An Electronic Community of Practice Facilitating Communication and Collaboration http://mspnet.mspnet.org/	n.a.	1. Expand MSP projects access to, and ability to share, resources, emerging research, tools, best practices, obstacles, and strategies; 2. Strengthen geographically dispersed partnerships by enhancing and sustaining dialogue through innovative collaborative tools, events, and structures; 3. Create a growing archive, for both researchers and practitioners, of the lessons and accomplishments of the MSP program; 4. Enhance the public's access to, and knowledge of, the MSP program; and 5. Conduct research on the impact of on-line formats, functionalities, and structures to enhance large-scale educational reform efforts.
64. Online Technologies to Enhance MSP Teacher Quality Programs (See Awardee No. 66) http://www.edc.org/cope_mspreta	mathematics and science (K-12)	1. Develop resources to inform the MSPs about approaches to online professional development, online enhancements for site-based professional development, and online tools and techniques to support professional learning communities; 2. Provide consultation services for a set of MSP projects that decide to use online technologies in their teaching enhancement programs; 3. Offer a capacity-building program that will enable MSPs to develop the capacity to incorporate effective online professional development within their projects; 4. Collaborate with the evaluators of the MSPs that use online technologies to inform future practices of those projects, other MSPs, and the field of professional development in general; and 5. Assess the use and potential use of online supports for improving teacher quality across the MSP projects, to inform a possible follow-up proposal to expand technical assistance, evaluation, and research in this area, within the MSP Learning Network.

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
65. MSP Motivation Assessment Program (See Awardee No. 67) http://www.mspmap.org	n.a.	1. Develop and make available reliable, valid, and practical tools to assess a variety of motivation-related student outcomes in math and science; 2. Increase MSP and teacher understanding of how motivation-related outcomes contribute to student achievement in math and science; and 3. Assist teachers and MSPs by providing information about how these outcomes may vary depending on students' gender, age, ethnicity, or economic circumstances.
66. Leadership Content Knowledge and Mathematics Instructional Quality in the MSPs: A Study of Elementary and Middle School Principals (See Awardee No. 64) http://www2.edc.org/CDT/cdt/cdttmi.html	mathematics (K-8)	Investigate the nature of elementary and middle school principals' Leadership Content Knowledge (LCK) and contribute to participating MSP's efforts to support elementary and middle school principals in doing classroom observation and teacher supervision. 1. Examine the characteristics and level of LCK that principals in the MSPs have, how LCK can be developed and improved, and how it affects principals' classroom observations, judgments about the quality of instruction, and interactions with teachers regarding mathematics instruction; and 2. Study empirical linkages between leadership practices, instruction, and students' mathematics learning.
67. Design, Validation, and Dissemination of Measures of Content Knowledge for Teaching Mathematics (See Awardee No. 65) http://www.soe.umich.edu/lmt	mathematics (K-8)	1. Review prior work on the definition and measurement of content knowledge for teaching; and 2. Outline the design for measures development and dissemination, providing information both on progress to date and the proposed plan for work with MSP-RETA funds. *Specifically:* *a. Expand existing measures upward to capture middle grade mathematics content for teaching, and developing new measures in key content areas;* *b. Validate these measures through interviews with teachers, reviews by mathematicians and mathematics educators, and other means;* *c. Support high-quality uses of these measures via tools (database, core scales) and technical assistance to MSP evaluators;* *d. Build a self-sustaining system of measures use; and* *e. Build and test theory through piloting and validation work.*
68. Developing Distributed Leadership: Understanding the Role Boundary Tools in Developing and Sustaining Leadership for Learning Networks http://www.distributedleadership.org	n.a.	Develop a research and design program focused on leadership as a distributed practice in MSPs. 1. Develop a research proposal to investigate those distributed leadership practices that enable knowledge creation and innovation in MSPs and provide empirical evidence about how these practices effect changes in the practices of school districts and other institutions for improving mathematics and science learning; and 2. Craft a program of design work based on a review of the literature on the role of tools on developing and maintaining partnerships.
69. Research on MSP Teacher Recruitment, Induction, Retention No External Website	n.a.	1. Study the teacher recruitment and/or induction activities of 10 MSPs from among 2-3 MSP Cohorts; and 2. Carry out an in-depth case study on the MSP by the National Science Teachers Association and partners.

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
70. Causal Inference in Instructional Workforce Research http://www.msu.edu/user/mkennedy /TQQT	n.a.	Using an existing database of approximately 550 studies designed to examine the relationship between one or more teacher qualification an one or more indicators of teachers effectiveness, examine and catalogue the variations in design and methods of studies on teacher qualifications, identify threats to causal inference that are associated with particular design variations, and empirically estimate the severity of these threats to the intended causal inference. 1. Develop a taxonomy of design variations and confounds; 2. Determine the relevance of study variations on effect estimates; and 3. Create a database of studies (a web-based index of studies).
71. The Effect of STEM Faculty Engagement in MSP: A Longitudinal Perspective No External Website	n.a.	Examine the effects of STEM faculty engagement in the Math Science Partnership (MSP) program. 1. Conduct a 4-year, longitudinal study of MSP's Cohort 2 projects using a comprehensive mixed-method approach involving both quantitative and qualitative analyses of teacher outcomes and student achievement over time relative to project strategies and activities.
RESEARCH, EVALUATION, AND TECHNICAL ASSISTANCE: Cohort III		
72. Mathematician Study Group of State Standards in Mathematics No External Website	mathematics (K-12)	Analyze the progress of the 50 states toward standards-based curricula in mathematics from the perspective of professional mathematicians. 1. Create a locus of expertise within the mathematics research community on the nature and structure of state standards; 2. Provide comparative analyses of the treatment of some of the basic topics; 3. Explore suggestions for reconciliation of the more conceptual/process based standards with the more procedural/performance based standards; and 4. Highlight key understandings that underlie some of the performance standards.
73. MOSART: Misconception Oriented Standards-based Assessment Resource for Teachers No External Website	science (K-12)	1. Develop a test item database that combines the rich research literature on children's ideas with the standards of the National Research Council and the American Association for the Advancement of Science; 2. Assemble items into reliable and valid tests of science content for earth and space science and physical science at K-12 levels; 3. Apply tests as a diagnostic instrument to measure teachers' subject matter knowledge at the K-4, 5-8, and 9-12 levels in specific domains; 4. Determine the relationship between the accuracy of science teachers' beliefs about students' prior knowledge and instructional gains; 5. Conduct a comparison study of the relationship between student gains and the level of teacher knowledge prior to and following teacher institutes; 6. Develop a web site video for dissemination and support of developed tests, including video illustrating alternative and scientific conceptions (from 800 hours of archival footage); and 7. Establishment of a fee-for-service program to provide evaluation of MSP Professional Development Institutes.

AWARD TYPE/COHORT/ TITLE/WEBSITE	TARGETED SUBJECT(S) (Grades)	MSPs' PROJECT GOALS AND OBJECTIVES AS STATED IN AWARDEE DOCUMENTS
74. Distributed Leadership for Middle School Mathematics Education: Content Area Leadership Expertise in Practice 　http://dls.sesp.northwestern.edu	mathematics (6-8)	Generate empirical knowledge about content leadership practice and knowledge as well as about how content leadership develops through formal and informal learning, design a set of tools to assess content leadership knowledge and practice and make these tools available to MSPs and Institute Partnerships. 1. Describe and analyze content leadership practices for middle school mathematics instruction and generate empirical evidence concerning which of these practices enables improvement in mathematics teaching and learning; 2. Describe the dimensions of knowledge for content leadership in mathematics at the middle school level and design, pilot, and validate these instruments for measuring content leadership knowledge; and 3. Generate more robust empirical evidence about whether and how content leadership knowledge can be learned through both formal learning opportunities (e.g., MSPs, Institute Partnerships) and informal on-the job learning.
75. Knowledge Management for the MSPs 　No External Website	mathematics and science (K-12)	Manage MSP-relevant knowledge by attending to knowledge acquisition, knowledge sharing and knowledge utilization, using a three-stage model of knowledge management. 1. Locate existing research relevant to MSP work; 2. Analyze those studies to identify findings based on methodologically sound qualitative and quantitative research, noting the apparent generalizability of these findings; and 3. Share the research results in forms that are accessible to current and future MSP awardees.
76. Florida Science and Mathematics Education Summit 　No External Website	mathematics and science (n.a.)	Bring together key groups in a statewide carefully constructed summit of state political, business, and education leaders. 1. Establish a common understanding of the need for science and mathematics literacy in our workforce, the challenges of today's schools, effective methods of science and mathematics instructions, the nature and dimensions of creating change in mathematics and science instruction, and action plans necessary to achieve them; and 2. Provide a model for state summits and for developing the mutually supportive environments necessary to significantly improve science and mathematics education on a broad scale.
77. Mathematics and Science Partnerships Program Evaluation 　No External Website	n.a.	n.a.

APPENDIX E

Reported NSF-MSP Awardee Activity

APPENDIX E

REPORTED NSF-MSP AWARDEE ACTIVITY

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
COMPREHENSIVE: Cohort I 1. North Carolina Partnership for Improving Mathematics and Science (NC-PIMS) University of North Carolina	• Established a statewide policy advisory board and district leadership teams to align policies, improve communication between districts and state agencies, and integrate the project within district reform efforts • Hired full-time facilitators to deliver professional development and provide direct support to teachers • Educated building-level lead teachers (designated elementary teachers and department chairs of middle and high schools) who will become model teachers and provide in-service for peers • Created and delivered professional development courses in science and math • Implemented out-of-school student activities to generate motivation in preK-8 and information sessions for parents to assist them in supporting children's learning	• MSPnet • Annual Reports (5/21/04), (5/18/05)
2. New Jersey Math Science Partnership (NJ-MSP) Rutgers University	• Adopted and implemented standards based curricula supported by aligned inquiry-centered materials • Supplemented state test with embedded alternative assessments that check for high levels of understanding of math and science • Designed and conducted professional development for teacher leaders • Built knowledge and support of top district administrators • Provided well-designed, continuing professional development for teachers to strengthen understanding of content and implement practices based on curriculum materials aligned with state and national standards • Adopted high-quality programs aligned with state early childhood math/science expectations • Involved parents and community leaders in all aspects of math and science improvement activities • Recruited potential teachers through high school, college, and community-based mentoring programs, with particular attention to minorities	• Annual Reports (6/07/04), (6/23/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
3. Appalachian Mathematics and Science Partnership (AMSP) University of Kentucky	• Designed and developed or revise pre-service teacher education model courses in math and science, including the ongoing development of online courses; and corresponding in-service summer institutes • Established a project-wide distance-learning development team in math and collaborated to develop graduate courses in this format • Developed peer-supported collaborative learning program for high school students • Established positions for tenured professors in math and science outreach • Developed a communication and partnership network connecting school and district personnel, IHE faculty, and support organizations • Developed leadership at all levels through principal/counselor training, leadership interns, and parent/community engagement • Developed comprehensive plan to collect data that will inform the project's continuous development, identified needed adjustments, and provided basis for conclusions of success and quality of activities and the program	• Annual Reports (6/17/04), (5/31/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
4. El Paso Math and Science Partnership (El Paso) University of Texas El Paso	• Enrolled teachers in the Master of Arts in Teaching Mathematics and the Master of Arts in Teaching Science to improve the quantity, quality, and diversity of the teacher work force • Implemented professional development plan that resulted in greater buy-in by math/science teachers of project's goals and improved math/science teaching and learning in classrooms across the region • Improved the capacity of math and science staff developers and high school teachers to implement the new math curriculum frameworks and modules thus deepening student conceptual understanding by addressing higher levels of cognitive demands, in addition to contributing to the alignment of math and science program, preK-16 • Developed math and science content leadership among school leaders through professional development workshops and seminars, as well as through the implementation of classroom observation protocol and built capacity to utilize student achievement data • Utilized the expertise of local STEM faculty in providing professional development, holding workshops, and developing math/science curriculum frameworks • Strengthened capacity for STEM faculty and K-12 teachers to conduct research in a variety of areas • Engaged parents and community members to support math and science education through hands-on training sessions, workshops and presentations (for parents), and through discussions with K-12 leaders, publications, and participation in local education forums (for community members)	• Annual Reports (5/24/04), (6/17/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
5. Faculty Outreach Collaborations Uniting Scientists, Students and Schools (FOCUS) University of California-Irvine	• Created teacher leader cadre of secondary and elementary, math and science teachers • Utilized teacher leader cadre to promote ongoing professional development, math/science content knowledge and pedagogical skills, and provide necessary tools for a collaborative site action plan • Recruited and supported future teachers along the educational continuum, from K-12 to university level and into credential programs through activities such as the development and sustaining of a variety of undergraduate courses aimed at not only preparing, but attracting future teachers • Provided Faculty Outreach Collaboration (FOC) programs (meetings, Web sites, publications, workshops etc.) to improve student achievement in math and science • Engaged PreK and K educators to collaborate with others and model practices, which integrate science, math, and literacy, improving student learning for young children in school settings and at home • Developd discipline dialogues system to address issues and gather stakeholders from all focal areas of the project (administrative concerns; teacher recruitment, preparation, and retention; disciplines of math and sciences) • Developed math and science standards-based curriculum/pacing guides and provided professional development based on these guides	• Annual Reports (6/23/04), (8/04/05)
MSP-PE Award No. 6 is located in COMPREHENSIVE: Cohort II		

