Mathematics and Science Academy

Year 6 Final Evaluation Report

CSE Technical Report 709

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MATH AND SCIENCE ACADEMY

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Abstract

This is an evaluation report for Year 6 of the Math and Science Academy (MSA), an initiative of the Los Alamos National Laboratory. A brief overview of the project, with goals and framework is presented first, followed by a description of methods used for the evaluation. Next, findings from the Year 6 Evaluation are described, including program impact on students and teachers. The report concludes with recommendations for future years of the program.

The 2005 National Assessment of Educational Progress (NAEP) results place student achievement in New Mexico in math, reading, and science in the bottom five states in the nation, for both fourth- and eighth-grade students. Equally disturbing, little if any progress towards increasing proficiency percentages in these content areas is evident over the past 10 years of assessing students. Proficiency rates for reading, math, and science hover around 20%. Of note, students of color (primarily Latino/a in New Mexico) continue to be out-performed by white students; students at Title 1 schools and students who qualify for free and reduced lunch (over 50% in New Mexico and close to 85% in northern New Mexico) also perform at statistically significantly lower levels than their more affluent counterparts do.

The news about teacher preparation and quality in New Mexico is equally grim; the state average for teaching experience is 7.2 years, while many teachers hold positions that require them to teach outside of their content area or credential. Recent research (e.g., Hill, H. C., Schilling, S. G., and Ball, D. C., 2004; Ma, 1999;

NCATE, 1998; NCTM, 2000) documents the prevalence of teachers' limited content knowledge in mathematics and science, particularly at the elementary school level. High turn-over rates in administration and district leadership hamper school's capacity to implement long-range plans for improving student learning with consistent support and follow-through.

In 1999, in response to this critical need to improve the overall quality of education in their state, educators, policy makers, scientists, and researchers from different agencies, including the Northern New Mexico Council on Excellence in Education (NNMCEE), the Northern New Mexico Network for Rural Education, the University of California, the Department of Energy's Los Alamos National Laboratory (LANL), and three northern New Mexico school districts agreed to develop a project to strengthen math and science education. The program focus was on middle-school students, in part because of historical trends that indicated a drop in test scores and student performance in middle school, and concern over the escalating high-school drop out rate.

Over the past six years, the project has expanded from the original vision and cohort of 3 districts, 3 middle schools and 12 teachers to include students, teachers and administrators at the elementary, middle and high-school level in five districts in northern New Mexico. While the MSA program has grown and been refined over time, the goals remain the same: increase student learning, while building teachers' content knowledge and skill to provide quality instruction for all students. The MSA model is researched based, and views professional collaboration and the implementation of research-based strategies to teaching and learning as key approaches to strengthening student achievement.

The Math and Science Academy is a complex and comprehensive project; it provides teachers with quality on-going professional development to increase content and pedagogical knowledge and encourages teachers to actively participate in on-going learning in their communities, with the goal of providing students in northern New Mexico with rich opportunities to participate in high quality science, math, social studies, and language arts learning experiences.

Project Overview

As the introductory paragraphs of this report highlight, the need for a project such as MSA is great. Appropriately, the goals are ambitious and far-reaching.

MSA's aim is to significantly improve math, science, and language arts education, as part of a larger systematic change initiative to improve the overall education of students of northern New Mexico. During Year 6 of MSA, three knowledgeable and highly skilled mentor teachers led the project. Twenty-two schools and their administrators, 80 teachers and approximately 1800 elementary students (Grades K - 6), 1500 middle-school students and 300 high-school students (Grade 9 only), participated in MSA during the 2005-2006 school year.

Evaluation and Design Issues

Prior UCLA/CRESST evaluations of the MSA project have focused on program implementation, and were designed to assess program effects and generate recommendations for the improvement and enhancement of the project. As in previous reports, our research builds upon results and findings from Years 1 – 5 of MSA. Year 6 examined how and in what ways teachers' participation in MSA and project implementation quality impacted students' learning, and explored the ways in which the coaching model serves as an approach to strengthening and supporting teaching, and ultimately student achievement. An additional focus of the evaluation was to analyze program effectiveness as the project expanded to include more elementary schools. The research issues examined this year included:

- How has the MSA program evolved? How does the refined cognitive coaching model work and how effective was it? How effective was the "scale-up" model of MSA?
- What was the effect of MSA on students' learning and achievement?
- What was the effect of MSA on teachers?
- How can the program be refined and sustained to better support and enhance teacher professional development, administrative leadership, student learning, and achievement?

Method

The evaluation employed a multi-method approach to understand and assess program implementation and effects. Surveys, monthly phone updates, and program documents were used as data sources on program implementation and impact. We used a formative approach to our research by systematically gathering information and conferring with project leaders throughout the year regarding

project successes and challenges, and suggestions for improvement. Table 1 below summarizes data sources for Year 6 of MSA.

Table 1

Summary of Year 6 MSA Data Sources

Student Data	Surveys	Monthly Updates	Interviews	Observations
Achievement test scores - Reading - Math - Science	Teachers Administrators	Project mentors	Project mentors	Summer Institute

Instruments. At the conclusion of the 2005-2006, surveys were distributed to teachers and administrators. Teachers were queried about the ways in which participation in the Math and Science Academy influenced a variety of areas relating to project goals. The questions focused on project effectiveness, and the extent to which program participation led to change in teachers' practices. Both open-ended questions and questions involving a 5-point rating scale were used. Administrator survey questions focused on MSA impact at the school level. Monthly telephone updates were conducted with MSA mentors, following a mutually agreed upon protocol that focused on program successes and challenges. Copies of surveys and the classroom observation protocol developed and used in the evaluation can be found in Appendices A, B, and C.

MSA Year 6 Project Findings

Findings from Year 6 of MSA are presented in the following sections. Demographic information on program participants is presented first. In the second section, results are organized around the research questions for Year 6 of MSA. The report concludes with additional information on project implementation and impact and recommendations for future years of MSA.

Participants

MSA Teachers. Table 2 below displays demographic information on MSA teacher participants during the 2005-2006 school year. Eighty teachers participated in MSA during Year 6: survey data were collected from 58 of those teachers.

Teachers were from five different districts in northern New Mexico, including 15 elementary schools, 5 middle schools and 2 high schools.

Teacher participants were primarily female (82%), of Latino/a, Chicano/a or Spanish American ethnicity (84%), and had an average of 13.5 years of experience. The range in years of teaching experience was fairly large: there were two first-year teachers in MSA during Year 6, and one veteran teacher with 39 years of experience. Most teachers have a bachelor's degree with a credential and additional educational units of study (52%), while nearly 35% have Master's degrees. Teachers reported participating in reform projects similar to MSA (34%), including Baldridge, Teach America, Northern New Mexico Network for Rural Education, and the American Indian Science Education Society. MSA participants hold a range of credentials: a majority hold multiple credentials (27 of 58, or 47%), 75% of teachers hold elementary credentials, 12% of teachers hold single subject or secondary credentials, and nearly 30% of MSA teachers have special credentials, such as TESOL, Early Childhood, and Special Education certifications.

Table 2

Year 6 MSA Teacher Demographic Information

Variable	Descriptor	N = 58
Sex	Male:	10
	Female:	48
Ethnicity	White:	8
	Hispanic/Latino/a Spanish American:	49
	Native American:	1
Highest Degree Received	Bachelor's + Credential	7
	Bachelor's + Credential + Units Beyond:	30
	Master's	6
	Master's + Units Beyond:	14
	Doctorate:	0
	Other (M.D.):	1
Teaching Credential*	General Elementary:	44
	General Secondary:	2
	Special Emergency:	0
	Multiple Subject:	5
	Single Subject:	6
	Bilingual:	14
	Other: (Early Childhood, TESOL, Special Education, Science):	17
Years of Experience	Average Number:	13.5 years
	Range in Years of Teaching:	1 – 39 years
Previous participation in projects like MSA	Number of teachers: yes	20
Number of Years in Project**	1st Year MSA	19
	2nd Year MSA	14
	3rd Year MSA	21
	4th Year MSA	2
	5th Year MSA	0
	6th Year MSA	1

Note. *Teachers may hold multiple credentials.
**Total does not include all survey participants: some surveys were blank.

MSA students. Approximately 3,000 students from 22 different schools participated in the project during Year 6 of MSA. They ranged in grades from kindergarten through tenth grade. MSA views whole school participation in the

project as critical to the successful implementation of program goals. To that end, at many MSA schools, all teachers were MSA participants; these sites had the opportunity for a more comprehensive implementation of the project. It also meant that every student was taught by an MSA teacher. Other sites involved grade-level teams as MSA participants, meaning students had MSA teachers only at specific grade levels. At a small number of schools, a single teacher, at a specific grade level and content area, participated in the project.

Student ethnicity was primarily Hispanic/Latino/Spanish American (63%), with roughly 17% Native American and 20% white and/or other ethnicities, a reflection of the population in northern New Mexico. Student population ethnicity and background varied greatly from school to school. More than 87% of the MSA student population qualified for a free/reduced lunch program (an indicator of low S.E.S.), while nearly 63% of the total population was identified as English Language Learners (ELL).

MSA mentors. Three mentor teachers provided project leadership during Year 6 of MSA. A fourth mentor, who worked approximately 50% time, joined the project in the fall of 2005; her responsibilities including coaching and informal observations. The three lead MSA Mentors were responsible for program development, program implementation, and project management. Additionally, mentors continued to participate in their own on-going education and professional development by attending and presenting at state and national conferences and seminars, and organizing and participating in graduate level programs, both as teachers and students.

As in previous years of the project, mentors served as project directors and program planners, and worked to develop and implement the goals for MSA. They planned and led MSA Summer Institutes, and then followed up these intensive work sessions by supporting teachers and guiding project member thinking as teachers implemented new strategies and approaches to teaching and collaboration. Mentors observed teachers in their classrooms, as they worked to incorporated new concepts and teaching strategies in their classrooms to support student learning. The cognitive coaching protocol was refined and used extensively by mentors (Costa & Garmston, 1998) , as was a second protocol to gauge informally the level and quality of implementation of project goals in MSA classrooms (see Appendix C).

Figure 1 below displays the MSA model used during Year 6 of the project, which emphasizes the areas of collaboration, technology, classroom management, instruction, curriculum, and assessment in support of student learning.

