



YEAR 3 REPORT

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Microsoft Math Partnership

YEAR 3 REPORT – FINAL PROJECT REPORT

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Executive Summary

The purpose of this report is to provide information about the Microsoft Math Partnership (MMP) and the extent to which participating districts have made progress towards grant goals and objectives over the last three years. Although summative in nature about the effects of reform on the selected schools and districts, the report is also designed to provide formative feedback to assist in the ongoing implementation of initiative efforts. The general questions explored during the evaluation were:

1. To what extent do Partnerships develop around the initiative as intended?
2. To what extent do districts implement the initiative as designed?
3. To what extent are there identifiable changes in public policy, and what are the apparent underlying reasons for these changes in policies and practices?
4. To what extent are there identifiable changes in teacher practice, and what are the apparent underlying reasons for these changes in teaching practices?
5. To what extent are there identifiable changes in student outcomes?
6. Did this initiative assist in developing sustainability over time, and how?
7. To what extent have there been changes in public support and attitudes related to middle school mathematics (data provided by Microsoft or its designee)?

It was apparent throughout the interviews and focus groups that MMP schools made substantial gains in several areas throughout of the three years of the initiative. In Year 3, MMP participants identified numerous specific ways in which classrooms look different from the beginning of the initiative to this year. Participants identified having a clear teaching point, encouraging more student discussions, devising ways to have students work together, and encouraging students to justify and defend their thinking as some of the ways classrooms look different now. Evaluators also observed the presence of more Powerful Teaching and Learning in classrooms in Year 3 as compared to previous years. In general, teachers are becoming less isolated in their practice.

In some of the MMP schools, math departments are working together in highly collaborative and focused teams. As such, some administrators are beginning to use their math departments as models for the rest of the school. One of the most beneficial activities of MMP throughout the three years of grant was the development of a coaching cohort. Universally, coaches reported the collaboration with their coaching colleagues as being one of the most valuable parts of the initiative. Most coaches thought of the coaching cohort as a PLC and used the collaborative time with the other coaches to get ideas, to share struggles, and to further understand their roles as coaches. Finally, a promising practice continuing from Year 2 of the grant is a high level of administrative sponsorship for the initiative goals and objectives. Administrators at the district level sponsored the initiative to a greater extent this year by incorporating more of the grant goals and objectives into their district improvement plans. Building administrators supported and sponsored the work by attending MMP trainings and by working closely with their math coaches and math departments.

Participating school districts developed Partnerships at several levels throughout the initiative. The nature of the Partnerships varied greatly among districts and among schools. In interviews and focus groups with school and district administrators, many admitted the expectations for forming Partnerships were not very clear and most Partnerships developed among the MMP schools or

among schools in the same district. Few family and community Partnerships developed during the course of the initiative.

In Year 3, teachers and principals continued to identify the instructional support provided by math coaches as one of the most valuable components provided by the Partnership. Over the last two years of the Partnership, coaches reported they understand their roles to a greater extent. MMP coaches continue to provide different types of targeted professional development depending on district, school, and individual teacher needs. This year, many coaches led and participated in professional development centered on aligning curriculum with new state math standards. The implementation of professional learning communities or collaborative learning teams is underway in many of the MMP buildings. Similar to last year, the structure and the level of implementation of these vary greatly throughout the Partnership. Many schools and districts continued to work on developing common formative and summative assessments in Year 3. The presence of conversations around developing common assessments was evident at all of the Partnership schools, but only a small subset of the schools and districts are implementing common assessments.

Overall, more policy changes at the district and school levels occurred in Years 2 and 3 of the initiative compared to Year 1. Additionally, many of the MMP districts are gathering information and discussing the possibility of large-scale revisions in subsequent years, including changes to graduation requirements for the class of 2013 and beyond. Policy changes at the district and school level include revising student placement strategies, offering more support math classes for struggling students, supporting curriculum and assessment alignment, and including students who qualify as English Language Learners and for Special Education in mainstream math courses.

Researchers gathered perception data about teacher practice during interviews and focus groups conducted at each of the Partnership schools. In Year 3, many interviewees reported coaches having a positive influence on teacher practice. In particular, interviewees mentioned increased student collaboration, clear teaching objectives, increased use of formative assessment, and increased student discourse on math as classroom practices over the last three years of the initiative. In addition to gathering perception data during the interviews, the research team also conducted classroom observations designed to determine the extent to which Powerful Teaching and Learning™ was present in the MMP schools. Year 3 results show improvements in every area of the STAR Protocol compared to previous years and are above or at the STAR Average (comparison group) in every area.