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
7. System-Wide Change for All Learners and Educators (SCALE) University of Wisconsin-Madison	• Produced a concept paper outlining criteria for all of the components of math and science teaching programs that each district will address and proposed timeline for adoption of policies for each of above components • Established policy outlining enhanced middle school math program for each district • Hosted multiple professional development events where teachers, coaches, and others came together to discuss high-quality math and science instruction • Outlined plans and rollout schedule for recruiting and training math and science instructional coaches and lead teachers • Conducted reform pre-service and in-service STEM teacher education for teachers in the partner districts • Created mentoring and guidance experiences for middle and high school students, especially women and minorities • Created state-of-the-art science, technology, engineering and math immersion projects and held meetings to establish immersion unit inquiry-based curriculum development • Developed rubrics designed to assess and measure school leadership, teaching quality, and professional learning	• Annual Reports (8/11/04), (6/30/05) • MSPnet
COMPREHENSIVE: Cohort II 6. University of Maryland-Baltimore County—Baltimore County Public Schools STEM Project (UMBC-BCPS) University of Maryland-Baltimore County (UMBC)	• Developed and provided professional development modules in math, science, technology, and performance-based instruction • Trained principals and other stakeholders on the systemic nature of the SUPER STEM initiative • Integrated the SUPER STEM instructional and assessment methods into the existing lesson plan • Supported ongoing development of math and science curricula and assessments aligned to state standards • Participated in ongoing systemic coordination of professional development efforts and established professional development sites and communication channels • Utilized BCPS math and science coordinators and supervisors as in-service faculty and module developers • Utilized new computer labs and technology in teacher and administrator SUPER STEM training	• Annual Report (8/16/04)
MSP-PE Award No. 7 is located in COMPREHENSIVE: Cohort I		

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
8. Puerto Rico Math and Science Partnership University of Puerto Rico	• Formed regional cadres of human resources at core partner universities to develop and implement the school support and professional development program, including future teachers as assistants • Funded and held summer camps for students (grades 6-12) • Conducted summer professional development workshops for math and science teachers • Developed programs to ensure that all math and science teachers (grades 7-12) are certified • Created and promoted a research agenda to strengthen math and science knowledge base, including a program that allows future teachers to participate in scientific research • Established communities of learning to strengthen and sustain partnership • Established communication between principals and lead teachers through the provision of technology kits • Developed several working documents to guide the project's work and support the improvement of professional development programs	• Annual Reports (10/13/04), (5/15/05)
9. Promoting Rigorous Outcomes in Mathematics/Science Education (PROM/SE) Michigan State University	• Analyzed math and science standards in partnering states to support teachers in efforts to align local curriculum and instruction • Designed curriculum and professional development activities for Mathematics Associates, including a virtual PD Network • Drafted teacher knowledge standards for MSU • Participated in policy discussions on revising/developing challenging state standards, sharing the project's philosophy and research with the policy makers • Assembled database of curriculum-sensitive baseline data on students, teachers, and districts that provides useful information to participating schools and districts, policy makers, and teachers, as well as informs the development of professional development activities • Proposed various math/science education degrees and programs at MSU as well as revised existing programs	• Annual Reports (6/01/04), (5/04/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
10. Milwaukee Mathematics Partnerships: Sharing in Leadership for Student Success University of Wisconsin-Milwaukee	• Established challenging math by ensuring curriculum alignment with the state standards and ensuring readiness for college expectations • Instituted a math teacher leadership role and developed principal leadership in math at each school and built a diverse cadre of math teacher leaders across the district • Focused math work at school sites through Math Action Plans where learning teams work together to develop a vision to improve the teaching and learning of math at their schools • Established strong and diverse teacher preparation programs - recruitment, preparation, induction - in teaching challenging math for prospective teaching candidates of MPS • Established a math course sequence at UWM to be shared with IHE Network that strengthens math content achievement for prospective teachers • Developed and promoted professional development opportunities in math content-related pedagogy for continued professional growth of all teachers • Trained teachers for math leadership and supported the ongoing professional development of teachers in providing leadership for the math programs in their schools • Improved student achievement through collaboration with tutors and parent support groups • Restructured high school math courses for successful transitioning to college • Redesigned supports to meet the needs and be inclusive of the diversity of pre-service teachers in math classes and colleges and universities	• Annual Reports (8/09/04), (5/11/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
11. Math and Science Partnership of Southwest Pennsylvania Allegheny Intermediate Unit	• Implemented activities for intensive teacher leader professional development • Developed and presented professional development curricula with IHE faculty • Developed and disseminated math and science curriculum framework for K-16 educators • Built on-line presence to support and sustain sharing of effective strategies • Recruited and oriented teacher fellows to bring together K-12 teachers and IHE faculty to share expertise • Gathered and analyzed student achievement data • Implemented management strategy and engaged in strategic planning • Convened teachers through Educator Networks meetings to discuss strategies to implement challenging curricula • Developed and revised parent handbooks in elementary and middle math and science to help parents better understand new curriculum and teacher methods	• Annual Reports (7/21/04), (6/28/05)
12. Partnership for Reform in Science and Mathematics (PRISM) University System of Georgia	• Drafted, reviewed, and revised math and science curriculum for P-12 students • Developed a public awareness campaign of the need for all P-12 students to have access to and be prepared for and succeed in challenging courses and curricula in science and mathematics • Provided academic concentration in science and math for current P-8 teachers through two new USG faculty consortia (math and science) • Created and delivered professional development for P-12 teachers • Established professional learning community to engage higher education and P-12 faculty • Established Institute on the Teaching and Learning of science and math to change how math and science are taught to future teachers • Initiated new policies to provide incentives and improve working conditions for teaching science and math in P-12 schools • Recruited science and math teachers through summer institutes and promoting dual degrees in colleges	• Annual Reports (8/28/04), (5/12/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
TARGETED: Cohort I 13. Mathematical ACTS University of California-Riverside	• Gathered and analyzed student-level data for use in increasing student achievement data • Recruited undergraduates for placement into classrooms through Community Teaching Fellowship Program and provided them with support through seminars and meetings • Developed the framework for a pilot Teacher Leadership Cadre • Created a database from the course transcripts of individual students to examine trends in course taking patterns and related areas of achievement • Recruited and expanded availability of community accessible events • Provided professional development for teachers through programs focusing on a laboratory school component at the middle school level and mathematics and science connections offered both during the school year and over the summer • Developed a pilot student questionnaire to measure students' motivations and perceptions of classroom practices • Involved IHE faculty in the creation of curricula and materials and in the analysis and interpretation of data	• Annual Reports (11/19/04), (11/20/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
14. Stark County Math and Science Partnership Stark County Educational Service Center	• Implemented teacher coach and college coach/professor training and program • Implemented district action and intervention plans, which were developed by teacher coaches in conjunction with district curriculum directors, math and science specialists, and college coaches • Designed and implemented a collaborative plan to increase minority math and science teaching candidates • Implemented academic and summer workshops for secondary math and science teachers • Opened professional development center to provide opportunity for districts to borrow technology and space to display standards-based math and science programs • Implemented internship programs for teachers to work at companies doing real-world work • Planned/implemented family math/science nights • Developed and implemented a plan to involve guidance counselors to encourage students to take challenging courses • Implemented lead teacher program in math for each middle and high school and encouraged formation of study group • Trained teacher coaches for licensure to support new teachers • Developed and implemented a Masters Degree program designed to enhance teacher content knowledge in math and science	• Annual Reports (7/01/04), (6/24/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
15. Teachers and Scientists Collaborating (TASC) Duke University	• Supplied and refurbished NSF-supported curriculum units matched to the NC Standard Course of Study and matched to needs of science classrooms • Trained teachers in use of selected curriculum units, in inquiry-based teaching and in use of scientist support • Prepared teacher leaders (trainers) who can train and coach their peers in the use of the curriculum units • Established a cadre of scientists well-trained in supporting teachers both in general and with regard to use of specific curriculum units • Connected supporting scientists and teachers electronically and in person • Evaluated teacher and student performance/attitudes • Established a teacher training and curriculum unit supply institution, integrating IHEs, the science community, parents, community organizations, funders, and K-8 schools	• Annual Reports (10/08/04), (7/06/05)
16. Vermont Mathematics Partnership (VMP) Vermont Institute of Science, Mathematics, and Technology	• Planned and conducted professional development course for middle level teachers • Assessed teacher content knowledge • Developed content-rich graduate courses for teacher leaders • Established upcoming year work plans with partner schools • Provided training, networking, and support opportunities for teacher leaders • Designed and led content-rich professional development • Designed and carried out collaborative research studies with teachers and students, focusing on the impact of using formative assessment as the basis for planning instruction and designing interventions	• Annual Reports (6/30/04), (6/29/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
17. Cleveland Math and Science Partnership Cleveland Municipal School District	• Planned, developed, and implemented a graduate program for a Masters Degree with a specialization in math or science for the middle grades teachers • Implemented a middle grades mentoring initiative in math and science • Planned, developed, and implemented new graduate courses for a three-year program for high school teachers • Established a faculty-in-residence program wherein university faculty spend time in a high school offering support in the preparation of materials, lectures, in-class demonstrations, or laboratory exercises • Developed a successful partnership, through collaboration with university faculty, Education Development Center, and CMSD; that adds value to teaching and learning math and science in grades 6-12 • Developed new graduate courses for math and science middle school teachers and adapted these courses for pre-service teachers of math and science	• Annual Reports (8/06/04), (7/15/05)
18. Alliance for Improvement of Mathematics Skills PreK-16 (AIMS) Texas Engineering Experiment Station/Del Mar College	• Developed staff and management team • Developed plan for IHE math faculty to participate in institutes and vertical alignment teams • Developed online survey to measure effectiveness of professional learning and use of technology • Utilized classroom observation instruments in ascertaining growth in teacher content knowledge and observing changes in teaching strategies • Provided math professional development opportunities for teachers, faculty, counselors, and administrators on topics such as technology, curriculum, mentoring, and math content	• Annual Reports (10/07/04), (7/13/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
19. St. Louis Inner Ring Cooperative: Intervention Case Studies in K-12 Math and Science (SIRC) Washington University	• Enhanced capacity to provide a challenging math and science curriculum for every student, particularly grades 4-8 • Developed program to support teachers from pre-service education through the induction years of teaching • Developed a progression of professional development for teachers of grades 4-8 that impacts student achievement through in-class support, materials support, and classes • Designed and implemented science clubs for elementary and middle school students, usually involving parents as well, to help build enthusiasm for science through hands-on, inquiry-based activities • Designed and implemented the Ascend Program for high school students, providing academic and life skills sessions, as well as placement in internships • Funded mini-grants to participating districts to encourage the development of creative solutions to closing the achievement gap	• Annual Reports (8/02/04), (6/30/05)
20. Texas Middle and Secondary Mathematics Project (TX-Math) Stephen F. Austin State University	• Assessed teacher content knowledge • Developed curricula (syllabi) for graduate major in school math at the middle or secondary level that are aligned with MET, NCTM, and MMT standards • Collected feedback from partner district administrators and counselors regarding needs for professional development activities and implemented these professional development activities at meetings held semi-annually • Developed curriculum for and convened summer institutes for teachers of grades 4-8, as well as for math camps for middle school students • Provided professional development activities for university math faculty • Drafted/presented several publications of the award	• Annual Reports (7/01/04), (7/01/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
21. E-Mentoring for Student Success (eMSS) National Science Teachers Association	• Recruited mentors/mentees and trained mentors for workshops and summer institutes • Convene meetings to present research related to mentoring and induction for beginning teachers, and to develop a conceptual framework for standards for mentoring beginning science teachers • Created WebCT (web-based conferencing site with resources, content, and discussion areas) and oriented users, provided workshops, and analyzed online interactions to ensure project objectives are being met • Completed and submitted research papers on awardee activities • Created and distributed a CD providing an item by item link between the curriculum used in districts and state standards • Assessed content knowledge of teachers and will provide content training sessions based on these results	• MSPnet • Annual Report (7/18/05)
22. Learning to Teach, Teaching to Learn Oakland Unified School District	Never Funded	
23. Indiana University- Indiana Mathematics Initiative Partnership (IMI) Indiana University	• Conducted district coordinator meetings to review, revise, and implement the project action plan • Convened workshops for teachers on elementary and middle math curricula • Convened follow-up workshops to develop the content and pedagogical knowledge • Developed project Web site to provide ongoing professional development and support for teachers • Held district-wide meetings and parent nights • Designed, tested, and implemented courses, which link math content and pedagogy for pre-service secondary math teachers • Held administrator awareness sessions designed to inform building administrators with concepts relevant to supporting the implementation of an NSF-endorsed mathematics curriculum	• Annual Reports (6/30/04), (7/22/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
24. Vertically Integrated Partnerships K-16 (VIP) University System of Maryland	• Conducted science cohort conferences (was "biology" but they do other sciences as well) • Conducted curriculum guide planning sessions and workshops • Promoted student enrollment in advanced science courses through guidance counselors • Conducted training sessions and provided practitioner research opportunities for teachers • Implemented curriculum guides and assessments into instruction • Conducted professional development summer institutes and monthly working seminars • Created field experience course for potential secondary teachers, inquiry-oriented courses, and graduate course on university teacher for STEM graduate students • Provided undergraduates with internships with high school science teachers	• Annual Reports (8/10/04), (7/13/05)
25. PRIME: Promoting Reflective Inquiry in Mathematics Education Black Hills Special Services Cooperative	• Offered professional development sessions and graduate courses for classroom teachers, K-12 • Began explicit training in Cognitively Guided Instruction (CGI), which has been shown to help reduce achievement gaps associated with ethnicity • Gathered, disaggregated, and analyzed K-12 student achievement data and course tracking patterns • Launched new student assessment project • Developed and presented a K-12 math specialist certification program concept • Recruited and trained secondary math coaches to provide building-based support at the secondary level • Categorized and made available a repository of inquiry-oriented activities	• Annual Reports (6/29/04), (6/28/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
26. Deepening Everyone's Mathematics Content Knowledge: Mathematicians, Teachers, Parents, Students, and Community University of Rochester	• Designed and implemented "reform math courses" that engage adult learners to inform the curricula of the K-12 partners • Developed teacher leaders within each district in order to build internal leadership capacity who participated in a number of professional development seminars and institutes, and also provided professional development to their district communities • Provided an on-going forum for mathematicians, teachers, parents, and community members to engage in conversations about issues in school mathematics reform • Gathered and analyzed student achievement and course enrollment data in an effort to target and begin to reduce achievement gaps • Worked with district administrators to deepen their mathematics content knowledge, help them understand math reform, and help them become advocates for reform	• Annual Reports (8/27/04), (7/14/05)
27. SUNY-Brockport College and Rochester City (SCOLLARCITY) Math and Science Partnership: Integrative Technology Tools for Preservice and Inservice Teacher Education SUNY College at Brockport	• Presented results of Computational Math Science Technology (CMST) to the Congressional Science Committee • Institutionalized summer training sessions as graduate level courses • Trained middle and high school students in CMST • Offered teachers a Texas Instruments certification training • IHE faculty integrated CMST tools into more than 20 college courses • Published journal papers on CMST pedagogy • Continued a mentoring program at partner school districts to offer professional development to teachers • Launched the first computational science undergraduate degree in the country, and developed BS, MS, and combined BS/MS degrees in the field • Provided internships and scholarship opportunities to university students to participate in research activities • Held summer workshops for teachers and distributed technology such as laptops and graphic calculators	• Annual Reports (10/07/04), (10/17/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
28. Revitalizing Algebra (REAL) San Francisco State University	• Designed lessons/curriculum such as a course for new graduate teaching associates focused on teaching and learning algebra • Implemented strategies to improve teaching of algebra • Convened seminars for teachers and graduate students becoming teachers • Created new teacher leaders • Encouraged communication and interaction between undergraduate math students interested in teaching as well as with faculty • Collected academic achievement by algebra students data	• Annual Reports (9/29/04), (9/30/05) • Project Website
29. Teachers Assisting Students to Excel in Learning Mathematics (TASEL-M) California State University - Fullerton	• Created management team structure to incorporate all partners and define their roles and responsibilities • Provided students with a standards-based, engaging, challenging, effective, and individualized curriculum • Analyzed and diagnosed students' weaknesses in math through data on student performance • Identified and used challenging and effective curricula to supplement available curricula • Developed and maintained a procedure and schedule for faculty partners to interact with teachers • Provided professional development activities throughout the year • Systematized and organized student achievement data • Designed activities to increase communication among parents, teachers, and administration	• Annual Reports (2/20/04), (1/26/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
TARGETED: Cohort II 30. Focus on Mathematics Boston University	• Conducted coherent, content-based professional development program that includes summer institutes, academic year seminars, colloquia, and online courses • Established study groups in all of the partner middle and high schools with a mathematician visiting for one day of work per month • Enrolled teachers in math institute • Developed and implemented Master's Degree program for mathematics teaching fellows • Researched additional sources of financial support • Set student achievement targets and reviewed curriculum to reach targets • Required student to develop and present a math research project at least once during Grade 8-11 • Increased collaboration in math community through study groups, seminars, and visiting mathematicians • Built communications infrastructure • Wrote articles for publication in journals, magazines, and newspaper	• Annual Reports (6/17/04), (6/02/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
31. Consortium for Achievement in Mathematics and Science (CAMS) Merck Institute of Science Education	• Developed and disseminated consortium-wide curriculum frameworks for math and science that are aligned with state standards • Identified, selected, and implemented standards-based instructional materials for math and science (provided PD to teachers) • Recruited undergraduate math and science majors for teacher preparation program • Recruited career changing scientists, engineers, and mathematicians • Aligned university instruction with New Jersey core curriculum content standards in math and science • Developed criteria for and selected professional development schools and recruited leaders from within • Developed new teacher induction program (including selection of mentors for new teachers) • Held workshops for teachers on content and instruction • Provided in-class support for all teachers through weekly consultations, model lessons, co-teaching, non-evaluative observations, and collaborative review of student work provided by CAMS coaches • Developed and implemented parent/community outreach programs • Developed assessments for 6, 7, and 8 grade science and 6 grade math, and provided professional development to ensure effective use of the assessments • Recruited potential teachers through initiatives aimed at guidance counselors, students, and parents	• Annual Reports (6/01/04), (6/01/05) • MSPnet
32. The Mathematics and Science Partnership of Greater Philadelphia (MSPGP) LaSalle University	• Developed teacher leaders to assist districts in reform process, mentor other teachers, and lead curriculum specific workshops • Promoted teachers' use of challenging and engaging materials appropriate to student development levels • Encouraged secondary teachers to develop collegial relationships with disciplinary IHE faculty • Conducted professional development activities for teachers to increase ability to promote student learning • Collected baseline data enrollment and self-assessments from IHEs • Recruited high school students, math and science majors, and mid-career shifters into teacher preparation programs	• Annual Report (7/20/05) • MSPnet