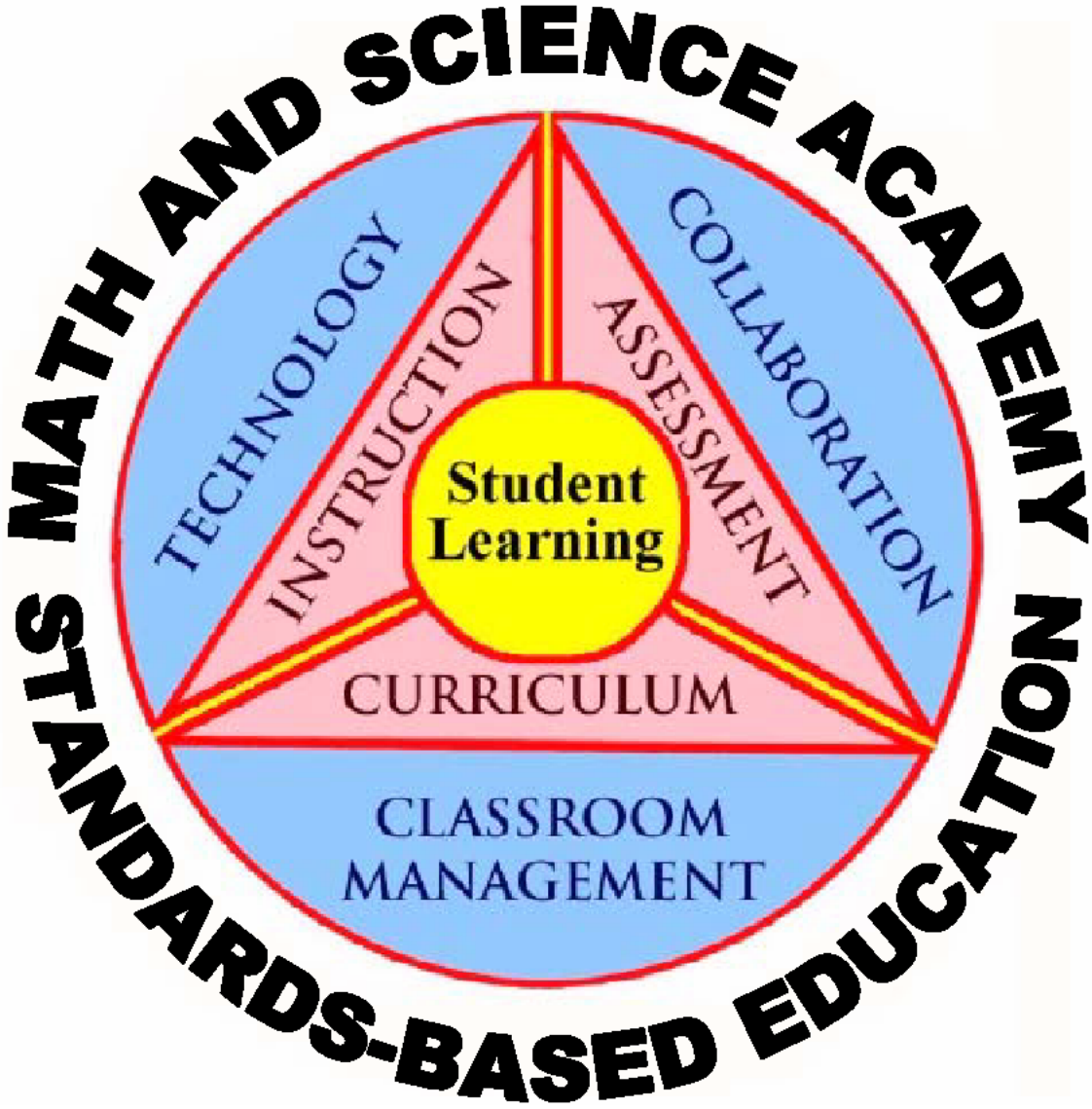

Figure 1. MSA model for quality professional development.[1]

Implementation of MSA Year 6 Project Goals

The following section presents data gathered to answer the four research questions that guided our evaluation. The Year 6 MSA foci were: to increase student

[1] Graphic created for MSA by Phillip Brown, 2005.

learning, develop and enhance collaboration amongst and between teachers and schools, more systematically assess student learning, and explore how and in what ways the cognitive coaching model could be refined to better support teachers as they learned to reflect on their instruction and refine it to increase student learning. In the paragraphs that follow, survey results are presented for Year 6 of MSA. In some instances, comparisons are made between teachers Year 5 responses and their Year 6 responses. The cohort for each group varied somewhat, however, so caution should be used in interpreting these results.

Program Evolution, Coaching, and Scale-Up Success

Program Evolution. The MSA model for professional development incorporates six different components, critical features of quality teaching and learning, that MSA emphasizes as teachers develop and strengthen their capacity to teach effectively. The areas of focus during Year 6 of MSA include: planning, collaboration, standards-based instruction, assessment, technology, and classroom management. Further, as the program expanded to include elementary schools, the importance of deepening teacher content knowledge in mathematics and science emerged as a critical need. Teachers, schools, and districts face the task of helping 100% of their students reach academic proficiency in math and language arts by the year 2014, as mandated by NCLB (No Child Left Behind Act, 2001).

In response to this need for deepening teacher's math content knowledge, MSA incorporated a math-content component to the Summer Institute, and on-going professional development for math instruction. At the 2005 Summer Institute, MSA teachers participated in math sessions facilitated by math content and pedagogical experts. The goal was to deepen teachers' own content knowledge of mathematics, while simultaneously providing them with strategies and frameworks for teaching students about math in ways that were developmentally appropriate, standards-based, and engaging for students.

MSA mentors also built in additional content learning experiences for teachers throughout the school year to reinforce mathematical concepts and strategies learned at the Summer Institute. Mentors recognized early on that merely exposing teachers to mathematical concepts was insufficient to foster deep conceptual understanding and learning. MSA teachers revisited math concepts after implementing units involving different kinds of mathematical thinking and reasoning. Armed with both new knowledge and experience on how students solve

problems, teachers engaged in additional learning experiences and professional development sessions to further their understandings of how to increase student learning and performance in math.

Other components of MSA remained the same during Year 6 of the project: teachers attended Summer Institutes, where they established long- and short-term learning goals for their students. They incorporated standards-based instruction into their daily work with students, and devised ways to more regularly assess and track student progress. MSA teachers met with their colleagues on bi-weekly basis to establish guidelines for quality work and performance at their sites, to discuss student work, and to plan for "Celebrations of Learning," held twice during the school year. Teachers used cooperative learning strategies and technology to support student learning. MSA teachers were also responsible for reading and responding to bi-weekly articles provided to them electronically, selected to stimulate their thinking on a variety of topics in education. MSA mentors met with teachers both formally (during cognitive coaching sessions) and informally after classroom observations to discuss teachers' successes and challenges in implementing MSA program goals. At the conclusion of the school year, MSA members attended a graduation celebration for third-year veteran teachers who had successfully completed the program.

Cognitive Coaching. A centerpiece of the MSA approach to building and strengthening teacher capacity is on-going classroom observations of project members as they carry out learning and instruction, and implement project goals and objectives. Observers (including MSA veteran teachers, selected third-year MSA teachers, as well as Mentors) are trained to use a "cognitive coaching" protocol, developed by Costa and Garmston in 1994. The protocol (see Appendix C) includes a 3-part sequence, designed to help teachers reflect upon their practices, and to document the extent to which teachers are implementing MSA principles.

Table 3 below summarizes teacher responses to questions about the nature and quality of the cognitive coaching experiences. Teachers were overwhelmingly positive in their responses to the benefits of cognitive coaching. One teacher wrote the following about her experience with cognitive coaching:

> I was so nervous before my coach came in to watch me teach. I'm an experienced teacher, but it seemed so formal. Not really sure what I was expecting. Anyway, my coach was an MSA Mentor, and it turned out to be a chance for me to reflect on my practice, and really see clearly where the strengths and weaknesses of my lesson were. I learned so much

about my own ideas, and I know my students benefited from seeing me continuing with my own learning.

Table 3

Cognitive Coaching

Number of Coaching Interactions During Year 6	Average: 4 sessions/year Range: 1 session – 9 sessions
Benefits of Coaching	1. Opportunity to reflect on practice 2. Immediate feedback on teaching effectiveness
Challenges of Coaching	1. Time 2. Lack of familiarity with the process and the protocol
Coaching Impact on Student Learning	1. Students seem more engaged in their own learning. 2. Students benefit from knowing others care about good teaching and learning.
Coaching Impact on Teaching	1. Increased capacity to clearly articulate learning goals to students and self. 2. Increase in self-confidence.

In general, MSA Mentors were coaches for first-year MSA teachers, while more veteran MSA members were coached by a principal, and/or other MSA coaches (including third-year MSA members, and veteran MSA teachers). As previously noted, overall, teachers were positive in their responses and views of the impact cognitive coaching had on their implementation of MSA strategies. Teachers were not asked to rate or score the quality of their coaching experiences in the survey. However, more teachers reported scheduling and logistical challenges when coaching involved personnel *other* than MSA mentors in open-ended responses. In cases where coaches were new to the process, many teachers also noted that the coaching relationship "improved" as the year progressed as participants became more familiar with the protocol.

Scale-Up Success. To gauge the success of the scale-up efforts of MSA, teachers were asked to rate the effectiveness of the MSA program. In general, teachers rated MSA program effectiveness as "highly effective" as shown in Table 4. In particular, teachers reported that MSA was highly effective in helping them become familiar with standards-based instruction, developing knowledge of content area frameworks, and assisting with the development of student learning goals. MSA teachers also reported that MSA was effective in increasing their assessment

knowledge and practices, a focus area for the 2005-2006 year. Teachers also mentioned learning about cooperative learning strategies as particularly effective. Ratings for learning about technology were slightly lower, reflecting a decision by MSA mentors to focus time and resources on other areas, specifically on assessment and data analysis. There were no statistically significant differences in ratings between first-year MSA teachers, and their veteran colleagues. Teacher comments about MSA program effectiveness are below.