There are several student outcomes that evaluators are gathering and tracking over time. The percent of students in MMP middle and junior high schools meeting or exceeding state standards on the state math achievement test is consistently higher than the state average. Course taking patterns at the middle school level were used to determine the extent to which students took algebra by the 8th grade. Overall, the majority of students enroll in courses classified as below algebra. However, the percentage of students enrolled in algebra or beyond courses increased from 2006-2007 to 2009-2010. Finally, course-taking patterns at the high school level were analyzed to determine the extent to which students are engaged in curriculum that prepares them for college and the workplace. At the 9th grade level, the percentage of students taking ‘Beyond Algebra’ or above grade level courses increased from the 2006-2007 school year to the 2009-2010 school year, with a

corresponding decrease in the percentage of students taking courses at grade level. A similar pattern emerged at the 10th grade level, with the percentage of students taking 'Beyond Geometry' or above grade level courses increasing from 2006-2007 to 2009-2010 by 8 percentage-points. Lastly, the percentage of college eligible students (math only) increased by 9 percentage-points from 2007 to 2010. This data indicates that the MMP districts are improving in the percentage of students who are college eligible (math only), however in 2010 about one-quarter of students graduating from these schools continue to not be eligible for college admittance by Washington State HEC Board standards because of course-taking deficiencies.

In Year 3, some initiative activities are developing sustainability in many of the Partnership schools; however, most admit sustainability will be greatly affected by not having a coach, by significant changes in administrators or teachers, and by reduced release time for teacher collaboration. Interview and focus group participants mentioned the following areas as sustainable: 1) School Culture, 2) Technology, 3) Curriculum and Assessment, 4) Collaborative Teaming, and 5) Changes in Classroom Practices.

Microsoft Math Partnership

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INTRODUCTION

The purpose of this report is to provide information about the Microsoft Math Partnership (MMP) and the extent to which participating districts have made progress towards grant goals and objectives over the last three years. Although summative in nature about the effects of reform on the selected schools and districts, the report is also designed to provide formative feedback to assist in the ongoing implementation of initiative efforts.

Evaluators obtained information during evaluation site visits conducted between February and June 2010, designed to determine the progress of grant activities. One hundred thirty two people participated in evaluation activities that included interviews and focus groups with district administrators, school administrators, coaches, and teachers. In addition to site visits, evaluators conducted classroom observations in the eighteen MMP-funded schools (teacher n = 106); met with district staff members; collected various documents including course enrollment records, graduation requirements, transcripts, and WASL scores; and analyzed a variety of district, state, and national data sources. This report will present an overview of the grant, a description of program implementation activities, and a summary of progress toward stated grant objectives.

General Program Background

The Microsoft Math Partnership is a three-year initiative funded through a corporate gift provided by Microsoft, Inc. The initiative targets K-12 mathematics reform, with a specific focus at the middle and junior high school level. The 2009-2010 school year marks Year 3 of MMP. The overall goal for all Year 3 activities is to foster stronger math instruction within a culture of collaboration in every MMP middle and junior high school math department. This overarching goal will be supported by **pedagogy, professional learning communities (PLCs), principals, coaching, partnerships, and collaboration**.¹ Other MMP objectives include²:

- Building the awareness for rigorous math education by informing school faculty and staff, parents, and the community of the importance of rigorous math education;
- Creating a cultural shift that values rigorous mathematics education for all students and is supported through public messaging and policy advocacy;
- Increasing teachers, administrators, and math coaches/lead math teachers mathematical content knowledge and pedagogical skills;
- Integrating instructional tools and resources including technology to promote algebraic thinking;

¹ Taken from the Microsoft Math Partnership Year 3 Action Plan.

² The objectives were taken from the Microsoft Math Science Initiative: Proposal for Mathematics Reform 2007 – 2010.

- Establishing and supporting professional learning communities in schools; and
- Developing common assessments to measure change and growth.

Significant program outcomes include increased student enrollment in algebra by the 8th grade and increased college and workplace readiness.

To accomplish this, the MMP initiative provides district-wide math training to a variety of audiences, including teachers, coaches/lead teachers, and administrators. There are opportunities to collaborate and to share resources between districts, with additional training and support from job embedded coaching around the objectives. A unique component of this initiative is the differentiated approach by district.

MMP provides funding to 18 middle and junior high schools across eight school districts in the Puget Sound region. Participating school districts include Bellevue, Highline, Issaquah, Kent, Lake Washington, Northshore, Renton, and Seattle (see Table 1). The Puget Sound Educational Service District (PSESD) functions as the Program Manager for the initiative. Three additional partners include the American Institutes for Research (AIR), the Partnership for Learning, and the University of Washington. AIR provides research and technical assistance around this initiative. AIR also created the Field Guide and wrote *The Gateway to Student Success in Mathematics and Science: A Call for Middle School Reform – The Research and its Implication*. The Partnership for Learning works on policy and advocacy work around communication and parent support.