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
33. The MSTP Project: Mathematics across the MST Curriculum Hofstra University	• Collected and analyzed baseline student achievement data on middle school math • Conducted retreats for middle school teachers to enhance math content and pedagogical understanding • Involved higher education faculty members in workshops for middle school teachers • Recruited under represented minorities entering the MST teaching workforce • Established leadership teams to enhance capacity of partners to engage in project activities • Disseminated models and information via project Web site, newsletters, and meetings • Developed and implemented Parent Leadership Workshops • Conducted curriculum review to analyze math alignment with standards and assessment	• Annual Reports (6/03/04), (6/08/05)
34. The East Alabama Partnership for the Improvement of Mathematics Education (TEAM-Math) Auburn University	• Developed an initial set of curriculum goals for each grade and course • Reviewed textbooks for their alignment with project goals and curriculum objectives • Developed a more detailed curriculum guide with suggested instructional sequences • Offered comprehensive professional development program for partner schools, including summer institutes, content classes, workshops, and seminars • Developed and implemented graduate-level content courses • Collected baseline data from first cohort of schools in project • Developed and disseminated a curriculum guide and revised the document to make it more user friendly, to establish more specific guidelines for its use, to ensure vertical alignment between grades, to develop a more consistent format across grades, and to explore the development of sample quarterly tests • Developed and administered instrumentation measuring teachers' content knowledge • Involved parents and community members through briefings, presentations, and newsletters for parents, as well as through positive media attention and briefings for public relations contacts for the community	• Annual Reports (2/17/05), (8/07/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
35. Partnership for Student Success in Science (PS3) Palo Alto Unified School District	• Offered teacher training to recruit and train a cadre of new teacher trainers • Collected baseline student data • Offered a Lesson Study Institute with a science focus that featured reflection on practice as well as continued follow up sessions	• Annual Reports (7/06/04), (6/02/05)
36. North Cascades and Olympic Science Partnership (NCOSP) Western Washington University	• Assisted schools in setting goals and implementing plans to specifically target student achievement in science • Connected with district and building administrators to receive support of science education reform goals and programs • Convened academies (workshops) providing professional development to improve knowledge, provide support and disseminate acquired knowledge with other teachers • Created a scholarship program to increase quantity, quality, and diversity of science teachers entering the workforce • Piloted school-based student club that would support future teachers • Revised elementary education major at partner IHE • Expanded science tutoring program to further extend its geographic reach • Prepared teacher leaders with skills in coaching and mentoring to support new teachers or student interns • Recruited secondary science education faculty and postdoctoral fellow to bring in expertise to build research agenda and build on faculty's ability to contribute to science education research • Collected data on district science curriculum adoptions and future adoption schedules to monitor progress toward implementing research-based curricula • Supported a group of Teachers on Special Assignment for teachers on a one-year sabbatical of individualized professional development • Assembled a policy advisory board to stay informed of policy matters relevant to the partnership, as well as informing policy agencies of partnership work important to their decisions	• Annual Reports (6/08/04), (6/03/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
TARGETED: Cohort III 37. Boston Science Partnership (BSP) University of Massachusetts-Boston	• Facilitate vertical teaming among teachers • Conduct seminars and training for teachers and graduate students • Recruited high school students to enter science and engineering schools • Develop Master of Science in Science Education program • Held conference on team building for leader teachers	• Annual Report (6/15/05)
38. Math and Science Partnership in New York City (MSPinNYC) City University of New York	• Conduct evaluations of hub schools • Structure and conduct professional development programs for teacher leaders and undergraduate interns • Identify IHE faculty to facilitate professional development programs • Form teacher-researcher teams that meet monthly to plan, conduct, and revise two lessons • Recruit into and modify teacher education programs • Develop mechanisms to ensure that what is learned at the micro level is sustained, scaled up, and institutionalized • Surface research questions to support implementation and practice	• Annual Report (6/22/05)
39. Project Pathways: A Math and Science Partnership Program for Arizona Targeted Project Track Arizona State University	• Developed, piloted, and implemented graduate courses for secondary math and science teachers • Organize fall summit for guidance counselors to provide them with the resources and information that they need to advise students on the benefits of continuing math and science course taking • Develop and pilot platforms for English language learners	• Annual Report (6/16/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
40. Rocky Mountain Middle School Math Science Partnership: 15 Months to Highly Qualified University of Colorado at Denver	• Institutionalized the development, adaptation, and implementation of university course work • Created professional development activities that are grounded in scientifically-based research and tightly linked to quality instructional materials • Supported teachers and their districts in the implementation of challenging, research-based curriculum targeting traditionally under represented groups for outreach and intervention • Analyzed baseline student performance and participation data in math and science • Institutionalized and implemented tool used to inform curriculum revision and reform • Developed and revised courses (some for summer academies) using instruments that tie content knowledge to classroom practice to enable teachers to access their content knowledge in a supportive, effective, and non-confrontational environment • Planned a framework for a certificate program in middle school science and math	• Proposal (12/16/03) • Annual Report (5/31/05)
41. A Greater Birmingham Mathematics Partnership (GBMP) University of Alabama-Birmingham	• Develop and deliver summer courses to increase effectiveness of middle school math teachers • Revise existing and develop new UAB math courses • Proposed middle school math certification route • Recruit minority pre-service teachers • Conduct follow-up sessions and develop support team • Conduct outreach activities to parents, community, and administrators	• Annual Report (6/01/05)
INSTITUTE: Cohort II 42. Institute for Advanced Study/Park City Mathematics Institute (PD3) Institute for Advanced Study	• Designed assessment instruments to provide baseline assessment data • Conducted professional development institutes for middle school and high school math teachers • Implemented video club as an interactive discussion of learning and teaching • Coached and provided individual support to teachers, especially younger ones	• Annual Report (6/21/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
INSTITUTE: Cohort III		
43. The Rice University Mathematics Leadership Institute William Marsh Rice University	• Established roadmap for presenting the program to the district and school leadership and reviewing roles and responsibilities of each partner • Designed and uploaded project specific Web site and plan to set up e-communications system to facilitate support • Develop schedule and curriculum for the first summer leadership institute	• Annual Report (5/27/05)
44. NSF Institute: Preparing Virginia's Mathematics Specialist (PVMS) Virginia Commonwealth University	• Recruit teachers to serve as full-time, school-based mathematics specialists and develop/conduct training Institutes • Measured impact of Institutes in transforming effective classroom teachers into disciplinary leaders	• Annual Report (7/13/05)
45. Standards Mapped Graduate Education and Mentoring Florida Atlantic University	• Conducted two week summer institute to create detailed syllabi for Master of Science in Teaching (MST) courses for Master Teachers • Created MST curriculum board and convened initial meeting • Offered two weekend workshops to publicize the institute partnership to middle grade math teachers and recruit 20 Master Teachers • Taught evening MST course for the new Master Teachers • Convened end of semester pedagogy meeting for master teachers and recruitment for summer institute from low performing middle schools	• Annual Report (4/23/05)
46. University of Pennsylvania Science Teachers Institute University of Pennsylvania	• Developed content intensive Master's degree programs for training in-service science teachers • Developed Master of Integrated Science Education degree for current middle school level science teachers • Developed Master of Chemistry Education degree for current high school level science teachers • Developed a resource center to support participating and graduate teachers as they become teacher leaders and implement classroom reforms • Planned for an Administrator's Math/Science Academy for school administrators to become better prepared at creating a school environment conducive to improved teaching and learning	• Proposal (12/16/03) • Annual Report (8/18/05)