Table 4

MSA Program Effectiveness

	How effective was MSA in the following areas?	2005-06 N = 58	
		Mean	SD
a)	Familiarizing you with standards-based instruction	4.7	0.6
b)	Developing your knowledge of state frameworks for content areas	4.7	0.6
c)	Helping you develop learning goals	4.6	0.7
d)	Teaching you assessment strategies	4.4	0.7
e)	Assisting you with data analysis	4.1	0.9
f)	Helping you understand how to use rubrics to guide instruction	4.3	0.7
g)	Helping you understand how to develop assessments	4.2	0.7
h)	Helping you understand how to use technology effectively	3.9	0.9
i)	Assisting you in implementing cooperative learning activities	4.4	0.7
j)	Helping you understand how learning theory relates to student learning	4.3	0.7

Note. Scale-1=Not Effective; 3=Somewhat Effective; 5=Highly Effective.

Project Impact on Student Learning and Achievement

Teacher Views. Student learning, in the form of criterion referenced achievement test data is another important component of project success. Student achievement data were provided to CRESST by MSA via a third party. To generate additional information about project impact on student learning, teachers were surveyed about how and in what students benefited from their teacher's participation in MSA through selected response and open-ended questions.

Overall, MSA teachers were very positive about the impact MSA had on student learning and achievement. As in previous years, teachers reported observing changes in student learning due to their participation in MSA. Teachers rated highly various MSA approaches to strengthening student learning, including providing students with records of performance, specific strategies for math learning and cooperative learning opportunities. One middle school teacher wrote:

> MSA had a very positive impact on students and their learning. At first they were a little unsure and hesitant about some of the techniques. But as the year progressed they really knew what was expected of them; bell ringers, graphic organizers, working in groups, using agendas, and placing objectives on the board were all effective in supporting student learning.

There were slight changes in teacher ratings from 2005 to 2006 of questions relating to MSA impact on student learning, but none of these variations were statistically significant. Table 5 below shows teacher ratings of the impact their MSA participation had on student achievement for Year 5 and Year 6 of the project.

Table 5

Student Learning and Achievement

	Please indicate your observations regarding student learning and achievement this year.	2005-06 N=58		2004-05 N=54	
		Mean	SD	Mean	SD
a)	I have observed changes in student learning and achievement this year.	4.3	0.8	4.0	0.7
b)	My participation in MSA had a positive impact on my students' learning and achievement this year.	4.5	0.7	4.5	0.7
c)	MSA concepts helped increase student learning and achievement.	4.4	0.7	4.3	0.8
d)	Students learned more because of cooperative learning opportunities in my classroom.	4.2	0.8	4.1	0.9
e)	Students benefited from my keeping track of their progress in my classroom (progress charts).	3.9	1.0	3.9	0.9
f)	Students benefited from the use of keeping track of their own progress (folders).	3.9	1.0	*	*
g)	Students benefited from use of math strategies in my classroom.	4.1	1.0	4.2	0.7

Note. Scale: 1 = disagree, 3 = moderately agree, 5 = strongly agree, NA = not applicable.
*: question not included in 2004 –2005 survey

Teachers' open-ended responses regarding the ways in which MSA influenced student learning and achievement were varied, and included a range of approaches and strategies. Most teachers reported using "progress folders" as a method for goal setting and tracking student progress, but some teachers indicated a need to "do more" with the information in the records. A second prevalent theme that emerged regarding project impact on student learning related again to the use of cooperative learning strategies. Different than in early years of the MSA project, more teachers reported seeing positive results when employing cooperative learning groups to scaffold student learning. This may be because more teachers have been exposed to the concepts and ideas of cooperative learning, and/or because students themselves are more experienced and skilled at working with others in groups. Additional comments below highlight additional teacher observations of MSA's impact on student learning and achievement.

MSA Teacher Comments on Student Achievement

> My students made gains in the area of math. By giving the pre-mid-end of year assessments I have seen growth for each child. Through the use of the ACE Rubric, students can see their own growth in math and writing weekly.

> I created pre and post-tests for each nine-week period for my Social Studies classes. This was difficult work and took a lot of time, but I feel that I am addressing my assessment goals and giving feedback to my students. They learned more because of my efforts.

> Students benefited most from what I've learned from MSA about teaching math. Students learned concepts better when I used the approach: concrete -> representational -> abstract. Their math knowledge and scores really improved!

New Mexico Standards-Based Assessment Results

Student achievement data from the 2005-2006 school year are presented in this section. Data were provided to MSA by individual schools through a third party; general information about school and district performance was accessed from the New Mexico Public Education Department website (http://www.ped.state.nm.us/). In 2005, New Mexico schools established baseline proficiency levels in language arts and math for all students. Each year, schools are required to make pre-determined, incremental steps towards achieving 100% proficiency for all students by 2014. This progress is referred to as "Adequate Yearly Progress" (AYP). All schools, and all identified sub-groups within a school, must demonstrate increases in the number of students reaching the "proficiency" level in both reading and mathematics each year, or risk serious repercussions and sanctions from both state and federal agencies.

Table 6 below displays proficiency targets for the 2005 and 2006 school years, along with the percentage increase needed to meet the state mandated proficiency levels. New Mexico has a wide variety of school configurations due to community needs, geography and resources. Notice how proficiency percentages vary for school configuration for different years. All districts, however, are mandated to meet the goal of 100% proficiency for all schools, all subgroups and all students by 2014. The starred rows below indicate school configurations found in MSA during the 2005—2006 project.

Table 6

2005, 2006 New Mexico Percentage Proficient for AYP Target

School's Grade Configuration	Reading Target 2005	Reading Target 2006	% increase needed to meet proficiency	Math Target 2005	Math Target 2006	% increase needed to meet proficiency
*K–5	40.85	45.00	+ 4.15%	24.13	28.00	+ 3.87%
*K–6	36.00	40.00	+ 4.00%	19.40	28.00	+8.60%
*6–8	34.14	38.00	+ 3.86%	10.58	15.00	+4.42%
*7–8	37.17	45.00	+ 7.83%	10.75	20.00	+9.25%
*9–12	37.30	41.00	+ 3.70%	18.29	22.00	+3.71%
K–8	36.79	41.00	+ 4.21%	15.28	19.00	+3.72%
7–12	37.30	41.00	+ 3.70%	14.42	18.00	+3.58%
K–12	37.23	41.00	+ 3.77%	15.79	20.00	+4.21%

Note. Source: http://www.ped.state.nm.us/

Performance levels for the 2005-2006 New Mexico Standards-Based assessment are categorized in four groups, and include the following descriptions:

- **Advanced (Level 4)**: students at this level show expertise with skills in the New Mexico Content Standards.
- **Proficient (Level 3)**: students at this level show a solid though imperfect display of skills in the New Mexico Content Standards.
- **Nearing Proficiency (Level 2)**: students at this level show only a partial understanding of the knowledge and skills in the New Mexico Content Standards. Students may need additional instructional opportunities and academic commitment to achieve the Proficient level.
- **Beginning Step (Level 1**): students at this level show a minimal understanding of skills included in the New Mexico Content Standards. Students need additional instructional opportunities and increased academic commitment to achieve the Proficient level.

Threshold Scores. In addition to establishing the proficiency percentages for AYP, threshold or cut scores are established for each of the content areas, and score points on the scale (advanced, proficiency, nearing proficiency, and beginning step). Student progress is often measured by comparison of scale scores from year to year.

However, because New Mexico uses a standards-based assessment to measure progress, the assessments themselves (as well as the content) differ from grade level to grade level. Therefore, it is not possible to compare a third-grade math scale score of 600 to a fifth-grade math scale score of 600, because the content standards for each grade vary. Some effort has been made to include items for vertical scaling, to allow for comparisons from year to year, but the test publisher has not released these items for analyses. Table 7 displays Grades 3–9 threshold scores for math, reading, and science for New Mexico for the 2006 assessment.

Table 7

Scale Scores and Proficiency Levels for NM Math, Reading, and Science

	Grade 3 SS Range	Grade 4 SS Range	Grade 5 SS Range	Grade 6 SS Range	Grade 7 SS Range	Grade 8 SS Range	Grade 9 SS Range
Mathematics							
Advanced (4)	660-690	675-738	700-744	716-774	733-795	756-857	775-830
Proficiency (3)	611-659	637-674	677-699	678-715	699-732	707-755	716-774
Nearing Proficiency (2)	557-610	584-636	659-676	632-677	649-698	661-706	668-715
Beginning Step (1)	531-556	522-583	542-658	572-631	614-648	630-660	630-667
Reading							
Advanced (4)	673-724	677-758	705-777	710-830	729-800	740-804	743-810
Proficient (3)	622-672	640-676	658-704	671-709	680-728	686-739	690-742
Nearing Proficiency (2)	593-621	600-639	609-657	624-670	635-679	651-685	661-689
Beginning Step (1)	539-592	546-591	555-608	564-623	577-634	567-650	587-660
Science							
Advanced (4)	668-728	698-738	719-760	719-800	736-778	758-687	769-807
Proficient (3)	600-667	650-697	670-718	669-718	683-735	691-757	696-768
Nearing Proficiency (2)	546-599	594-649	619-669	615-668	629-682	640-690	647-695
Beginning Step (1)	506-545	528-593	556-618	315-614	592-628	609-639	605-646

Note. Source: http://www.ped.state.nm.us/

Some issues involved with CRTs and proficiency scores arise when a student scores right below (or above) the critical or cut value, that is, the score needed to achieve a specific level of proficiency. A one-point difference in a student score may cause a student to be labeled "proficient" or "not proficient" if s/he scores at or near the threshold values. New Mexico addresses this problem by creating a "confidence

band" that includes both upper and lower limits for student scores. Additionally, the accuracy of results for a particular sub-group may be compromised due to small sample size at some of the schools.

MSA 2005–2006 Student Achievement Results

For the 2005-2006 academic year, scores are reported in the following sections. First, proficiency levels for all MSA schools are presented for the 2005–2006 school year. Next, comparisons between MSA student performance and non-MSA student performance are presented. We conclude this section with in-depth examinations of two schools that highlight progress in MSA student achievement.

It should be noted that the implementation data and available student data provide the beginnings of important information about the impact of MSA on student achievement, but there are limitations to these analyses. First, the absence of a longitudinal database restricts the sensitivity of the analyses and our ability to conduct multi-level analyses across the sample to control for pre-existing differences among individual students. Second, inherent differences in the data sets make it necessary to guide the reader to use caution when interpreting the results presented in these sections, due to the possibility of other pre-existing differences in student populations that may account for the reported differences in student performance, including (but not limited to) principal leadership, initial teacher quality, and/or commitment to the project. And third, the implementation design limits attributions of causality and inhibits firm conclusions about project impact on student achievement.