AWARD TYPE/COHORT/ TITLE/PRIMARY INSTITUTION	ACTIVITY	SOURCE(S)
47. The Fulcrum Institute for Education in Science Tufts University	• Convened first Launch Workshop, which engaged teachers in hands-on science activities and introduced them to the Fulcrum staff • Conducted monthly meetings of the Science Working Group to develop curricula and curricular materials for online science education courses, which will be offered to teachers	• Annual Report (5/09/05)
48. Math in the Middle Institute Partnership (M^2) University of Nebraska-Lincoln	• Developed and submitted for review all data collection instruments • Gathered baseline data for teachers on teacher knowledge, beliefs, and classroom practice • Submit an article for review by the Journal of Mathematics Teacher Education • Developed curricula and convened math institute for teachers	• Annual Report (5/26/05)
49. Oregon Mathematics Leadership Institute Partnership Oregon State University	• Select project staff and form district and school leadership teams • Conduct a leadership summit for orientation to the project, roles and responsibilities, and identification of priority professional development needs • Conduct planning retreat for project staff to plan for summer institutes and academic year follow-up activities • Conduct a leadership seminar for project staff and leadership teams around best instructional practices and math content knowledge for teachers • Conduct initial site visits to selected participant schools for project orientation and identification of priority professional development needs • Conduct first summer institute	• Annual Report (4/29/05)

APPENDIX F

**Illustrative Examples of Sustainability and Institutional Change Activities
as Reported by MSP Awardees in Their Annual and Evaluation Reports**

Appendix F

ILLUSTRATIVE EXAMPLES
OF SUSTAINABILITY AND INSTITUTIONAL CHANGE ACTIVITIES
AS REPORTED BY MSP AWARDEES
IN THEIR ANNUAL AND EVALUATION REPORTS

AWARDEE TYPE/ COHORT/ MSP-PE AWARD Number	ACTIVITIES INTENDING TO PROMOTE SUSTAINABILITY AND INSTITUTIONAL CHANGE AS REPORTED BY AWARDEE
COMPREHENSIVE: **Cohort I**	
1.	Evaluation Report (2004-05): 1) The Statewide Advisory Board was developed with the state Dept. of Public Instruction serving as co-chairs. The IHE/K-12 Connections Task Force has been developed as an extension of this board to address the issues of institutional change and sustainability as it pertains to the involvement and rewards for arts and science and education faculty involvement in K-12 mathematics and science education. Annual Report (2005-06): 1) Shared specific actions that promote K-12 articulation and activities among arts and sciences and education faculty to move them toward the institutional changes that are important to the development of highly qualified teachers.
2.	N/A
3.	Evaluation Report (2005-06): 1) Developed and/or refined a set of "content-rich, pre-service courses" at multiple IHEs. 2) The work of these IHE development teams has led to stronger relationships between partner IHE faculty as well as to afford opportunities for K-12 teachers and IHE faculty to learn from one another as respected members of the teams. This is part of the awardee's larger goal of developing sustainable partnerships between IHEs and the schools. Annual Report (2005-06): 1) Created the Partnership Enhancement Project. This small-grant program is participant driven and is designed to provide support for project activities which address the program benchmarks through linkages at various levels throughout the awardee's target region. 2) There is a systematic program to raise middle and high school students' scores on the state's testing system. It employs advanced distance learning technology with synchronous interactive video and electronics to create and sustain mutually supporting teacher and student communities dedicated to continuous improvement in school and college mathematics instruction. By 2006, approximately 250 state mathematics and science teachers will have received the equipment and training to allow long-term participation in the program involving remote teaching assistants and web-based homework interfaces. 3) Another program, formally established in May of 2005, is committed to sustaining the most effective of the awardee's reform activities. An advisory board of directors has been appointed and has met to approve mission goals and activities. Some activities are well underway with external funding. 4) The awardee created positions for tenured full professors in mathematics and science engagement as a major component of its plan to ensure sustainability of partnerships and engagement of STEM faculty in the academic linkages that are part of the activities in all four lines of investment. These positions, one in each discipline, are termed Outreach Professors.
4.	Annual Report (2005-06): 1) MSP leaders maintained close ties with mathematics and science high school department chairs. As a result of the two years that staff developers spent in the high schools, department chairs are now serving more as instructional resources instead of department managers. 2) An example of what was started by staff developers and now sustained by the department chairs is their use of student achievement data as points of discussion about instructional practice. 3) Another indicator of MSP's impact is the fact that one of the largest urban high schools redesigned the responsibilities of department chairs to mirror responsibilities of staff developers so that instructional support for classroom teachers would be uninterrupted. 4) Other districts have invested in formally training two principals, one staff developer and a district instructional staff member to ensure that professional development in coaching is institutionalized and sustained after the end of the award.
5.	Evaluation Report (2005-06): 1) Ongoing talks with each district are pursuing a fee for services model that could begin to sustain the awardee's professional development of teachers as grant resources dwindle. 2) Instruments used for short-term outcomes, such as the teacher survey for determining

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	increased mathematics and science teacher knowledge and skills following key awardee activities, have shown the potential to provide indicators for sustainable practices. Annual Report (2005-06): 1) During the awardee's fourth year, there were efforts to establish certain policies and procedures in partner districts that would remain in place to continue the awardees strategies after funding concluded. Ongoing negotiations between the districts and the college are seeking to establish a district contribution for 'pay for service' professional development that will continue the awardee's efforts to produce a stronger cohort of Teacher Leaders, both PDPs and site TLs, as a reliable resource for the partner districts to promote sustainability. 2) The perceived ownership of professional development by teacher leaders is exactly the result we would want to see as an indication of sustainability and institutional change at the K-12 level.
MSP-PE Award No. 6 is located in COMPREHENSIVE: Cohort II	
7.	Evaluation Report (2005-06): 1) The Building a Partnership and IHE Case Studies teams are undertaking research designed to help both awardee's implementers and all education reformers understand these partnership efforts. The districts will explore and case studies will investigate how to design and configure instructional guidance that really works. Annual Report (2005-06): 1) Two of the four awardee districts, are in the process of senior leadership transitions. In both districts, in anticipation of the transition, the awardee was called on to work with senior staff and board members. Both districts' school boards have formally adopted resolutions that the policies developed in collaboration with the IFL are official policies intended to continue across the superintendent transition. Both boards expect the incoming superintendent to maintain the general direction in which the district and awardee have been moving. The reason for the likely smooth transition appears to be board buy-in to the district/awardee theories of action. The important lesson here is that sustainability calls for working with many constituencies in a district. 2) Another lesson that awardee has learned is that in order to bring such activities to scale, it takes coordinated, long-term, resourced efforts that are aligned with institutional practices, resources, and needs. 3) While the Partnership considers individuals' membership in many teams vital to ensuring global coherence and minimizing turbulence, we believe it is necessary for these individuals to only play leadership roles (and not play "worker" or even "collaborator" roles) in these teams in order to reduce overload. This is important because overload is inherently unsustainable for the key leaders, and because it leads to blockages in communication and work flow that may hamper efforts to achieve sustainable system change.
COMPREHENSIVE: Cohort II 6.	Annual Report (2003-04): 1) The awardee implemented the adoption of the project as part of the mathematics and science professional development, curricula, and assessments. The implementation: The public county schools formally adopted the project as a critical element of its mathematics and science professional development, curriculum guides, and assessments. 2) The awardee developed a relational data warehouse to enable analyses of teacher effectiveness and other complex project data. The implementation: Being contracted for technology services to create a relational data warehouse. 3) Efforts are being explored at the college by the Vice Provost to examine ways in which faculty work with K-12 can be recognized and valued as part of the Retention, Tenure, and Promotion Process. The implementation: These efforts will require careful and sustained dialogue across a number of significant offices within the college. 4) Faculty Scholarships were given to support the development of certain courses and Transfer Student seminars. 5) The awardee developed an online resource and professional development site for PreK-12 and higher education faculty and students. The implementation: The college supported the development of an online resource and professional development site.
MSP-PE Award No. 7 is located in COMPREHENSIVE: Cohort I	
8.	Evaluation Report (2005-06): 1) New professional enhancement experiences … have enabled practicing K-12 M&S teachers to develop mastery of subject matter and excellence in pedagogy. Yr. 3 Benchmark 2.1: 90 % of participants in PD workshops evaluate the activities positively, and 86 % show mastery of M&S subject matter and effective pedagogy. 2) Yr. 3 Benchmark 4.1: 88% of mathematics,

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	science and education dean or department chairs and 83% of M&S faculty show commitment to renewal and excellence in their institutions' education delivery systems. Annual Report (2005-06): 1) Collaboration on education research projects between STEM and teacher preparation faculty now is on a self-sustaining basis, and some STEM – teacher preparation faculty relationships are creatively moving into areas of research that exceed areas initiated by the MSP.
9.	Annual Report (2005-06): 1) In keeping with institutional change and sustainability, the Summer Academy is designed to create capacity within a district to develop a better understanding of central mathematical concepts across the district teachers through a model of distributed leadership in which each district is encouraged to send at least one teacher, who may or may not be an Associate, to each course, with the expectation that the teacher will then share with others in the district.
10.	Annual Report (2005-06): 1) Teachers-in-Residence (TIR) work collaboratively with mathematicians and mathematics education faculty, to improve the mathematical preparation of teachers for urban schools. (Benchmark: Four new TIRs are selected and begin working with mathematicians and mathematics education faculty.) 2) The Teacher Education Program (TEP) at the college continues its recruitment activities and MPS internships and supports articulation of students to the state college. (Benchmark: Key informant interview reveals impact.) 3) Feedback from external review of the Problem Solving and Geometry courses is used to inform course redesign. An external review of the Discrete Probability and Statistics course is conducted. Critical revisions and alignments of Math 276 Algebraic Structures are ongoing in preparation for external review. 4) A DVD on the "Think Aloud Strategy for Problem Solving" is produced and disseminated. Continued use of existing video images (e.g., multiplication, coaching conversation, protocol) are used in professional development.).
11.	Evaluation Report (2005-06): 1) IHE faculty expressed dissatisfaction with content-deepening seminars' (CDS) purpose and organization; however, they were enthusiastic about the sustainability of the CDSs. Because CDSs are based on teacher needs, the offerings are plentiful and varied. The IHE faculty feels that this variety makes them more likely to be sustained than teacher leadership academies, which seemed to be more repetitive. CDSs were more consistent with their IHE's vision of scholarly activity and could be a factor in career advancement. 2) An ongoing issue is sustainability. Tying MSP involvement into career paths is one critical issue. There is uncertainty about the value of MSP activities for promotion and tenure decisions. 3) Another critical facet is the issue of financial commitment. Once IHEs take a larger funding role, program activities are likely to require adaptation. For example, CDS and teacher learning academies (TLAs) may become part of a graduate program. Some solution is needed to prevent the MSP from becoming a financial burden to IHEs. 4) The teacher fellows (TF) are a link between the IHE campus and its school or school district, helping to meet the goal of sustainable partnership. 5) All IHE faculty felt the TLAs could be sustained, but perhaps not in its current configuration due to the expense of teacher stipends. It Is not clear that the universities will be able to provide this type of financial support after the award period. 6) There is an evolving nature to the MSP partnership and a shifting emphasis across resources, strategies, and activities as the project matures. This evolution is an important component of long-term sustainability. 7) The MSP coordinators are a direct link between the intermediate unit (IUs) and K-12 districts, and their salaries need to be covered by the IUs if these positions are to be sustained. The coordinators reported that they are concerned about the continuation of their position once the award has ended. 8) Most of the involved faculty already have tenure. 9) Sustainability for this partnership is seen as institutionalization of commitment to the vision and supportive vehicles for action toward that vision. With a clear, shared vision developed, the partnership is pursuing a three-pronged strategy for sustainability. First, integrate an understanding of the vision and support for action into policy level initiatives at the local and state levels. Second, elicit and articulate the value-added of MSP vehicles, tools, and strategies. Third, integrate goals/work of partnership into on-going work of key stakeholder institutions with careful attention to their unique contexts.
12.	Evaluation Report (2004-05): 1) The partnership's Strategy 10=Provide a reward structure in universities to encourage faculty members to sustain involvement in improving science and mathematics teaching and learning in K-12 schools. The goal of this strategy is to revise the roles and rewards structure in higher education so that college faculty will get credit for sustained involvement with K-12 schools. Toward this end they have created committees, conducted focus groups, and revised strategy based on an evaluation. 2) It has been clear since the beginning of the project that our higher-level administrators support faculty participation in the project. Since then, our Vice President for Academic Affairs has actually edited a draft of the strategic plan to explicitly include these collaborative activities with K-12 teachers. His intent and hope is for it to become part of the school's culture and policy for faculty to engage in both scholarly and service related collaboration with K-12 schools. In addition, our administration will add a new funding source through our internal grants program to support such activities with specific funds. 3) Building administration support for K-16 science and mathematics school-based learning communities ranges from minimal to extremely strong across

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	districts. In a learning community in one school where there is very strong school and central office support, participants asserted that without that support, they do not believe that K-16 learning communities could emerge naturally or be sustained. Both public school and university members of two learning communities strongly suggested that the regional project leadership should create a formal structure for the organization and implementation of K-16 learning communities and insist that participating schools become active in this area.
TARGETED: Cohort I	
13.	Annual Report (2004-05): 1) The goal: institutional change and sustainability. This is done through examining policies for course articulation and the impact on mathematics achievement. The policy changes sets out uniform criteria for the advancement of students, which the awardee Core Team anticipates will place fewer students into Algebra I. 2) In addition, the awardee has worked towards sustainability and increased use of the project's professional development through the initiation of a Leadership Cadre of selected teachers with the district. One result of this work was a series of well attended school site Family Math Nights, complete with take home materials, practice sessions, child care and parent evaluations. 3) Evidence of sustainability and institutional change at the school campus and within the state includes the 2005-06 sequence of coursework in mathematics and science for elementary school teacher credential candidates (Liberal Studies), which substantially increases the number and rigor of classes. The Mathematics Department and Graduate School of Education have cross-listed a mathematics education course, and increased the mathematics content in the curricula. These stiffer requirements precede the state and college system-wide ambitious initiative to increase the number of mathematics and science teachers tenfold, with an annual output of 1,000 newly credentialed mathematics and science teachers by the year 2010. Opportunities for college faculty in science, mathematics, engineering, and technology to become involved in K-12 education have increased with two ED grants to the school campus, totaling just under 12 million dollars. The Graduate School of Education received an 11.5 million dollar grant to address the quantity and quality of teachers in science. The Center received $482,000, a grant that will address mathematics education for middle school girls and increasing the quality and number of mathematics teachers available. The commitment to educational engagement by the campus is also demonstrated in personnel policies from the Committee on Academic Personnel, and the appointment of the Co-PI and Center Executive Director as Assistant Vice Provost of Academic Partnerships. Another Co-PI has been named Associate Dean of the college's Graduate Division, a position that connects directly to graduate student outreach activities with K-12 STEM education. A PI Professor is a major instructional force in the State MSPs, and their experiences with other districts in other MSP programs enrich our STEM faculty work.
14.	Annual Report (2004-05): 1) One way of determining not only collaboration but also sustainability is the establishment of new classes or programs at the college level. By utilizing MSP grant monies, the college has implemented a Master's of Teaching program. This program is viewed as a strong accomplishment of the MSP grant related activities, and it is described elsewhere. 2) The center will provide on-going training and support for all teachers, which is necessary to sustain effective hands-on programs in mathematics and science. Districts will have the opportunity to have science kits refurbished each summer in the warehouse materials center. 3) In lieu of a survey for the second time the Research Bureau conducted a focus group session with members of the MSP Advisory Board. Sustainability and institutional change were not one of the formal questions asked, however group members shared their thoughts for when the grant ends. There were several areas that members felt would continue: • Teacher leadership program for mathematics and science: Districts strongly believe in the effectiveness of these programs as evidenced by their support of language arts, social studies and the arts lead teacher programs. Teacher leaders will go on to higher- level positions. • Standards-based lessons: Lessons developed by teachers from summer internships, academic year business workshops and leadership programs will remain on the AlignOhio web site. • Masters Degree Program: The College will have the opportunity to continue the program. The state's masters degree program will have been completely developed. Exemplary Instructional Programs: Through the Math and Science Materials Center, the use of exemplary materials will be promoted.
15.	Annual Report (2005-06): 1) In accordance with the 2005 plan, The awardee accelerated development of an independent nonprofit dedicated to continuing the work of the awardee after 2007. The center has provided a significant amount of professional development outside of awardee offerings, including training for 90 select lead teaches, training on inquiry-based teaching, and use of kits for about 200 teachers in various non-partner districts, additional training for a variety of teacher groups in partner districts, and several sessions for all of the principals and assistant principals in a new partner district. The center has begun to regularly present at conferences and is rapidly gaining visibility and credibility. The center has also been invited to offer assistance to 10 school districts (not current partners) that will

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	undertake training this coming year under a grant. 2) A second center is committed to continuing the Teacher Link Program and its relationship with the first center beyond the period of the grant. The involvement of scientists and engineers in public schools will continue to be valuable especially as state schools add standardized science assessments in the 5th and 8th grades in the 2007-2008 school year. The Fellows can serve as resources to teachers to assist them with content knowledge as well as strategies for teaching science concepts. Involving scientists and engineers in public education also can serve to build support for and the expectation of high-quality science programs.
16.	Evaluation Report (2004-05): 1) Since teachers, administrators, and staff all identify the building of teacher leadership as a key component in the success of their program, maintaining and supporting teacher leadership in mathematics is a key to the sustainability of the work of the institute. 2) A key sustainability strategy within the program relates to development of site coordinators and mathematics teacher leaders. These leaders provide site-based leadership during the period of the grant and will be poised to continue in this leadership when the program ends. 3) Several sites have experienced budget constraints that have made it difficult to sustain funding for this level of teacher leadership. Site Leadership Teams and the institute collaborate to determine the level of funding of teacher leaders that is funded by the Partnership, and the level funded by the school. Shared funding is a sustainability strategy and can increase local perception of the value of mathematics teacher leaders. However, difficult budget decisions have led to erosion of school funding for these positions in at least one site, and similar cuts have been contemplated in at least two others. This has caused major consternation in these three sites, as both site leaders and institute staff determine how to meet multiple demands with diminished leadership capacity.

Annual Report (2004-05):   1) The institute will shift its focus and emphasis as follows:
• Less emphasis on extensive, new course development and more emphasis on publication and dissemination of materials
• Less emphasis on providing direct professional development services to partner schools and more emphasis on assisting partner schools and organizations plan for long-term sustainability
• Less emphasis on separate research and development teams, and more emphasis on building linkages across institute research and development efforts.
2) All plans are designed to leverage the existing mathematics leadership strengths (such as the presence of institute graduates and participants) and are also designed to increase long-term, sustainable capacity (such as developing structures that allow teachers to serve as grade level mathematics leaders while maintaining their full-time teaching loads). 3) The institute is designed to build sustainable relationships and systems that leave all partners with an enhanced capacity to continue the work of helping all of the state's children succeed in mathematics, well after the grant period. A. Through partnerships with PreK-12 partner schools, the institute builds close working relationships among teachers, leaders, mathematicians and mathematics educators. The institute provides intensive, on-site professional development in mathematics content and instruction, sustained over time for teachers, support personnel, administrators. The institute targets technical and financial assistance for school systems to design and evaluate the effectiveness of intervention programs to address the needs of identified populations of students who are currently not succeeding. It engages PreK-12 educators in substantive action research. B. Through partnerships with Statewide Systems, the institute: Represents a coordinated effort among all of the key organizations, institutions and systems responsible for mathematics teaching and learning across the state; C. Through partnerships with Higher Education, the institute: Builds collaboration among departments of mathematics and education to strengthen in-service and pre-service courses and programs; Pilots a redesigned, content-intensive, pre-service model for teacher preparation; D. Through partnerships with the state DOE, the institute: Consults on the establishment of a new statewide endorsement: Elementary Mathematics Specialist; Consults on the elevation of middle level endorsement requirements; E. Develop and implement strategies to promote institutional change and ensures sustainability; Ensure that institute partnerships, subawards, and work plans are designed to enhance partners' capacity to sustain successful efforts; Fully integrate institute efforts with existing services, network and initiatives across the state. |
| 17. | Annual Report (2005-06): 1) As with the program at the state college, the Masters Degree Programs at another university have been approved by the college and by the state Department of Education and upon successful completion of the program allows a teacher to become licensed by the state to teach middle grades (4-9) mathematics and science. The Masters Degree Programs will be sustained as a fully accredited program beyond the grant cycle of the MSP. 2) The college has shown through its long-term involvement with partnerships between faculty in colleges of Education and Science that the institution and its faculty are committed to change. As noted previously, a member of the faculty has worked extensively with faculty in Arts and Science through grants from the state's Systemic Initiative Discovery, and a specific project on numerous faculty development activities. Another Ph.D. faculty worked with the mathematics department and other faculty long before the MSP program began to |

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	redesign the content offerings for the middle-childhood program, and to develop a master's degree in middle childhood mathematics education and graduate certificate in middle childhood mathematics education. As also noted, numerous other projects have involved faculty from arts and sciences with education faculty and K-12 teachers. All of the content courses offered as part of the MSP program have been approved at both the undergraduate and graduate level, which enables us to offer them to both levels simultaneously. These courses are now part of the program for pre-service middle-school teachers at the college, and will continue to be offered into the future. The courses have also become popular with non-MSP graduate students, and students from surrounding colleges and universities that do not offer such courses. 3) The high school component at a third university will help the district build an understanding of how university faculty can become engaged in a long-term and sustainable program to improve the quality of lab-based experiences in 9-12 schools. 4) The mentor leaders continued to be supported financially throughout Year 4 by a grant. This support, as it relates directly to the mentor leaders, allowed the leaders to present their work at national and regional conferences. This group continues to focus on activities to address the closing of the Achievement Gap and they continue to study adult learning theory and development especially involving effective communication skills that allow for delivery that impacts the listener and powerful and meaningful ways. The Mentor Leaders continue to be committed to sustaining the mentoring program beyond the life of this NSF grant award. These teacher leaders, along with the Principal Investigator and the grant's Program Coordinators, continue to work with the Chief of Professional Development for the district to develop strategies for embedding the mentoring component into the district's strategic plan. The strategies identified thus far include using mentors and mentor teachers leaders as the lead presenters in district mentor initiatives and training in the years to come as well as utilizing their skills as mentors to assist first year teachers in preparing for the Praxis III exam, which is required for initial licensure in the state. 5) Another key change to the monthly meeting format is the teachers ran them. One or two teachers were recruited in each track to assume responsibility for securing a meeting time and place, setting the agenda, gathering the necessary materials, engaging college faculty, and notifying their colleagues. As a result of this teacher leadership, the sessions were always relevant to their day-to-day issues in the classroom and provided an opportunity for teachers to share information and ideas. We believe this is a significant step in developing sustainability for the project beyond current funding.
18.	Evaluation Report (2004-05): 1) The project must again achieve greater participation of higher education faculty and document success rather than have to document why and how IHE faculty are so reluctant to participate. Training of trainers has started for teachers, which have been identified by the partnering districts. IHE involvement will increase as a result of the site visit report and an increased awareness of their former lack of commitment to this project.