MSA Academic Performance: Whole School Proficiency

Table 8 below provides information on performance proficiency percentages for all MSA schools for the 2005–2006 school year. The table displays information for schools by district and includes the grade levels included in the schools cluster. Where possible, specific grade levels and classes are identified by participation in MSA if an entire grade level did not participate in MSA. For example, in District 1, both elementary schools in the district participated in MSA, but only one of the middle schools was part of the MSA program. Proficiency percentages are reported but not scale score means due to variations in the scaling at different grade levels.

As has been noted elsewhere in this report, the sample size for a specific school may influence scores and percentages in ways that provide biased and/or unreliable information about student learning. General proficiency levels on standards-based assessments are but one of many indicators that demonstrate student achievement, learning, and progress.

Table 8

MSA Schools and District Proficiency Percentages: 2005–2006 Academic Year

District & School Grade Levels Data Reported	Number of Students (N)	Math Percentage of students at Proficient or above	Reading Percentage of students at Proficient or above	Science Percentage of students at Proficient or above	School AYP Met?
District 1					
School A Grades 3 - 5	(N=39)	39	65	68	Yes
School C Grades 3 - 5	(N=44)	40	48	73	Yes
School D Grades 6 - 8	(N=37)	10	38	16	No
District 2					
School F Grades 3 - 5	(N=48)	28	48	44	Yes
School G Grades 6, 7	(N=87)	10	45	16	No
School H Grade 9 MSA - math only	(N=47)	36	53	47	Yes
District 3					
School I (MSA = 4th grade only	(N=24)	21	63	54	No (*1 MSA class)
School J Grades 5, 6	(N=282)	30	47	28	Yes
District 4					
School M (MSA = one 3rd, two 4th, one 5th grade)	(N=77)	48	59	69	Yes
School N (MSA=two 3rd, one 4th grade)	(N=56)	23	46	68	Yes
District 5					
School P (MSA = one 6th)	(N=21)	NA	14	24	No
School Q (MSA: 2-5th, 2-6th grades)	(N=94)	13	39	24	No
School S (MSA: two 5th grades)	(N=35)	12	43	34	No
School TGr. 7 (MSA: 4 teachers, 1 science, 1 math, 1 LA, 1 history)	(N=57)	16	56	11	No (*MSA cohort = yes)
School U Grade 8, 9 (5/16 MSA Ts)	8th N = 196 9th N = 230 (N = 426)	10	26	18	No

The range for proficiency levels in mathematics for MSA schools ranges from a low of 10% proficiency to a high of 48%. In language arts, proficiency levels range from 14% proficiency to a high of 65% proficiency. Science proficiency levels range from 11% to 73%. As in previous years of the project, proficiency levels are higher at the elementary levels, with a noticeable decline in scores at the middle school level, particularly in seventh and eighth grades. MSA schools continue to make progress towards increasing proficiency in all content areas, but much work remains to be done to meet the ambitious NCLB 100% proficiency goal by 2014.

MSA Student Performance vs. Comparison Student Performance

Data reported in this section represent information from all MSA districts, schools, and teachers and non-MSA school and classroom comparison data. Comparison data were collected from two sources: from MSA schools where not all teachers participated in the project, and from schools within MSA "districts" that did not participate in the project during the 2005-2006 school year. We strove to balance the non-MSA comparison sample according to total number of students, grade levels represented, and demographics of the student population, but again, pre-existing differences in the data sets limit the reliability of the comparisons.

Tables 9 to 17 present data from the 2005-2006 school year for MSA and non-MSA students. Students, teachers, and schools were matched to the greatest extent possible, but slight variations in the demographics occur in the data, due to natural variation in schools and districts.

The percentage of students scoring at or above the proficient level (a score of 3 or 4: see Table 6 above), at all grade levels in MSA during the 2005-2006 school year, is presented. In the areas of math and language arts, MSA students (Grades 3–9) generally outperformed their non-MSA colleagues, with the exception of students in Grade 8. In the area of science, more MSA students scored at the proficient level or above than their counterparts. Sample sizes vary for content areas (math, language arts, and science) due to the number of student scores reported for each subject.

Table 9

Grade Level Scale Scores and Proficiency Levels: Grade 3

School Name	Number of Students (N)	Mathematics		Reading		Science	
		Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above
School A	15	610	47	642	67	634	80
School C	15	597	31	615	62	622	77
School F	14	605	57	630	69	639	93
School M	19	600	37	619	42	627	74
School N	37	594	24	618	46	626	76
MSA 3rd Grade Totals	100	601	41	625	63	630	91
Non-MSA School F	12	600	42	635	69	638	92
Non-MSA School N	49	595	35	614	45	624	80
Non-MSA School S	18	606	31	613	29	628	89
Non-MSA 3rd Grade Totals	79	600	36	621	42	629	83

Table 10

Grade Level Scale Scores and Proficiency Levels: Grade 4

School name	Number of Students (N)	Mathematics		Reading		Science	
		Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above
School A	12	625	50	651	75	631	58
School C	16	633	44	626	31	631	75
School F	44	610	56	632	44	620	42
School I	24	620	21	647	63	630	54
School M	35	619	52	641	55	640	77
School N	19	609	21	628	47	618	53
MSA 4th Grade Totals	150	619	43	638	51	629	59
Non-MSA School I	112	622	38	642	57	624	49
Non-MSA School N	86	619	34	634	42	615	44
Non-MSA 4th Grade Totals	198	621	36	638	50	620	47

Table 11

Grade Level Scale Scores and Proficiency Levels: Grade 5

School Name	Number of Students (N)	Mathematics		Reading		Science	
		Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above
School A	12	635	17	662	58	648	58
School C	15	646	47	668	56	659	63
School F	20	646	35	672	75	646	50
School J	96	643	37	655	57	639	36
School M	23	653	48	650	78	652	52
School Q	39	634	15	652	29	632	34
School S	35	629	05	651	08	639	06
School V	19	624	11	648	47	634	21
MSA 5th Grade Totals	294	639	26	657	43	644	32
Non-MSA School F	22	627	14	650	41	633	18
Non-MSA School J	46	638	23	657	59	637	33
Non-MSA School M	30	620	03	653	50	629	07
Non-MSA School Q	21	622	19	644	38	623	10
Non-MSA School R	42	637	26	653	50	639	24
Non-MSA School S	15	625	20	645	47	631	33
Non-MSA 5th Grade School Totals	176	628	19	650	47	632	26

Table 12

Grade Level Scale Scores and Proficiency Levels: Grade 6

School name	Number of Students (N)	Mathematics		Reading		Science	
		Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above
School D	19	639	11	650	37	646	26
School G	40	646	18	662	45	646	13
School J	156	659	28	664	42	650	21
School P	21	--*	--*	635	14	643	24
School R	19	648	16	660	32	644	03
School V	20	654	05	654	25	650	20
School X	29	642	11	650	17	638	14
MSA 6th Grade Totals	304	648	21	654	37	645	20
Non-MSA School B	10	647	0	664	56	661	44
Non-MSA School R	30	633	03	646	27	633	08
Non-MSA School S	46	632	02	651	28	644	15
Non-MSA School X	28	623	00	641	14	629	07
Non-MSA School W	30	633	03	646	27	633	08
Non-MSA 6th Grade Totals	144	633	02	650	27	640	12

*_Note._ missing data

Table 13

Grade Level Scale Scores and Proficiency Levels: Grade 7

School Name	Number of Students (N)	Mathematics		Reading		Science	
		Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above
School D	21	655	14	667	43	647	14
School G	47	651	04	678	43	657	19
School T	57	667	16	682	56	655	11
MSA 7th Grade Totals	125	658	12	676	49	653	15
Non-MSA School B	21	669	24	684	24	673	38
Non-MSA School T	112	639	02	653	17	631	03
Non-MSA 7th Grade Totals	133	654	05	668	24	652	10

Table 14a

Grade Level Scale Scores and Proficiency Levels: Grade 8

School name	Number of Students (N)	Mathematics		Reading		Science	
		Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above	Average scale score	Percentage of students at Proficient or above
School D	20	666	05	664	35	649	10
School U	196	660	07	669	24	652	06
MSA 8th Grade Totals	216	663	06	667	25	651	06
Non-MSA School B (veteran MSA teachers)	22	693	32	702	68	689	36
Non-MSA School G	57	674	09	684	52	660	07
Non-MSA School U	10	636	00	637	00	622	00
Non-MSA 8th Grade Totals	89	668	13	674	49	657	13

Table 14b

Grade Level Scale Scores and Proficiency Levels: Grade 8

School Name	Number of Students (N)	Mathematics		Reading		Science	
		Average Scale Score	Percentage of Students at Proficient or Above	Average Scale Score	Percentage of Students at Proficient or Above	Average Scale Score	Percentage of students at Proficient or Above
School D	20	666	05	664	35	649	10
School U	196	660	07	669	24	652	06
MSA 8th Grade Totals	216	663	06	667	25	651	06
Non-MSA School G	57	674	09	684	52	660	07
Non-MSA School U	10	636	00	637	00	622	00
Non-MSA 8th Grade Totals	67	655	07	661	45	641	06

Tables 14a and 14b show slightly different information; 14a includes School B as a non-MSA site. No teachers at this site participated in MSA during the 2005-2006 school year, but the site has a long-term or veteran MSA staff. Table 14b displays the same information for eighth-grade schools, but excludes School B from the analysis.

Table 15

Grade Level Scale Scores and Proficiency Levels: Grade 9

School Name	Number of Students (N)	Mathematics		Reading		Science	
		Average Scale Score	Percentage of Students at Proficient or Above	Average Scale Score	Percentage of Students at Proficient or Above	Average Scale Score	Percentage of students at Proficient or Above
School H	47	706	36	692	53	691	47
School U	230	681	10	669	26	671	18
MSA 9th Grade Totals	277	694	17	680	38	681	28
Non-MSA School U	54	649	04	635	03	635	00
Non-MSA 9th Grade Totals	54	649	04	635	03	635	00

These data are encouraging information of MSA project impact on student achievement. During the 2005-2006 school year, significant time and attention were devoted to increasing teacher content knowledge and pedagogical expertise in all content areas, particularly in mathematics.