Annual Report (2004-05): 1) The project's PreK-16 has begun to develop a program for sustaining and institutionalizing the student-centered, standards-based curriculum design in the nine partnering ISDs. A group of 25-30 persons are being selected for training to provide the professional development and other activities provided by the projects PreK -16 after the grant has expired. 2) As part of the process of creating sustainability, training of individuals from the ISD partners has resulted in three trainers for three different projects. This process is to be extended in the remaining two years of the project in order for each district to have at least one individual per district qualified to pass on the professional development workshops to teachers within their districts. The preferred goal is to have three individuals (one PK-5, 6-8, and 9-12) per district. 3) Changes are occurring within the ISDs and at least one of the two IHEs as indicated by the observed changes in teaching practices and comments provided on the on-line surveys. Support has been shown by most of the ISDs and plans are in progress for obtaining more specific plans for sustainability. These efforts have begun with the request of the ISDs to provide names of teachers who they will support in obtaining training to become trainers who will then train other teachers within the districts. 4) Efforts to obtain more engagement from the more hesitant IHE partner will be increased. 5) The Education Development Center has developed a Research, Evaluation, and Technical Assistance (RETA) project focusing on the use of research to build capacity for institutional change and sustainability. Generally speaking, the project will disseminate and develop research to support the Math Science Partnership (MSP) projects by helping the MSP 1) achieve the organizational changes the MSP initiate as a result of their involvement, and 2) increase the likelihood the MSP's programs (and the institutional changes the MSP has made) will be sustained. To assist this RETA project, the project's PreK-16 has been asked to provide input concerning our perspectives on institutional change and sustainability. |
| 19. | Evaluation Report (2005-06): 1) Evidence of sustainability is seen in the mini-grant proposals for 2006-07 of three of the five districts. The strongest evidence is seen in the two proposals from a specific school district. This district has a strategic plan in place to take over the after-school programming utilizing their high school students who were in the after-school programming as assistants for the elementary programming. 2) The school district will establish a consistent parent information system that will tie parents into their children's study, providing learning outcomes, activities to engage their |

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	students, and science vocabulary. 3) Another district is expanding their mathematics work to other grades and is conducting cross-grade organized planning led by a local, recently developed Leadership Team, composed of teachers who have participated in the MSP level three leadership work. 4) Subsequent interviews with teachers indicate some movement toward sustainability due to teacher efforts. They report working with the principal to negotiate release time during their building professional development time to continue teamwork on developing common units and assessments. 5) Two situations where liaisons see sustaining activities occurring is with the middle school team and with one teacher in the school district who is taking over some of the after-school clubs and Robotics club activities previously performed by the MSP. 6) An inhibiting issue to sustainability arises with the practice of teachers looping with their students through two grades. Teachers report that this prevents them from sustaining work on units they have developed for a certain grade as they move to another one. Refinement and continuation of the units are interrupted every year as the teacher moves to another curriculum. Other inhibitors to sustainability are teacher and administrator attrition. 7) Strategic planning at the university level is occurring indirectly. The Science Outreach director is being invited to sit on campus committees concerned with community involvement where that did not previously occur. 8) The Edu6000 courses will continue to be sustained by the university as part of their regular programming with the support of the two full time faculty members and additional Science Outreach staff. Annual Report (2005-06): 1) Districts are seeking ways to institutionalize the project through the recently funded project with the university or through seeking grants from state DESE. 2) The Science Center, as the major site for work with high school students, has developed a new interest in school-based work as opposed to only doing community group work. The family education focus will continue through offerings of the parent conference. 3) The state DESE is in the process of establishing technical assistance sites of which the warehouse will be one. There are also private sources of funding that have expressed interest in supporting the materials warehouse. 4) The dean of arts and science has indicated that the university will continue to support science and mathematics graduate courses for teachers that combine content and pedagogy and at a significantly reduced tuition. These courses were first offered in 1992 through the HHMI and have been expanded through the MSP.
20.	Annual Report (2005-06): 1) Since the onset of this project, we have strived to maintain our established partnerships with 12 independent school districts and our extended efforts among a total of 28 additional participating districts that we refer to as collaborating districts. Each district has at least one representative who attends the professional development sessions for administrators. We also insist that a single administrator from each district is named as the district contact person. This arrangement continues to work well for us most of the time. We have, however, experienced difficulty this year with administrators in two of the partner districts regarding the reporting system and administrative response to surveys circulated by project evaluators. After numerous email reminders and phone calls, two districts failed to complete the survey. The first has done nothing and second has completed both elementary and middle, but not secondary. Additionally, the number of responses from principals on a project evaluative survey was disappointing. Although we have stressed to the districts their obligation to all partnership activities, they seem to be under the impression that they are not obligated to participate in full if they do not currently have teacher participants in the project.
21.	Evaluation Report (2004-05): 1) The project leadership describes the project as an experiment designed to determine the extent to which an on-line, content-based mentoring program can first be developed, second scaled-up to a national level, and finally sustained beyond the NSF-funding period. Annual Report (2004-05): 1) In an effort to create a program that is sustainable and affordable beyond NSF funding, the project will continue 1:1 mentor/mentee groupings next year, and will also pilot and collect data on 1:4 groupings in which a single mentor works with four mentees.
22.	N/A
23.	Evaluation Report (2005-06): 1) The partnership's goal is to sustain professional development and support activities focused on elementary mathematics program improvement within the organization and culture of each district. This strategy reflects the awardee's commitment to sustaining and scaling-up its work through the capacities it has built among District Coordinators, teachers in leadership roles, and pilot teachers. Annual Report (2005-06): 1) Project staff has become familiar with concrete implementation issues involved in shifting to a standards-based reform curriculum, in providing content training to teachers, and in developing plans for sustainability. We are especially interested in setting up district-wide professional development structures that will provide sustainability for grant activities. 2) The partnership's goal is to sustain professional development and support activities focused on elementary

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	mathematics program improvement within the organization and culture of each district. This strategy reflects the awardee's commitment to sustaining and scaling-up its work through the capacities it has built among District Coordinators, teachers in leadership roles, and pilot teachers. We have begun the move to sustainability of our project goals in our nine school districts, concentrating on administrators and our teacher leaders. 3) Information was also provided concerning the state-wide initiative of applying for local MSP grants originating at the state level. These block grants are excellent funding sources to help sustain the momentum already established by our NSF-supported MSP grant. School districts were encouraged to pursue this avenue of funding. Two of our districts have received funding from this available source.
24.	Annual Report (2004-05): 1) The project's K-16 Web site is a resource for facilitating communication among project participants, building sustainable learning communities across the teacher/faculty cohorts, and sharing best practices and the results of action research. 2) This was the first year of our supplementary grant to evaluate sustainability of reforms in science education at the university level, Change And Sustainability in Higher Education.
25.	Annual Report (2005-06): 1) Project leaders have been working with the state Department of Education and Board of Regents for the past 18 months to develop a 'K-12 Mathematics Specialist' endorsement program. The concept was spawned within the project, it was then presented to the council of deans of education across the state, and a statewide committee was formed. An administrative rule was drafted in the fall of 2005, and the state Board of Education approved the rule and codified it into law in the winter of 2006. The university developed an academic program to respond to the rule during the spring of 2006, and as of June 2006, both the state Board of Regents and the state Board of Education have provided final approval for the university's Mathematics Specialist program. A teacher in the state who has a master's degree can now complete 20 credit-hours of graduate coursework through the university and receive the endorsement of 'K-12 Mathematics Specialist' on their teaching license. For those who do not have a master's degree, the university has also established a joint program through which teachers can receive both a master's in curriculum and instruction and the specialist endorsement (36 credits total). 2) At the end of the 04-05 school year, project leaders decided that this secondary coaching model held great promise for the future and decided to extend it through 05-06, continuing to invest in the leadership capacity within each building. Furthermore, all of the Secondary Coaches were 'released' from at least one class period of teaching per day during 05-06, so they had time within their schedules to provide mentoring and peer-coaching for their colleagues. This new model, complete with release time for the coaches, represents a significant institutional change that has been approved for next year as well and enjoys support from both the superintendent and school board. For the coming year, the model is being further enhanced by coordinating release periods for the coaches to allow for some of their own professional development to be embedded within the school day. Previously, the vast majority of PD for secondary coaches has needed to happen in the evenings, on weekends, and over the summers. Given the strong administrative support in the district, this model has excellent potential for sustainability beyond the funding period for the project. 3) With supplemental funding from one of state's Title II programs, a faculty member from EDC's Center for Mathematics Education provided a weeklong class entitled 'Algebra by Inquiry.' Designed to deepen content knowledge and to encourage alternative ways to think about mathematics, this served as a strong training piece for the Secondary Mathematics Coaches. A follow-up Title II grant was awarded for 2006 to continue content training for the secondary coaches. The audience for the 2006 iteration has been broadened, however, to include elementary teacher leaders and other district teachers as well. 4) Early in the fall of 2004, the district strongly reaffirmed its commitment to improving mathematics instruction at all levels, K-12, clarified its vision about the direction the district is headed with mathematics, and celebrated successes within the project to date. The venue was a half-day in-service for all instructional and administrative staff across the district in a large convention hall.
26.	Annual Report (2004-05): 1) Our MSP project is grounded in a belief that in order to sustain organizational learning communities we need to develop internal leadership and professional development expertise so that the organizations can become self-supporting in some areas. To that end, we support teachers to become the local "experts" on critical issues related to mathematics educations and to become facilitators of commercially available high quality professional development. During Year 2 we capitalized on the following opportunities to do so: A. Developing Mathematical Ideas: Building a System of Tens (August 2004) – Capitalizing on a mathematics summer institute that was offered as part of a State TLQP Grant with the city school district, we were able to offer our Cohort II Lead Teachers the opportunity to participate in a regional, week-long DMI Institute (recall that our Cohort I lead teachers had already completed this institute). B. MAPPS Dissemination Conference (October 2004) – to build leadership capacity of our Lead Teachers in the area of parent and community engagement. C. Leadership Cases for Mathematics Professional Development (LCMPD) (November 2004) – to support our teacher leaders in providing high quality mathematics professional development. LCMPD (Carroll & Mumme, in preparation) is a set of high quality mathematics professional

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	development materials designed for mathematics professional development providers as a way to examine their practice and critically reflect on issues that arise in providing professional development in mathematics. We introduced this initiative sooner than we anticipated. D. MSP Learning Network Conference (January 2005) – to continue to develop the project leadership team's capacity to support mathematics reform. E. The Connected Mathematics Project (CMP) holds an annual conference to support grades 6-8 teachers and administrators in districts using this program to further deepen participants' understanding of critical issues related to implementation. F. NCTM Research Pre-session at NCTM Annual Conference & NCSM Annual Conference (April 2005) – to deepen our leadership team's knowledge of current research and practices, and to nurture collaborations among our team and colleagues across the country. G. Workshop on Engaging Parents and Community Members in Math: MAPPS and Ruth Parker Parent Programs (April 2005) – to build leadership capacity of our Lead Teachers in the area of parent and community engagement. After attending the MAPPS Conference in AZ the State TLQP Project (same PI as MSP) was hosting a 1- day workshop for their teacher leaders from each school (called "Math Coaches") and their parent liaisons. H. Connected Mathematics Leadership Institute (June 2005) – to continue to develop leadership capacity focusing on the mathematical ideas/concepts developed in a high quality, challenging mathematics curricula for grades 6-8. As previously noted, both of our suburban project districts and 5 out of 10 of our GV BOCES project districts are using Connected Mathematics as their middle school mathematics curricula. 2) Our project is also grounded in the belief that a comprehensive and cohesive challenging curriculum is required in order to significantly improve ones mathematics program and ultimately to sustain that improvement. Therefore, the partners with whom we have the longest histories have already adopted NSF-funded curricula and the new partners are strongly encouraged to do so. As noted earlier in the report, the majority of our partners have already adopted these new curricula. Since these curricula are radically different from what was traditionally used by our partners there is a compelling need for all constituencies involved in promoting student learning to develop deep and thoughtful understandings of these curricula. This in turn calls for more and different forums for communication and collaboration, which in turn fosters institutional change. It is important for us to focus on impacting the entire "institution" in significant ways, which for us means influencing all of the significant constituencies involved in supporting students' learning of mathematics. We see our work supporting institutional change and sustainability in a number of ways. Our Evening chats, a key initiative, have the potential to reach the largest number of people in the each constituency. Other initiatives that promote and support institutional change and sustainability are the Algebra/Geometry Course and the Summer Mathematics Course for K-12 teachers. Up until this point we have been offering the Algebra/Geometry Course to our lead teachers or potential lead teachers as a requirement to participate as a leader in this project, however, for the remaining three years of this project we will be offering this course to any teachers in the project districts. The implementation of the Parent/Community Mathematics Course during this year was highly effective in meeting our goals of deepening community members' knowledge of mathematics, teaching and learning (see Evaluation Report).
27.	Annual Report (2005-06): 1) Through collaboration with the university, the city SD is learning ways to sustain and institutionalize the project's techniques. 2) Since the launching of the Computational Science undergraduate degree program, the Department of Computational Science (CPS) has developed BS, MS, and combined BS/MS degrees in this area, the curricula of which integrate mathematics, computer science, and application sciences. The Department of Computational Sciences manages this grant and it provides necessary 'integrated' core content and infrastructure for it. 3) Since the beginning of this grant, we have offered new courses and scholarships to more than 40 bachelor's and master's students. The college's institutional goals are in support of those of this grant. 4) We also offered, through collaboration with Texas Instruments, TI-certification training (60 hours) to 38 MST teachers. As part of institutionalizing our project activities, these trainings were formalized as credit-bearing college courses and offered outside the summer institute to additional 79 teachers and teacher candidates who actually paid tuition to receive such training. In-service and preservice teachers may use these courses toward fulfilling their degree requirements. The training was also integrated into the professional development offerings by the school districts through use of our coaches and Lead Teachers. The more than 500 lesson are magnifying our outreach efforts, as they enable teachers to demonstrate to others the effectiveness the new pedagogy. 5) A faculty member received a $5 M grant, and this has taken our partnership to an even deeper level by coordinating the technology access and trainings in several schools with a large number of teachers.
28.	Evaluation Report (2005-06): 1) The third, and perhaps most critical strand of the MSP's work, which occurs in a cohort's second year of participation, began for the first time this year. Cohort 1 began their efforts to translate their learning from the MSP into their home settings. They were charged with working with their mathematics department colleagues and peers, in the case of the university graduate assistants, with the end goal of reshaping the culture of teaching mathematics. The MSP was designed to support participants as they took on leadership roles at their school sites with release time to plan