Additional Analysis of Student Achievement Data

An additional comparison to report on student achievement is performance at School T for MSA and non-MSA students, shown in Table 16. Students with four MSA teachers, a complete "MSA team" (1 math teacher, 1 language arts teacher, 1 science teacher, and 1 history/social studies teacher), outperformed non-MSA School T students in math, language arts, and science at statistically significant levels. Students with three MSA teachers also outperformed the non-MSA cohort at statistically significant levels ($p > .05$). Background information, including academic performance in prior years, was taken into consideration when conducting theses analyses. There were no significant differences between groups based on background information; school records indicate that students were randomly

assigned to teachers (MSA vs. non-MSA classrooms). Readers are again urged to use caution when interpreting these results as we have not included teacher level information that may have impacted student performance and results.

Table 16

School T: 7th Grade MSA vs. non-MSA performance

			Mathematics		Reading		Science	
School Name	Grade	Number of Students (N)	Average Scale Score	Percentage of students at Proficient or Above	Average Scale Score	Percentage of Students at Proficient or Above	Average Scale Score	Percentage of Students at Proficient or Above
School T MSA (4 MSA Teachers)	7	57	667*	16*	681*	56*	655*	11*
School T Non-MSA	7	112	639*	02*	653*	17*	631*	03*

Note. *Statistically significant difference at the p<. 05 level.

Also of importance in this MSA vs. non-MSA comparison at School T is the decrease in number of students scoring at Level 1 (beginning step). Eighteen percent of students who were taught by the MSA team of four scored at Level 1, while over 60% of students taught by non-MSA teachers scored at Level 1 in mathematics. In language arts, no students in the MSA cohort scored at Level 1, while 21% their non-MSA counterparts scored at Level 1. The pattern repeats for science scores: 9% of MSA students scored at Level 1, while more than 45% of non-MSA students received a beginning step, Level 1 score. These differences suggest that MSA teachers are supporting student learning at all levels; that is, they are working successfully with lower and higher performing students to increase learning.

A second example of successful program implementation and impact comes from an elementary school setting, where the majority of teachers (10 of 12) of the school's fifth- and sixth-grade teachers participated in MSA for two years. Teachers at this site met and conversed weekly, discussing student work on a regular basis.

At this site, the MSA cohort remained the same from last year ('04–'05) to this year ('05–'06), leadership at the school was constant, and there were no major changes in curriculum materials from year to year. Additionally, there were no other initiatives in place during the 2005–2006 school year, other than teacher participation in MSA. Thus, it is possible to examine student achievement scores as reflecting MSA project impact on student learning and achievement. As Table 17 below displays, student proficiency levels doubled in mathematics between the '04–'05 school year, and the '05-'06 school year. Language arts proficiency levels increased slightly, while science scores decreased slightly from 2004-05 to 2005-06. The increase in mathematics scores reflects a project-wide emphasis on strengthening teacher content and pedagogical knowledge in mathematics.

Table 17

MSA School J Comparison

School Grade Levels	Number of Students (N)	Math Percentage of Students at Proficient or above	Reading Percentage of Students at Proficient or above	Science Percentage of Students at Proficient or above	School AYP Met?
2004 - 2005 School J Grades 5 & 6	(N=270)	16	45	32	No
2005 - 2006 School J Grades 5 & 6	(N=282)	30	47	28	Yes

These are encouraging results for the Math and Science Academy. The evidence presented in this report is weak but suggestive of the impact of MSA on student learning and achievement. While subject to the caveats mentioned earlier, the findings suggest that MSA may be having positive effects on teachers and their knowledge and skill in providing quality instruction to students. Particularly noteworthy are the two cases presented, where the majority of teachers, or a "complete" team participated in MSA. Results provide evidence of areas of project success, and highlight other areas where the project can be strengthened. MSA continues to have a stronger impact on elementary school teachers and their students, while its impact is more diffuse at the middle- and high-school levels. This finding may be partially

explained by project structure: MSA elementary school teachers work with the same students throughout the day, and can implement the approaches and strategies MSA promotes with greater attention and fidelity. Program organization and participation at middle and high schools is less focused and more diffuse. Students may work with an MSA math teacher, but have non-MSA teachers for the remainder of their day. Project impact is more difficult to gauge in these situations. The 2005–2006 data provide some evidence of increased effectiveness of MSA when there is a concentrated, concerted effort to support student learning through the successful implementation of MSA goals and objectives. While program effectiveness varied based on levels of implementation, and a host of other factors, the available evidence suggests that MSA can make important contributions to districts, schools, teachers, and students in the quest to provide quality teaching and learning experiences to improve student learning.

Project Impact on Teachers

The next section presents information about the ways in which teachers were impacted by participation in MSA. The sub-sections parallel the project foci for Year 6: planning, professional collaboration, instructional practices, assessment practices, instructional resources, and classroom management.

Planning. In the MSA model for professional development, systematic planning (both short and long range), along with establishing and articulating clear learning goals that are aligned with state content standards, are essential elements in quality teaching and learning. During the 2006 Summer Institute, MSA teachers had the opportunity to plan collaboratively, within and across grades, schools, and districts, to establish learning goals and key concepts for their classes and content areas. Teachers used tools and protocols provided by MSA in this process.

Survey results indicate that teachers viewed the planning process as a critical component in promoting and supporting student learning. Table 18 below presents results from the survey. In general, teachers reported developing short- and long-term goals for their students, and frequently planned with their colleagues, in particular to set goals for learning and achievement with grade level teachers. Teachers also reported that their instructional planning, articulation, and collaboration with colleagues had changed "a great deal" (4.8 on a 5-point scale) as a result of their participation in MSA.

Table 18

Program Planning: Curriculum and Articulation

	Please respond to the following based on your implementation of MSA ideas.	2005-06 N = 58	
		Mean	SD
a)	I develop short-term goals for my students.	4.2	0.7
b	I develop long-term goals for my students.	4.3	0.8
b)	I identify essential questions that are tied to my students' learning goals.	3.8	0.9
c)	I use appropriate curricula to support student learning.	4.5	0.6
e)	I work with my colleagues in my content area/grade level to set goals and standards for learning and achievement.	3.9	0.9
f)	I work with my colleagues across content areas to set goals and standards for student learning.	3.6	1.1
g)	I developed goals for "data not guesswork" performance.	3.9	0.7
h)	I use "data not guesswork" to guide instruction.	3.9	0.8

Note. Scale: 1 = never, 3 = sometimes, 5 = always, NA = not applicable.

Additional teacher comments about planning and articulation are found below.

Teacher Comments on Planning with Colleagues

> Articulation of learning goals to students, more efficient use of cooperative learning strategies and becoming better at assessing student learning.
>
> Students must know the learning goals before instruction begins. I now plan with the end in mind. What is it that I want my students to know?
>
> When I started MSA I was a new teacher. MSA taught me to use my standards to guide instruction. Many of the strategies I use in teaching also come from MSA.

Professional Collaboration. Survey data indicate that MSA teachers view increased professional collaboration as contributing to stronger teaching and learning at their sites. More regular collaboration with peers served to deepen

teachers' understandings of how to implement MSA tools, strategies, and ideas more effectively in their classrooms; to strengthen teachers' sense of belonging to the MSA team at their sites; and to build on their sense of membership in the MSA professional community. Comments below from teachers illustrate the general findings about the effects of collaboration on teachers during Year 6 of MSA, and highlight teachers' observations about the benefits and challenges of collaborative planning.

Teacher Comments about Collaboration

> This area still needs work but at least we are meeting together twice a month to collaborate.
>
> My colleagues and I collaborate and talk about student learning across grade levels and we plan instruction together to correlate with what needs to be learned or taught. I teach 3rd grade and I collaborate with 5th to talk about what I need to be teaching so 4th and 5th can continue with it.
>
> During our planning sessions, we talked a lot about how to provide students with consistency in our school. We discuss and organize rules and procedure books, parent handbooks, rubrics, graphic organizers.

Table 19 presents teacher ratings of survey questions about the nature of teachers' collaborative practices.

Table 19

MSA Collaboration

	Please respond to the following based on your implementation of MSA ideas.	2005-2006 N = 58	
		Mean	SD
a)	I meet with my MSA colleagues to discuss student work on a regular basis.	4.2	0.8
b)	I meet with my MSA colleagues to discuss my teaching on a regular basis.	4.1	0.9
c)	I meet with my MSA colleagues to discuss student learning on a regular basis.	4.2	0.8

Note. Scale: 1 = never, 3 = sometimes, 5 = always, NA = not applicable.

Teachers also rated the extent to which teachers' collaboration with colleagues changed as a result of participation in MSA; this change was rated as a 4.2 on a 5-point scale.

Additional Teacher Comments on Collaboration

> MSA helped us to work more as a team. We went from the idea of *my* students to *our* students. We want all students to succeed and feel success.
>
> My colleagues from MSA have been a great deal of help to me. They have really shown me that we have to have high expectations for our students. Most of my other colleagues thought I didn't do enough arts and crafts activities but I feel confident that my students will love math and science.
>
> I met with my colleagues to discuss teaching and learning, but sometimes it would turn into a gripe session: I don't feel that this was too effective.
>
> A complete difference: we all work together to solve problems not just complain about them. We have developed clear, consistent rules and procedures.

Instructional Practices. As a model for professional development, MSA incorporates research-based approaches to instruction to support standards-based teaching. No set curriculum or activities are provided by MSA; rather MSA works with teachers to strengthen their knowledge and understanding of quality instruction, and how to best structure learning opportunities for all students.

MSA continues to incorporate new ideas and information into their strategies for supporting teachers; graphic organizers, a visual representation of student ideas, continue to be an important instructional strategy for students of all ages (Zikes, 1992), as are cooperative learning groups, an emphasis on higher-order thinking skills, and the use of technology to support research and access to quality materials and information. These instructional approaches represent a step away from more traditional teacher-directed activities and classrooms, and emphasize student involvement and collaboration as critical elements in the learning process.

MSA teachers reported a positive experience when new instructional tools were introduced and used in their classrooms during Year 6 of the project. Teachers also reported increases in student learning and student effort as a result of the use of MSA tools and strategies. More than 90% of Year 5 MSA teachers reported changes in the design and management of student learning opportunities in their classrooms due to their participation in MSA. As Table 20 indicates, MSA teachers report

frequent use of the tools and strategies MSA provides to increase student learning and achievement.

Table 20

MSA Teacher Instructional Practices

	Please respond to the following based on your implementation of MSA ideas.	2005-2006 N = 58	
		Mean	SD
a)	I post agendas for students that clearly identify learning goals.	4.1	0.9
b)	Learning activities are directly related to my learning goals.	4.4	0.6
c)	I access and purposefully build on students' prior knowledge.	4.2	0.6
d)	I require students to work collaboratively.	4.0	0.7
e)	I provide a language rich learning environment: accurate, expressive, and tied to the lesson.	4.3	0.6
f)	I use instructional strategies that support student understanding.	4.5	0.6
g)	I revisit learning goals to support student recall of the learning goals.	4.3	0.7
h)	I close lessons to support student recall of the learning goals.	4.1	0.8
i)	I model and emphasize metacognitive skills.	3.9	0.9

Note. Scale: 1 = never, 3 = sometimes, 5 = always, NA = not applicable.

Teacher Comments on MSA Instructional Practices

I feel I build more on students' prior knowledge. I revisit goals students have set for themselves and do my assessment to meet those needs. I use MSA concepts and ideas in all aspects of my teaching.

The best instructional approach for both my students and myself has been the posting of agendas and making goals for the day known. I used to think if students saw everything outlined, they would become disinterested in learning.

My instructional approaches have become more students oriented. I use student language, take into account student interest and needs. I try to be more open to new strategies and hands-on activities. I use graphic organizers and if my students suggest they would like to show me what they have learned through oral presentations or drawings then I will allow that.

Assessment Practices. As teachers, schools, and districts have become increasingly aware of the importance of understanding student learning and progress, assessment, both formative and summative, has taken on an integral role in the MSA model for quality teaching and learning. MSA teachers are becoming progressively more perceptive about the need and importance of "knowing what students know" before, during, and after instruction. Through a variety of different learning opportunities, MSA is working with teachers to support their development and understanding of the role that assessment plays in fostering and improving student learning. Specifically, during planning sessions, MSA teachers identified and/or created pre-, midpoint, and post-tests to gauge student learning. In previous years of MSA, teachers have reported a need for knowing more and understanding more about assessment. Survey results for the 2005–2006 school year indicate that project efforts to develop teacher assessment capacity are successful; teachers reported an increase in all types of assessment use. Teacher ratings of the frequency with which they use specific strategies to assess student learning are displayed below in Table 21.

Table 21

MSA Teachers' Assessment Strategy Use

	Please respond to the following statements based on your implementation of MSA assessment practices.	2005-2006 N = 58	
		Mean	SD
a)	I systematically gather data on my students and their learning in my classes.	3.9	0.9
b)	I analyze assessment data on a regular and timely basis to inform and guide my teaching.	3.7	0.9
c)	I guide my students in self-assessment.	3.6	0.9
d)	I use student data, observations of teaching, and interactions with colleagues to reflect on and improve my teaching practices.	4.2	0.7
e)	I provide students with information on how their work will be assessed.	4.1	0.8
f)	I provide students with examples and models of what represents "good work."	3.8	0.8
g)	I use different kinds of assessments to help me understand students' learning.	4.1	0.6

Note. Scale: 1 = never, 3 = sometimes, 5 = always, NA = not applicable.

Interestingly, all teachers reported that MSA participation has changed assessment practices for teaching and learning as a "4", to a great extent, on a 5-point scale, regardless of the number of years in the project. This is a definite increase from previous ratings; in 2004-2005, teachers reported only a moderate level of change in their assessment practices due to program involvement. Additional comments from MSA teachers about their assessment views and practices are below.

Teacher Comments on Assessment

> Reading First and the required use of DIBELS have dictated the influence in this area. MSA has influenced me to use more authentic, performance-related assessments that show students' understanding. I hope to do more to integrate this in the coming year. As a reading coach, I am working with nine teachers and helping them to use data. I hold monthly meetings with each grade level to review and analyze short-cycle assessments and adjust Intervention groups, as necessary.

> I have learned that assessment is not just tests and quizzes. Being able to assess students through different methods provides a better picture of student comprehension and understanding.

> I realize the importance of pre and posttests and analyzing the results. I was introduced to it this year and plan on implementing more of it next year.

Instructional Resources. During Year 6 of MSA, teachers reported occasional to frequent use of the instructional tools and resources made available and recommended by MSA. Teachers indicated that they viewed the resources MSA advocates—print materials, projects, investigations, and technology—as critical supports for student learning. Teachers reported success in using graphic organizers to help students "show what they know" in a variety of ways. Technology provided students with access to up-to-date information and the opportunity to create video presentations. Manipulatives were employed to strengthen students' conceptual knowledge and understanding in math, and students benefited from the participation in group projects and investigations. Additionally, teachers reported high levels of implementation of effective classroom management techniques (Wong & Wong, 1998). Table 22 below displays teacher ratings of the frequency of their use of specific instructional materials and resources.

Table 22

Instructional Materials and Resources

	Please respond to the following based on your implementation of MSA ideas.	2005-2006 N = 58	
		Mean	SD
a)	I structure learning time to allow students to engage in projects and/or investigations.	4.1	0.7
b)	I ensure a safe learning environment.	4.8	0.7
d)	I make available tools & materials to students to support learning.	4.6	0.6
e)	I make available print resources to students to support learning.	4.5	0.7
f)	I make available technological resources to students to support learning.	4.0	0.9
g)	I use graphic organizers to support learning.	4.4	0.8

Note. Scale: 1=never, 3= sometimes, 5=always, NA=not applicable.

Teachers reported a change in their use of instructional materials and resources due to MSA participation at 4.5 (to a great extent) on a 5-point scale. Additional comments from teachers about changes in their instructional approaches as a result of MSA participation include the following ideas:

Teacher Comments on Instructional Materials and Resources

> I no longer just rely on textbooks as a sole source of instruction. Textbooks are not the curriculum.

> I am moving away from just using textbooks. I introduce concepts, use models, and other concrete ways to help my students learn.

> Because I structure time so much more now, I have found that I am going deeper into my teaching. Safety is always first in my classroom regardless of what we're doing. I try my best to incorporate hands on whenever possible. I also try and use/incorporate technology such as power point presentations, compass learning, and Internet info. My all time favorite thought is using graphic organizers for Spanish, science, and spelling.

Conclusions and Recommendations

This final section of the report is structured around the MSA model and its components. The recommendations are intended to support future and growth of the project.

Coaching Model

The cognitive coaching model continues to work well for the MSA project. Additional refinements and revisions to the protocol have improved the usability and applicability of the classroom observations to MSA goals and objectives. More in-depth and specific training for all project members, including teachers, coaches and mentors, may be a productive use of time and resources. Specifically, participants could observe teachers (in real time or on video), and work through the coaching protocol jointly to ensure that all participants have a common understanding of what good teaching and assessment look like in MSA. Additionally, it may be useful for coaches to "recalibrate" the use of their protocol during the school year to strengthen the technical qualities of the tool (reliability and validity) by engaging in the same type of joint observations.

These steps to increase the technical qualities of the cognitive coaching tool may generate data that help to better understand MSA and how and in what ways successful MSA teachers use the strategies and tools provided by the project to support and increase student learning.

Teacher Learning

Planning. As survey results indicate, teachers value the opportunity to plan and plan collaboratively with colleagues. On-going, systematic opportunities to plan and evaluate the quality of those plans is critical to the success of MSA. Teachers benefit from guidance in these planning meetings and interactions, and from understanding and using timelines for the planning sessions. Additionally, teachers may benefit from revisiting their plans to both review initial thinking and modify instruction where needed based on student progress.

Collaboration. The opportunity to collaborate with colleagues, both within and across sites, is another aspect of MSA that teachers highly value. Teachers may benefit from additional guidelines and protocols for how to develop and maintain

these emerging collaborations, in particular at sites where administrative support is weak or there is a high turnover in personnel.

Instruction. Emphasis on understanding and implementing instructional strategies that work should remain a focus for MSA. As MSA leaders have realized, with more elementary school teachers in the project, additional work and focus on mathematics content and instructional strategies is critical (Simon, 1993). Follow-up sessions to the Summer Institute math sessions have been beneficial; additional on-site sessions, with demonstration lessons or a similar approach may be beneficial to strengthen teachers' content and pedagogical content knowledge in mathematics.

Assessment. Teachers report increases in their understanding of assessment as a result of project work and focus on this area. Additional work and attention to this component of MSA is critical however, if teachers are to continue to make progress towards increasing student learning and achievement. Specifically, teachers and administrators need tools to assist with refining formative assessment strategies at the classroom level, and how to use that information to better guide instruction and provide feedback to students about their work and progress. There is a critical need to help teachers and administrators to understand how to gauge student learning and goals, and to help them articulate success in meaningful and specific ways.

Instructional resources. Resources, both print and technological have had a positive impact on the kind of information teachers provide to students, and in what format. Continued focus on how and in what ways to use new and varied resources, along with information on understanding which tool best fits which learning setting, would benefit MSA teachers.

Classroom management. The strategies and approaches to classroom management advocated by MSA hold broad appeal to teachers. In particular, the importance of clearly articulated goals with specific, intended outcomes, appears to have a positive impact on how well teachers manage their classrooms. Further work to refine classroom management strategies will be beneficial to novice and veteran teachers alike.

General Logistics

Buy in. In surveys and during observations, teachers report the importance of administrative support in implementing new ideas and approaches at their sites.

Continued work and effort to include administrators in MSA is critical. Administrators also benefit from attending sessions on instruction and assessment.

Program management. MSA mentors have continued to streamline, and refine their approaches to professional development. Mentors have formalized the sessions they present to teachers at Institutes, and have vast resources to support and assist teachers with the implementation of project goals.

Conclusion

Over the past seven years, MSA has grown from a middle-school project in 3 schools with 12 teachers and 200 students to a K–9th grade project that includes 22 schools, 80 teachers and 3600 students. The project has grown in other ways as well: the vision for what quality teaching and learning look like in an MSA classroom is clearer, as are the tools and strategies teachers need to provide quality instruction for students. Teachers have become more sophisticated and perceptive participants in MSA, and most readily avail themselves of the tools and opportunities for professional growth and collaboration. As project recognition has increased, more teachers have made the commitment to the intensive and demanding program. Different from many professional development programs, where participants attend a training session, and then are expected to implement the ideas independently, MSA provides consistent follow-up and follow-through for teachers. The cognitive coaching process, with classroom observations and conferences with MSA mentor and veteran teachers, celebrations of learning, and biannual provides support for MSA teachers and the implementation of project goals.