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	and meet with colleagues and with personal support from the leaders of the MSP in the form of school visits. The true value of the MSP's work lies here, as does the responsibility for sustaining it. 2) One of these principles is that long-term, sustained professional development is needed to effect changes in classroom practice. The MSP provided two cohorts with this experience, each for one full year. The PIs met with and suggested funding sources to support a high school in their efforts to continue learning circles this year. Beyond that, we suggest they need to continue their contact with school administrators from both cohorts to ensure that the progress that was made over the past two years is sustained, and that the departments continue to evolve within the MSP vision. The responsibility for moving principals and district administrators towards sustaining the MSP falls on the shoulders of the PIs. One initial step they might take is to share a revised version of the framework the evaluation used for observing classes with administrators. 3) The teachers who participated in the learning circles were overwhelmingly grateful for the time it gave them to reflect on new approaches, research, their own students and their own practice. They were also quite aware of how unusual it is for teachers to have such luxury. They expressed well-founded fears that they could not sustain the changes they had realized over the past two years once they lost their meeting time. One second generation learning circle participant said it quite clearly, "The potential for [longterm] impact on the mathematics culture because of our workload, unless we have some support, we will fall back into our old ways." Our data showed that the most profound change resulted when the learning circles engaged in lesson study. 4) To sustain the momentum to change teaching practice we urge the MSP to help all participating departments, but especially Cohort 1 which has officially ended its time with the MSP, to identify ways they can continue to support changes in teachers' practice before the momentum of the learning circles fades away. To sustain the GTA culture around the MSP, the MSP must determine what structures and supports will remain in the GTA culture to support the focus on teaching. We saw perhaps the most dramatic transformation of teaching practice and the most meaningful lesson studies occur in the GTA learning circles. To manage and sustain partnerships we definitely need to do more work with administrators. As a part of our school visits we are planning to meet with the principals to keep them in formed of the program and what we are seeing so far. In particular we plan to inform them about the Cohort 1 data for this past year, and in some cases, to talk about approaches to teaching to the standards. To sustain improvements of department culture school mathematics departments must continue to meet if they are going to maintain and build on the working relationships they developed the second year. The purpose of the program has been to "jump start" the work of a mathematics department. Whether the department will continue on its own is an open question. We think it takes more support over a longer period of time, but this was an experiment to learn what would happen with just two years of support. To sustain momentum to change teacher practice the MSP will continue to work with teachers and administrators to encourage building in opportunities for teachers to meet to talk about their teaching. Maintaining a culture in a department also depends on new hiring. To sustain GTA culture around the MSP we have been able to set up some infrastructure to support the GTA culture that has grown around the MSP. This fall is the second semester that we are offering a 3-unit course, Math 700, for new GTAs who are teaching the elementary and intermediate algebra courses.
29.	<u>Evaluation Report (2005-06):</u> PLCs are now becoming well established in the schools, and the project is considering ways to "take these to the next level." Among the good suggestions offered by the project team in December was working on ways to foster site-based leadership and devising ways to integrate new teachers new to established PLCs within the schools.
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30.	<u>Evaluation Report (2005-06):</u> 1) Communications among partners are increasingly more open and trusting due, at least in part, to the relationships they have built through their joint work together, and the value they place on what they have learned from one another. Executive Council meetings this third year have been dedicated to solving problems relating to teaching and learning mathematics, 5–16, and to developing strategies for sustaining critical program components, in addition to addressing their usual program management and operational issues. 2) Within the program districts there is evidence that changes have and will be made on the individual and programmatic levels but are not yet appearing at the infrastructural or policy levels. The program's goal of supporting the development of lasting mathematical communities and changing the culture of teaching and learning mathematics within schools and districts has seen some success, specifically at the school levels—within mathematics departments and among the active members of on-going study groups. The two programs in the Mathematics Teaching degree programs at the university have become institutionalized. Partnership leaders spent time during 2005–06 discussing the program activities they value and want to sustain when NSF funding ends. District-level policy changes and newly allocated resources will be needed. These changes will depend in part on persuading superintendents and other administrators that program activities are worth supporting and that increasing teachers' knowledge of mathematics will improve student achievement. Mathematics teaching and learning will need to remain in the district limelight. Districts want to find ways to continue supporting

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	student research and presentation of their work at the local mathematics fairs, as well as school-based study groups. They have not yet identified how they would continue to support mathematicians' involvement or provide the administrative support the grant now offers. New budget line items will be needed if MTFs assume leadership responsibilities beyond classroom instruction and regular committee duties. Partners are working to secure external resources. Core partners have hired 2 additional part-time staff members to work with them on sustainability issues in general, and fundraising in particular. District leaders are becoming more involved in developing strategies and seeking outside funding. Inevitable changes in district and IHE leadership continue to be a threat to sustaining partners' 'program on Mathematics.' 3) Evidence of the value that district leaders place on the partnership is their desire to sustain their meetings together past program funding. 4) During Executive Council meetings and others, the PIs and district leaders have discussed which program activities each district would like to sustain and support, past 2008. Some discussions have centered around which activities the districts value and others focused on strategies for securing additional funds. 5) Look for ways to make the project sustainable. The mathematicians wanted to see the mathematics fairs and study groups sustained beyond the grant period to see the project's impact on teachers continue. A few mathematical sematicians were willing to continue to contribute time after the funding; others hoped that districts would find a way to provide the support needed to sustain them. And some hoped that the study groups would be sustained by teacher interest and effort. 6) Importantly, in terms of the development and sustainability of a mathematics community in the school over time, 2 of this district's high school teachers are in the program. No other school in the 5-district partnership, regardless of size, currently has more than 1 program member at either the high school or middle school level. 7) The core PIs held a meeting last August to discuss sustaining their program at the district level. As the district leaders have considered sustaining programs/activities, they first have had to determine *what they value* and *which activities* they want to and can sustain. All highly value the study groups, the involvement of mathematicians, and the mathematics fairs. Districts believe that the MMT program is important, but do not believe that their districts can financially support teacher participation. A complicating factor is that smaller districts have limited numbers of teachers at, for example, their high schools, and cannot afford to have several teachers engaged in activities that take them off site during the school day. Most district leaders also value and hope to find a way to continue the Executive Council meetings, or meeting together in some other format. They have not yet identified practical ideas for realizing their goals. District leaders are becoming more interested and involved in seeking new funds. One district leader has volunteered to work with a small committee from the Executive Council in pursuit of funding from the Business Roundtable. To support this effort, EDC has hired a quarter-time consultant to work with the project coordinator and PIs to design strategies for raising funds. Annual Report (2005-06): 1) We made progress toward building partnership support in the school districts by holding administrators' breakfasts and meeting with superintendents. The focus of each breakfast was to involve the principals in thinking about how to increase teacher participation and what that meant in terms of administrative support. We also engaged administrators in a discussion about sustaining the programs beyond the five years of the grant and in thinking about the aspects of the partnership they value most. In general, principals were engaged in the discussions and offered suggestions and support.
31.	Annual Report (2005-06): 1) Concerned about lack of support for new teachers, the program charged the Professional Capacity Committee to examine relevant research and develop a plan for new teacher induction. After extensive review, the Committee recommended adopting a program for a period of two years; assigning mentors to buildings on a "needs" basis; providing 30 new teacher mentors with ten days of professional development, including content support from faculty, over that period; and, following completion of Pathwise professional development, providing mentors with a "Training to Lead" session to prepare them to train additional mentors and build district-level sustainability of the program.
32.	Annual Report (2004-05): 1) Discipline working groups are one of the project's strategies for sustainable structures that can support individual efforts at pedagogical change as well as foster 6-16 educator interactions. 2) Next year, a new course will continue and will be funded by college. 3) We developed a web site that announced the project's related events. It contains sections documenting the year-long pedagogy seminar as well as the one day pedagogy workshop. 4) Team members were Co-PIs on a multi-national grant proposal to the NSF for the GK-12 Graduate Fellowship program. The project proposes that STEM graduate students from these four project IHEs work to support teachers in the school district as the teachers implement new mathematics and science curriculum. To make sustainable changes in an institution, one must approach the problem from many different directions and engage a wide range of constituencies. We try to identify the constituencies at the colleges who have a role to play in mathematics and science education and linkages with community partners. These include the Community Service Office, the Service Learning Program, the Education Program, the tutoring programs, student initiated outreach programs, the mathematics and science disciplines, and the college's Science Centers. 5) The pedagogy seminar from year 2 will continue. It will meet

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	monthly and will be open to any interested participant. In an attempt to determine its sustainability, we will no longer offer stipends to participants. To institutionalize the seminar, we are arranging to have two centers providing the funding. 6) A Community Service Office (CSO) will continue to run its America Counts mathematics tutoring program at several local schools and community locations. We are working with the CSO to increase the component of the program that takes place in partnership with the school district and community. We continue to explore administrative models that will make the program sustainable beyond the life of the award. 7) During the next year, we will investigate whether we can use the Comprehensive Data Analysis System for School Improvement (CDA) developed to improve the long-term data collection and warehousing of our participating districts. CDA is potentially quite useful for data analysis, and will provide a sustainable data analysis system that will outlive the MSP--but it is expensive, costing $3.00 per student per year. We will discuss with each of our districts whether participation in CDA is of sufficient benefit for them to fund doing so.
33.	Evaluation Report (2005-06): 1) One of their goals is to create sustainable changes in higher education STEM curricula once funding ceases. Benchmark = Targeted Higher Education MST faculty will introduce enhanced mathematics curricula and pedagogy into their courses as evidenced by self-report and formal course syllabi (topics, readings, activities) as follows: Summer 2004-evidenced by 10% of faculty; Summer 2005- evidenced by 30% of faculty; Summer 2006-evidenced by 40% of faculty; Summer 2007- evidenced by 60% of faculty; summer 2008-evidenced by 80% of faculty. In addition the following new IHE enterprises will be instituted by summer 2008. By the end of the project there will be a graduate level mathematics course specifically for middle level mathematics teachers; a seminar series on pedagogical changes for faculty of science, mathematics, and engineering courses; an applied mathematics graduate course for MST teachers; a Discovery Math Lab for hands on learning. The benchmark has been met. Faculty surveys as well as informal observations and interviews indicate they have introduced enhanced mathematics curricula and pedagogy into their courses. When asked to reflect on how involvement in the project had influenced their own pedagogy, Faculty reported they used more hands-on and inquiry-based activities. Evidence is based on collected quantitative and anecdotal data. One of their goals is to sustain the Project through two lines of support once NSF funding ceases. Benchmark = by the termination of the project establish in each targeted district (n = 10), within each targeted BOCES (n = 2), and within the project (n = 1), interdisciplinary technical assistance communities consisting of personnel from: mathematics, science, and technology for a total of 13 established committees. The benchmark focuses on teams at the termination of the project. However, progress has already been made on establishing interdisciplinary communities within each of the targeted districts.
34.	Annual Report (2004-05): 1) Signs of institutional sustainability can be seen in several ways, perhaps most notably in the adoption of the program model by a group of scientists and science educators. They have gotten $80,000 of start-up funding from the university to begin work on curriculum alignment and teacher leader development, thus following the general pattern of the program, even adopting a similar name to emphasize their connection with our project.
35.	Annual Report (2005-06): 1) We recognize that for sustainability the most powerful professional development is site-based featuring local, immediate issues. Thus the plan for 2006/07 is to provide two professional development days – one in September and one in January – each followed by two or more study group sessions.
36.	Evaluation Report (2005-06): 1) Strengthening the first tier means preparing for sustainability of the project; promoting broader and deeper engagement among the existing stakeholder groups by further distributing responsibility and roles and weaving tighter connections between the "core" and the larger first tier of the community. Specifically, this might mean bringing more IHE faculty and "onboard" in the teaching of the course sequence; expanding activities that allow interactions between teachers, IHE faculty and administrators and providing them, among other things, with a coherent plan of action of PD targeted for current teacher leaders and "on board" administrators and faculty. 2) How can the program's long-term decision making be informed by a broader stakeholder perspective? One way is through the anticipated Policy Advisory Board planned for assembly in the next several months. Another way, perhaps more in service of immediate needs, would be to establish a stakeholder board with broad representation from program stakeholder groups. Such a board could meet quarterly (even with rotating membership), with the goal of engaging in a two way conversation around issues, needs and possible reward systems to be tapped in support of sustained science reform in the region. 3) Research shows that changes to teacher practice are more likely to be sustained when they are supported in their adaptation of practices when they return to the classroom (Cohen & Hill, 1998; Garet et al., 1999). The LCFs, held monthly during the academic year, have helped to "scaffold" teachers to some degree in their learning, often building on learning strands from the Summer Academy and providing opportunities for teacher leaders to continue strengthening the regional science education community network. 4) We are developing a suite of instruments to measure the Program Partnership itself at various points in time, to gauge its evolution, the success of the partnership as a whole, and