MSA continues to grow and expand as a professional development project. During Year 6 of the project, teachers made important strides towards refining their teaching practices and implementing the instructional strategies, methods, and tools to better support student learning and help increase student achievement. The work continues.

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Appendix A – Teacher Survey

UCLA CENTER FOR THE STUDY OF EVALUATION

MATH AND SCIENCE ACADEMY (MSA)
TEACHER SURVEY 2005 - 2006

Please indicate your responses by checking, circling or filling in the blanks.

1. Sex: [ ]M [ ]F

2. Ethnicity (check all that apply): [ ] White [ ] Latino/a, Hispanic
[ ] Native American [ ] African American [ ] Asian [ ] Other_____

Academic/Professional Background

3. What is the highest degree you have received?
- [ ] Bachelor's + Teaching credential
- [ ] Bachelor's + credential + units beyond
- [ ] Master's
- [ ] Master's + units beyond
- [ ] Doctorate
- [ ] Other (specify)_____

4. Please indicate which teaching credentials you have and specify the content area of specialization.
(check **ALL** that apply.)
- [ ] General Elementary
- [ ] General Secondary
- [ ] Special Emergency
- [ ] Multiple Subject
- [ ] Single Subjects
- [ ] Bilingual
- [ ] Other_____

5a. How many years of teaching experience do you have? _____ years

b. How many years have you been a part of MSA? _____1 year _____2 years
_____3 years _____4 years _____5 years _____6 years

_____*other (describe)

6. How many years have you taught bilingual/LEP/bicultural students (including this year)?
_____ years

7a. Have you participated in other reform projects like MSA? [ ] Yes [ ] No
If yes, please describe:

7b. Approximately how much time did you dedicate specifically to MSA each week? _____
Each month? _____

8. Please describe your teaching responsibilities for the 2005-06 school year:

a. Grade/s: _____

b. Subject (if applicable): science_____ math_____
language arts_____ social studies_____

9. Language(s) of instruction:

1. Mostly Spanish _____ 2. Both English and Spanish _____

3. Mostly English _____ 4. Other _____

Planning an Effective Program: Curriculum Mapping and Alignment

10. Please respond to the following statements based on your implementation of MSA standards:

		Never		Some-times		Always	N/A
a)	I develop short-term goals for my students.	1	2	3	4	5	N/A
b)	I develop yearlong goals for my students.	1	2	3	4	5	N/A
c)	I identify essential questions that are tied to my student's learning goals.	1	2	3	4	5	N/A
d)	I use appropriate curricula to support student learning.	1	2	3	4	5	N/A
e)	I work with my colleagues in my content area/grade level to set goals and standards for student learning.	1	2	3	4	5	N/A
f)	I work with my colleagues across content areas to set goals and standards for student learning.	1	2	3	4	5	N/A
g)	I developed goals for "data not guesswork" performance.	1	2	3	4	5	N/A
h)	I used "data not guesswork goals to guide instruction.	1	2	3	4	5	N/A
i)	Other: describe below	1	2	3	4	5	N/A

11a. To what extent has your **instructional planning** changed as a result of your participation in MSA?

Not at All		Somewhat		A Great Deal	N/A
1	2	3	4	5	

Please explain and provide specific examples.

11b. To what extent has your **instructional planning with your colleagues** changed as a result of your participation in MSA?

Not at All				A Great Deal
N/A				
1	2	3	4	5

Please explain and provide specific examples.

Instruction

12. Please respond to the following statements based on your implementation of MSA standards:

		Never		Some-times		Always	N/A
a)	I post agendas for students that clearly identify learning goals.	1	2	3	4	5	N/A
b)	Learning activities are directly related to my learning goals.	1	2	3	4	5	N/A
c)	I access and purposefully build on student's prior knowledge.	1	2	3	4	5	N/A
d)	I require students to work collaboratively.	1	2	3	4	5	N/A
e)	I provide a language rich learning environment (accurate, expressive, and tied to the lesson).	1	2	3	4	5	N/A
f)	I use instructional strategies that support student understanding.	1	2	3	4	5	N/A
g)	I revisit learning goals to assess student understanding.	1	2	3	4	5	N/A
h)	I close lessons to support student recall of the learning goals.	1	2	3	4	5	N/A
g)	I model and emphasize metacognitive skills.	1	2	3	4	5	N/A
i)	Other: describe below	1	2	3	4	5	N/A

13. To what extent have your instructional approaches changed as a result of your participation in MSA?

Not at All		Somewhat		A Great Deal
1	2	3	4	5

Please explain and provide specific examples.

Assessing Student Learning

14. Please respond to the following statements based on your implementation of MSA standards:

		Never		Some-times		Always	N/A
a)	I systematically gather data on student learning in my classes.	1	2	3	4	5	N/A
b)	I analyze assessment data on a regular and timely basis to guide my teaching.	1	2	3	4	5	N/A
c)	I guide my students in self-assessment.	1	2	3	4	5	N/A
d)	I use student data to reflect upon and improve my teaching practices.	1	2	3	4	5	N/A
e)	I provide students with criteria on how their work will be assessed.	1	2	3	4	5	N/A
f)	I provide students with examples and models of what represents "good work".	1	2	3	4	5	N/A
g)	I use different kinds of assessments to help me understand students' learning.	1	2	3	4	5	N/A
h)	Other: describe below	1	2	3	4	5	N/A

15. To what extent have your assessment practices for teaching and learning changed as a result of your participation in MSA?

Not at All		Somewhat		A Great Deal	N/A
1	2	3	4	5	

Please explain and provide specific examples.

Materials and Resources

16. Please respond to the following statements based on your implementation of MSA standards:

		Never		Some-times		A Great Deal	N/A
a)	I structure learning time to allow students to engage in projects and/or investigations.	1	2	3	4	5	N/A
b)	I ensure a safe learning environment.	1	2	3	4	5	N/A
c)	I use **tools & materials** to support learning.	1	2	3	4	5	N/A
d)	I use **print resources** to support learning.	1	2	3	4	5	N/A
e)	I use **technological resources** to support learning.	1	2	3	4	5	N/A
f)	I use **graphic organizers** to support learning.	1	2	3	4	5	N/A
g)	**Other: describe below**	1	2	3	4	5	N/A

17. To what extent has your use of instructional materials and resources changed as a result of your participation in MSA?

Not at All		Somewhat		A Great Deal	N/A
1	2	3	4	5	

Please explain and provide specific examples.

MSA Collaboration

18. Please respond to the following statements based on your implementation of MSA ideas:

		Never		Some-times		Always	N/A
a)	I participate in planning and developing the school program (EPSS or school improvement plan) for my content area/grade level.	1	2	3	4	5	N/A
b)	I meet with my MSA colleagues to discuss student work on a regular basis.	1	2	3	4	5	N/A
c)	I meet with my MSA colleagues to discuss my teaching on a regular basis.	1	2	3	4	5	N/A
d)	I meet with my MSA colleagues to discuss student learning on a regular basis.	1	2	3	4	5	N/A
e)	Other: describe below	1	2	3	4	5	N/A

19. To what extent have you changed your involvement and participation in collaboration with your colleagues as a result of your participation in MSA?

Not at All		Somewhat		A Great Deal
1	2	3	4	5

Please explain and provide specific examples.

MSA Program Effectiveness

20. How effective was MSA in the following areas:

		Not Effective		Some-what Effective		Highly Effective	N/A
a)	Familiarizing you with standards-based instruction	1	2	3	4	5	N/A
b)	Developing your knowledge of state standards for content areas	1	2	3	4	5	N/A
c)	Helping you develop learning goals	1	2	3	4	5	N/A
d)	Teaching you assessment strategies	1	2	3	4	5	N/A
e)	Assisting you with data analysis	1	2	3	4	5	N/A
f)	Helping you understand how to use rubrics to guide instruction	1	2	3	4	5	N/A
g)	Helping you understand how to develop assessments	1	2	3	4	5	N/A
h)	Helping you understand how to use technology effectively	1	2	3	4	5	N/A
i)	Assisting you in understanding cooperative learning strategies	1	2	3	4	5	N/A
j)	Helping you understand how learning theory relates to student learning	1	2	3	4	5	N/A
k)	Other: describe below	1	2	3	4	5	N/A

Please explain and provide specific examples.

MSA Impact: Self-Assessment

21. Please rate yourself along the following dimensions as a result of your participation in MSA. If you teach more than one content area, please use the area below to report additional self-assessment of **Question 21a** and **Question 21b (content knowledge and content standard knowledge).**

		Weak		Moderately strong		Very strong	N/A
a)	Knowledge/understanding of your content area (math, science, language arts, or social studies)	1	2	3	4	5	N/A
b)	Knowledge/understanding of your content standards (math, science, language arts, or social studies)	1	2	3	4	5	N/A
c)	Confidence in teaching content area	1	2	3	4	5	N/A
d)	Knowledge of mathematics content	1	2	3	4	5	N/A
e)	Knowledge of strategies for teaching mathematics effectively	1	2	3	4	5	N/A
f)	Knowledge of a wide variety of instructional techniques	1	2	3	4	5	N/A
g)	Technology skills	1	2	3	4	5	N/A
h)	Knowledge and implementation of cooperative learning strategies (i.e., jigsaw, small groups)	1	2	3	4	5	N/A
i)	Knowledge of assessment strategies	1	2	3	4	5	N/A
j)	Implementation of various assessment strategies	1	2	3	4	5	N/A
k)	Understanding of learning theory	1	2	3	4	5	N/A
l)	Other: describe	1	2	3	4	5	N/A

If you teach in more than one content area:

22. Please rate yourself along the following dimensions as a result of your participation in MSA.

Content Area Knowledge:

		Weak		Moderately strong		Very strong	N/A
a)	Knowledge/understanding of math content	1	2	3	4	5	N/A
b)	Knowledge/understanding of science content	1	2	3	4	5	N/A
c)	Knowledge/understanding of language arts content	1	2	3	4	5	N/A
d)	Knowledge/understanding of social studies content	1	2	3	4	5	N/A
e)	Other: please specify	1	2	3	4	5	N/A

If you teach in more than one content area:

23. Please rate yourself along the following dimensions as a result of your participation in MSA.

Content Area Standards:

		Weak		Moderately strong		Very strong	N/A
a)	Knowledge/understanding of math content standards	1	2	3	4	5	N/A
b)	Knowledge/understanding of science content standards	1	2	3	4	5	N/A
c)	Knowledge/understanding of language arts content standards	1	2	3	4	5	N/A
d)	Knowledge/understanding of social studies content standards	1	2	3	4	5	N/A
e)	Other: please specify	1	2	3	4	5	N/A

Please explain and provide specific examples.

Student Learning and Achievement

24. Please indicate your observations regarding student learning and achievement this year.

		Disagree		Moderately Strong		Strongly Agree	N/A
a)	I have observed changes in student learning and achievement this year.	1	2	3	4	5	N/A
b)	My participation in MSA had a positive impact on my students' learning and achievement this year.	1	2	3	4	5	N/A
c)	MSA concepts helped increase student learning and achievement.	1	2	3	4	5	N/A
d)	Students learned more because of cooperative learning opportunities in my classroom.	1	2	3	4	5	N/A
e)	Students benefited from my keeping track of their learning progress in my classroom (progress charts).	1	2	3	4	5	N/A
f)	Students benefited from keeping track of their own progress (folders).	1	2	3	4	5	N/A
g)	Students benefited from use of math strategies in my classroom. Please describe below.	1	2	3	4	5	N/A
h)	Other: describe below:	1	2	3	4	5	N/A

25. Please explain and provide specific examples from MSA impact (or not) on student learning.

26. MSA Coaching Experiences (please use back of paper if necessary).

Coaching Role: coach coachee

Number of "coaching experiences" participated in this year:

Primary "coach" (please indicate the role or position, i.e., MSA mentor, other teacher, principal, etc., rather than a specific name)

Benefits of the coaching experience/s

Drawbacks of the coaching experience/s

Impact (if any) of coaching experiences on student learning

Impact (if any) of coaching experiences on your teaching

If a coach, what have you learned from the coaching experience about:

curriculum

assessment

instruction

27. MSA Communication
a. Did you respond to the biweekly informational e-mail messages?

Never		Sometimes		Almost Always
1	2	3	4	5

b. How useful was the information sent to you as a professional?

Not at all useful		Somewhat useful		Highly useful
1	2	3	4	5

c. Please provide more information and examples from your responses to Question 27 regarding MSA communication.

28. For Site Leaders: describe your experience working with your team members this year. How (if at all) did your leadership role impact your experience with MSA, your teaching and your relationship with your colleagues?

29. After School MSA Meetings:

Below, please briefly describe your experiences this year with after-school MSA meetings at your site.

a. Schedule

b. Organization

c. Benefits

d. Drawbacks

e. How can after school meetings be more effective?

30. List three successes in the implementation of MSA at your school site. Please provide details and examples.

1)

2)

3)

31. List three barriers to the implementation of MSA at your school site. Please provide details and examples

1)

2)

3)

32. How could MSA be improved?

Thank you for completing this survey.

Appendix B - Administrator Survey

UCLA CENTER FOR THE STUDY OF EVALUATION
MATH AND SCIENCE ACADEMY (MSA)
ADMINISTRATOR SURVEY 2005 - 2006

Please indicate your responses by checking, circling or filling in the blanks.

1. Sex: [ ] M [ ] F

2. Ethnicity [ ] White [ ] Latino/a, Hispanic [ ] Native American
[ ] African American [ ] Asian [ ] Other_____

Academic/Professional Background

3. What is the highest degree you have received?
[ ] Bachelor's + Teaching credential [ ] Master's + units beyond
[ ] Bachelor's + credential + units beyond [ ] Doctorate
[ ] Master's [ ] Other (specify)_____

4. Please indicate which teaching credentials you have and specify the content area of specialization. (Circle **ALL** that apply.)
[ ] General Elementary [ ] Single Subjects
[ ] General Secondary [ ] Bilingual
[ ] Special Emergency [ ] Administrative
[ ] Multiple Subject [ ] Other _____

5. a. How many years of teaching experience do you have? _____ years
b. How many years have you served as principal? _____ years
c. How many years have you been a part of MSA?___1 year _____2 years
_____3 years _____4 years _____5 years
_____other (please explain)

6. Have you participated in other reform projects like MSA? [ ] Yes[ ] No
If yes, please describe:

7. How many teachers at your site were involved with MSA this year? Please specify number, grade level/s and content area if applicable.

Instructional Planning and Collaboration

8. To what extent have you observed changes at your site in teachers' instructional planning, articulation of curriculum and professional collaboration between teachers as a result of their participation in MSA?

Not at All		Somewhat		A Great Deal
1	2	3	4	5

Please explain.

Guiding and Facilitating Learning

9. To what extent have you observed changes at your site in teachers' approaches to guiding and facilitating student learning changed as a result of their participation in MSA?

Not at All		Somewhat		A Great Deal
1	2	3	4	5

Please explain.

Assessing Student Learning

10. To what extent have you observed changes at your site in teachers' approaches assessment practices for teaching and learning as a result of their participation in MSA?

Not at All		Somewhat		A Great Deal
1	2	3	4	5

Please explain.

Instructional Materials and Resources

11. To what extent have you observed changes at your site in teachers' design and management of student learning environments as a result of their participation in MSA?

Not at All		Somewhat		A Great Deal
1	2	3	4	5

Please explain.

Building Communities of Learners

12. To what extent have you observed changes at your site in the development of learning communities with students as a result of your sites participation in MSA?

Not at All				A Great Deal
1	2	3	4	5

Please explain.

School & MSA Community

13. To what extent have you observed changes at your site in teachers' approaches to ongoing planning and development of the school-learning plan as a result of their participation in MSA?

Not at All				A Great Deal
1	2	3	4	5

Please explain.

MSA Program Effectiveness

14. How effective was MSA in the following areas:

		Not Effective		Some-what Effective		Highly Effective	N/A
a)	Familiarizing you with standards-based instruction	1	2	3	4	5	N/A
b)	Developing your knowledge of state frameworks for content areas	1	2	3	4	5	N/A
c)	Sharing assessment strategies	1	2	3	4	5	N/A
d)	Informing/involving the community about MSA goals and objectives	1	2	3	4	5	N/A
e)	Helping teachers to develop rubrics to support instruction	1	2	3	4	5	N/A
f)	Helping teachers understand how to use technology effectively	1	2	3	4	5	N/A
g)	Assisting teachers in implementing cooperative learning activities	1	2	3	4	5	N/A
h)	Helping teachers understand learning theory as it relates to student learning	1	2	3	4	5	N/A
i)	Other: please describe	1	2	3	4	5	N/A

Comments:

MSA Impact: Self-Assessment

15. Please rate yourself along the following dimensions as a result of your participation in MSA.

		Weak		Moderately strong		Very strong	N/A
a)	Knowledge/understanding of content areas (math, science, language arts, or social studies)	1	2	3	4	5	N/A
b)	Knowledge/understanding of content standards (math, science, language arts, or social studies)	1	2	3	4	5	N/A
c)	Knowledge of a wide variety of instructional techniques	1	2	3	4	5	N/A
d)	Knowledge of mathematics content	1	2	3	4	5	N/A
e)	Knowledge of strategies for teaching mathematics effectively	1	2	3	4	5	N/A
f)	Technology skills	1	2	3	4	5	N/A
g)	Knowledge of cooperative learning strategies (i.e., jigsaw, small groups)	1	2	3	4	5	N/A
h)	Knowledge of assessment strategies	1	2	3	4	5	N/A

Comments:

Student Learning and Achievement

17. Please indicate your observations regarding student learning and achievement this year at your site.

		Disagree		Moderately strong		Strongly Agree	N/A
a)	I have observed changes in student learning and achievement this year.	1	2	3	4	5	N/A
b)	My site's participation in MSA had a positive impact on students' learning and achievement this year.	1	2	3	4	5	N/A
c)	MSA ideas helped increase student learning and achievement.	1	2	3	4	5	N/A
d)	Students learned more because of cooperative learning opportunities in classrooms.	1	2	3	4	5	N/A

Please explain and provide specific examples.

After School Meetings:

18. Below, please briefly describe your experiences this year with after-school MSA meetings at your site.

a. Schedule

b. Organization

c. Benefits

d. Drawbacks

e. Other

How can after school meetings be more effective?

19. List three successes in the implementation of MSA at your school site. Please provide details and examples.

1)

2)

3)

20. List three barriers to the implementation of MSA at your school site. Please provide details and examples

1)

2)

3)

21. How could MSA be improved?

Thank you for completing this survey.

Appendix C - Informal Observation Checklist 2005-2006

Teacher:	Date:	Time in: Time out:	Observer:

Lesson interruptions (use tally):		
Non-academic interruptions (use tally):		
Curriculum and Standards	**Quality of Implementation (1 – 5)**	**Comments**
Agenda on board (what students will **learn** and do today) (6C)		
Bell ringer-type of assignment (e.g., released item) (5A)		
Learning strategies *varied and appropriate to the task* (e.g. Graphic organizer, pre/post, mental models, ICFLP) (2D, 4B)		
Achievement charts/student folders available and in use for documenting and tracking student progress (5C)		
Instruction		
Written and posted (1A)		
Addressed during lesson (1A) Learning goals and assignments aligned with standards		
Learning goals clear (3A, B, C, D) Expectations for performance clear (examples of what good work looks like provided, rubric w/explanations, etc.)		
Variety of assessment strategies employed (students know how they will show achievement of learning goals: rubrics, portfolios, performance, product, test, quiz, graphic organizer, etc.) (3C, 5D)		
Assessment		
Students on task (participating appropriately) (6C)		
Mutual respect is evident (student-student, student-teacher, other?) (6C, 7G)		
Students know routines (6B)		
Student generated questions Conceptual Connections to outside world % of students engaged in: whole class discussions		

Numbers in parenthesis correspond to the NMSDE Teacher Evaluation instrument.

small group discussions other		
Teacher behavior		
Formative queries Teacher generated questions (7E) Build		
Feedback to students Responds to students in a timely and appropriate manner (6A, 6G, 7A, 7B, 7C, 7G, 7I)		
Assignment/Task Quality		
Aligned with learning goals		
Demonstrates Ts conceptual knowledge		
Classroom Management		
Teacher develops and maintains a safe and healthy learning environment in the classroom by creating, teaching and use of consistent implementation of procedures, rules and routines.		