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	evidence of sustainability. 5) Because one of the key factors in sustainability of a partnership is that the participants feel that important and useful purposes are being accomplished, we ask participants how they became involved in the program and what their personal and professional goals are within the partnership. 6) 147 TLs will participate in 360 hours of professional development to acquire the skills needed to establish and sustain building-based science learning communities. TLs participated in three main professional development activities: 1. Two-week long Summer Academy (SA) 2. Monthly Learning Community Forums (LCF) 3. Lesson Study (LS) incorporated into the SA and LCFs. 7) The success of the partnership in the two years ahead will be measured by whether these newly developed leaders can act as effective change agents among their peers and administrators. Simply having an impact on the "first tier" will not be sufficient to implement or sustain reform and ensure all students have access to quality teaching and opportunities to learn. 8) With sustainability of partnership outcomes as a priority, the partnership will continue to assess all of its activities to determine whether those activities are likely to lead to lasting outcomes or whether resources might be better applied elsewhere. 9) The results of the combined changes in teacher preparation and teacher professional development are expected to lead to sustainable, improved student outcomes. Improvements in content understanding, understanding of the nature of science, attitudes toward science, and science course-taking patterns are anticipated. Annual Report (2005-06): 1) School Districts that attended a Strategic Planning Institute are eligible to attend biannual Networking Forums. These forums provide the leadership teams who developed the district science strategic plan continued support as they work to implement and sustain their inquiry-based science program. 2) Higher education disciplinary science faculty from multiple institutions are now observing one another's classrooms and discussing the extent to which the collaboratively designed lessons achieved the intended goals. The dedication of the faculty to this common content course sequence and its impact on student learning is a strong indicator that the resulting reforms and collaborations will be sustained well beyond the funding period.
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37.	Evaluation Report (2005-06): 1) Challenges of sustainability include: A. How to get less motivated teachers to take the courses; B. Clarifying the relationship of the courses to graduate degrees and licensure; C. Financial viability after the grant ends, including commitment of IHEs to offering the courses; D. Commitment of STEM faculty to teaching the courses; and E. Commitment of IHEs to supporting STEM faculty science education work, including tenure and promotion issues. 2) Many project resources have been devoted to meeting the laboratory needs of AP course students, making use of facilities at the partner universities and continuing with an existing program at a medical school. This is certainly a key component of improving the instruction and achievement of city science students. However, it might be best to find ways to sustain this effort separate from the partnership before the end of the 5 years, ensuring its sustainability and freeing up financial and personnel resources for other aspects of the project. This might also be true for the urban teacher AP training workshops with which the university has become involved. Annual Report (2005-06): 1) As our primary vehicle for school-based PD, the university will have a substantial impact on the quality of science teachers and teaching practices and students' opportunities to succeed in advanced science courses through both its own content and as a means of providing follow-up support for our project's other PD activities. Finally, since the university already has been institutionalized as part of the district-wide school improvement plan, our Partnership's success in implementing it will be critical to our project's long-term sustainability. 2) This project goal encompasses a diverse array of institutional structures and practices needed to sustain our project's participation and competency gains over the long term. The specific outcomes identified in our project proposal are the following: *Improved teacher recruitment and retention:* Increased participation of university-prepared teachers in the system, at the pre practicum, practicum and hiring stages; Longer participation of science teachers in the program, as measured by retention of new teachers hired during the project period; Enhanced recruiting, hiring, and new teacher support practices by the university. *Faculty rewards for involvement in K-12 education reform:* Increased university support for faculty participation in science education reform, as perceived by the faculty; Rewards to documented faculty efforts in science education reform, through peer recognition and favorable tenure and promotion decisions. *Continuation of the Partnership beyond the project period:* Ongoing and long-term collaboration among the project's core partners; and Permanent offerings of at least half of the contextualized content courses developed in this project. 3) At the partner universities, the program has created or contributed to significant new structures to coordinate and raise the profile of science education activities, including pre-service teacher preparation. The new structures created in Year 2 include the following: The approval of a new university-wide STEM Education Center at a university;

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	The hiring of a pre-practicum coordinator in the university's Teacher Education Office, who will improve the management of information about the university's pre-service science teachers; The creation of a new Master of Education in Middle School Science degree program at another university, which will institutionalize most of the partnership's contextualized content courses; and A new workshop for university junior STEM faculty on the tenure and promotion process, which will include information on how to incorporate science education and other service-oriented activities into their tenure and promotion portfolios.
38.	Evaluation Report (2004-05): 1) Potential challenges to institutional change include: One question that emerged during this research was whether participating teachers would be able to implement approaches and techniques developed over the summer during the regular school year. One teacher who participated in the previous summer's pilot program spoke of this being extremely difficult. While he tried to draw on some of the approaches he had experimented with successfully in the summer, he found it difficult given the environmental constraints of an overcrowded urban high school. This same teacher, however, was hopeful that the small learning communities might provide a more hospitable space for such collaborations to happen during the regular school year.
	Annual Report (2004-05): 1) Mechanisms to institutionalize reform include: MSP will continue to have a strong voice on the Teaching academy through the PI and two other representatives on the Task Force. MSP will continue to engage high school teachers and students with college faculty and work to enhance their teaching through a number of mechanisms previously detailed—Expert in Residence, Pedagogical Rotations, PD coordinators etc. New TRT teams will be developed in year two and new PD will be run along similar lines—building on the existing partnerships between schools and colleges and involve the satellite schools and teachers/coaches from the whole of one region.
	Projects started in year one will continue in year 2, including the algebra-HS project between the three mathematics TRT members. Educational research will continue in year 2 as part of the TRTs, summer camps, new research projects and research seminars.
39.	Evaluation Report (2004-05): 1) When the learning of community members is recursively registered in the structure of the community (through implicit and/or explicit transformation of the norms) the transformation in the organization supports the very learning that triggered the structural change. As this happens, the community might be said to be "self-generating" or "self-supporting," and therefore eventually self-sustaining in its setting. Another way to describe a "self-sustaining" entity is to say that it has "institutionalized" itself – a bonus that comes with the territory. Response to Evaluator's Report: In analyzing our data this summer from the first implementation of the professional learning communities, we are already beginning to characterize the shifting interaction patterns of the community, in addition to documenting the understandings, beliefs, values and expressed practices of the learning community participants. It is our goal to emerge with frameworks, tools, and understandings that will allow our learning communities to be self-sustaining.
40.	Evaluation Report (2004-05): 1) The project team has made progress toward adding a middle school certificate to the program. Other institutional changes, such as a middle school endorsement, will take a greater amount of time and negotiation. Sustainability efforts have begun in the form of the summer courses being offered during the traditional school year, as well as, approved for graduate credit.
	Annual Report (2004-05): 1) For Institutional Change and Sustainability, we can point to the approval of seven new courses in the College of Liberal Arts and Sciences. The application for the certificate will be submitted when the remainder of the courses is approved. It also institutionalizes the course structure and is a first step towards a middle school mathematics and science endorsement. A number of other institutional changes have taken place such as an equalization of summer pay for two types of faculty who will help to encourage STEM faculty involvement. We have also managed to break down a number of other barriers that made working across divisions of the university difficult.
41.	Annual Report (2004-05): 1) Late in the fall and into the spring semester it became apparent that the course (re)design process would be more involved than initially conceived. After some discussion, the partnership agreed to bring more mathematicians directly into the development, both to forward the design efforts more effectively, and to provide a basis for sustaining the projected institutional changes at the lead IHE. This culminated in revisions to the Strategic Plan, which augmented the lead IHE mathematics contingent in a more substantial capacity in year one. Now, they will design the new major track, and, beginning in year two, will be designing the new calculus course sequence. In addition, three more mathematicians are projected to contribute to the course design process in year two, and take a MEC course in summer, 2006. 2) The state's critical need for improved mathematics teaching and learning is recognized across the state as evidenced by the statewide efforts at reform. Setting up a way to cooperate and collaborate in the statewide effort has been a challenge that we feel we are meeting in a timely and constructive manner. This collaboration holds great promise for

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	sustainable reform across the state.
INSTITUTE: Cohort II 42.	Evaluation Report (2005-06): 1) The project builds and sustains that community through the program's summer institute and the network and connections the project has made and is making. Annual Report (2005-06): 1) We have requested and received approval, award pending, for a supplemental grant that will enable us to move towards additional outcomes: Sustainable change in school mathematics departments with respect to instruction and student outcomes, based on teacher change and teacher leadership; and *District-wide* rethinking and improvement. 2) Goal 5 is a long-range goal for the projects to continue to build the connections between mathematicians and schools but in a way that links directly to schools. 3) The project intends to build a school culture where student learning of mathematics is the recognized responsibility of each teacher and of the collective whole into which people are hired, rather than attempting to build individual capacity that is subject to the whims of personnel turnover. The program's focus this year is to develop tools and practices that contribute to such a culture. Evidence of improved student learning at the end of this project will impact the community of families, teachers, and district administrations, helping to sustain a favorable learning culture and helping to spread it throughout a district. Such seeds of change already exist in two areas.
INSTITUTE: Cohort III 43.	Annual Report (2005-06): 1) The program manager/instructor for the first Summer Leadership Institute believed that establishing a strong professional learning community should be a top priority in creating a sustainable program. 2) All partners are committed to the vision of the program, to its implementation, and to its sustainability. Participation in the Summer Leadership Institute, in the program, and the ongoing relationship with faculty and graduate students in the MATH/CAAM/STAT departments at the university increases lead teachers' knowledge, which, in turn, will impact students' interest in and awareness of the importance of studying advanced mathematics.
44.	Annual Report (2005-06): 1) Through a process actively involving school system and IHE partners a formal document was developed that had consensus buy-in. This was an important accomplishment. 2) All three institutions have approved the new masters program. The identical five Institute Mathematics courses and three educational leadership courses are included as requirements in all three programs and the programs will accept credits earned at partner institutions. 3) The legislation has been introduced and passed in both houses of the legislature (March 2005). An additional resolution commending the work of the Mathematics Specialists was passed by the 2006 legislature. 4) The school systems have made a commitment for each of 27 participants in the Institute.
45.	Annual Report (2004-05): 1) A first draft of the course material was ready in August 2004, and the week-by-week course outline was finished early in January 2005. The Advisory Board approved the courses in August 2004. Both courses were taught for the first time during the Spring term of 2005, under the temporary names Standards Based Middle School Mathematics I and II. 2) The Department of Mathematical Sciences has agreed to the creation of a new track for middle school teachers in the existing Master of Science in Teaching (MST) program. The College Graduate Committee had its first preliminary discussion of this new track on the basis of the two new courses first taught in Spring 2005. The next step in the implementation is to define the content of the remaining four courses is the core curriculum for the track.
46.	Annual Report (2004-05): 1) Requiring university faculty/instructors to be involved in new thinking on curricula design is a major component of our means of addressing the Key Feature of Institutional Change and Sustainability. One additional means of addressing this Key Feature was the initiation by the state institute of the *Teaching and Learning of Science Seminar Series* sponsored by the state's Center for Teaching and Learning. In the five sessions, faculty, staff and graduate students from science departments and the medical school interacted in working on lessons and discussing alternative means of teaching science at the college level. 2) The approval of the new master's degree program enables middle school science teachers to gain significant additional content knowledge. The university agreed to change the course tuition structure enabling the teacher participants to pay almost all of the tuition cost with the stipend we provide. We have also been able to access no cost parking arrangements previously arranged for participants. All of these changes not only help make our program accessible to all qualified applicants but they will also help us to achieve Institutional Change and Sustainability as these new arrangements greatly reduce the financial burden previously covered by the School of Arts and Sciences and the Department of Chemistry.
47.	Annual Report (2005-06): 1) The first cohort of the institute will have finished its online course work in May of 2006. Institute researchers will continue to follow these teachers in their classrooms. Institute staff will continue to be available to them for help with both curricular and pedagogic questions. We are not yet certain about the extent and depth of the interaction between ongoing institute activities and the cohort 1 institute teachers once they have finished their coursework. We also reexamined recruiting

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	and training of facilitators. Although we are generally satisfied with the way instruction of the institute courses has worked, there are reasons to believe that the current procedures for recruiting and training facilitators are neither maximally effective nor sustainable for the long-term. We will be examining the possibility of using doctoral students in science education for this purpose under the guidance and close supervision of a faculty member. We will also experiment with varying the number of students in an online group as well as the number of online groups that a facilitator can reasonably be expected to interact with.
48.	Evaluation Report (2005-06): 1) The awardee is designed to improve K-12 student mathematics achievement by creating sustainable partnerships among individuals at the university; regional Educational Service Units (ESUs); and local school districts. These partnerships are designed to educate and support teams of outstanding middle level mathematics teachers (Grades 5-8) who will become intellectual leaders in their schools, districts, and the ESUs. At the end of the first year, respondents indicated that several activities were supporting sustainability of the project. Areas of strength include effective leadership, support structures, high credibility and visibility, and strong partnerships. Areas of strength in sustainability include the following: *Leadership*, including the project leadership, administrators, and teacher leaders; *Organizational development*, resulting in closer ties between the teacher education program and the content area experts; S*upport structures*, including resources, collegial support, and individual support for struggling teachers; *Credibility*, in terms of fidelity to state standards for teaching and learning; *Incentives*, both intrinsic and extrinsic; *Visibility*, including outreach and awareness activities for project scalability; *Strong partnerships*, both within the university and with it K-12 district partners; and *Macroculture development*, such as celebrations of early successes, logos, or other "branding" activities, resulting in an identity for the project.
49.	N/A