Table 1.
MMP Participating Districts and Schools

District	School
Bellevue*	None
Highline	Chinook Middle School, Sylvester Middle School
Issaquah	Issaquah Middle School, Maywood Middle School
Kent	Cedar Heights Middle School, Meeker Middle School, Mill Creek Middle School
Lake Washington	Evergreen Junior High School, Finn Hill Junior High School, Rose Hill Junior High School
Northshore	Canyon Park Junior High School, Kenmore Junior High School, Skyview Junior High School
Renton	Dimmitt Middle School, McKnight Middle School
Seattle	Hamilton Middle School, Mercer Middle School, Washington Middle School

*Note. Bellevue School District (BSD) serves in an advisory role for MMP. Thus, MMP did not fund middle schools in BSD. The analyses presented in this report do not include data from BSD unless noted.

EVALUATION DESIGN

The evaluation utilized a multiple measures, mixed methodology approach. The collection of both quantitative and qualitative data adds scope and breadth to the study in addition to providing the ability to triangulate findings.

Evaluation Questions

The evaluation is designed around gathering evidence of *implementation* as well as evidence of *impact* related to project goals. To this end, we concentrated our inquiry around seven general evaluation questions:

1. To what extent do Partnerships develop around the initiative as intended?
2. To what extent do districts implement the initiative as designed?
3. To what extent are there identifiable changes in public policy, and what are the apparent underlying reasons for these changes in policies and practices?
4. To what extent are there identifiable changes in teacher practice, and what are the apparent underlying reasons for these changes in teaching practices?
5. To what extent are there identifiable changes in student outcomes?
6. Did this initiative assist in developing sustainability over time, and how?
7. To what extent have there been changes in public support and attitudes related to middle school mathematics (data provided by Microsoft or its designee)?


In order to answer these questions, researchers gathered a variety of qualitative and quantitative data. The following section outlines data sources and provides a description of data collection procedures.

Data Sources

To address these questions researchers gathered data from multiple sources for Year 3 of the evaluation:

- Interviews and Focus Groups at 18 middle and junior high schools
- Achievement Data: Washington Assessment of Student Learning (WASL)
- Course enrollment data from 18 middle schools
- Transcripts from 11 high schools
- Classroom Observations – STAR Classroom Observation Protocol
- Teacher Involvement Ratings from 16 coaches
- Implementation Rubrics on 17 schools
- Initiative Documents and Materials

Interviews and Focus Groups. Evaluators conducted site visits in Year 3 at 18 middle and junior high schools, which included interviews and focus groups with principals, math teachers, coaches, and district personnel. The purpose of the interviews and focus groups was to gather qualitative



data around perceptions of the MMP program in general and to gather information on specific activities and strategies being implemented within each school.

Achievement Data. Evaluators compiled 7th grade math WASL scores over an eight year time period (2001-2002 to 2008-2009). We compared this data to the state average over the same time periods. We aggregated school data by initiative instead of presenting any individual school data. Therefore, the data is not intended to be representative of any one school.

Course Enrollment Data. Evaluators collected and analyzed course enrollment data related to algebra to determine the extent to which students are enrolled in algebra by 8th grade and the extent to which this changes over time. Evaluators obtained course enrollment information for 9th, 10th, and 12th grade students at select high schools in the 2006-2007, 2007-2008, 2008-2009, and 2009-2010 school years, along with course catalogs describing the schools' classes. Eleven high schools were selected according to the feeder patterns of the funded middle schools and junior high schools. We selected two high schools in districts with three funded middle schools, and we selected one high school in districts with two funded middle schools. We coded and analyzed this information to determine course-taking patterns in mathematics. Once again, we aggregated school data by initiative instead of presenting any individual school data. These data are not considered to be representative of any one school.

Classroom Observations. Evaluators conducted classroom observations in each of the 18 middle and junior high schools to determine the presence of Powerful Teaching and Learning™ in MMP schools, using the STAR Classroom Observation Protocol™. Additional information on the STAR Classroom Observation Protocol™ is presented in the *Evaluation Findings* section of the report.

Teacher Involvement Ratings. Evaluators obtained teacher involvement ratings from MMP coaches in order to determine the level of teacher involvement across the initiative. Coaches rated teachers on a scale of 1 to 5 on their level of involvement with Partnership activities (i.e. trainings and coaching). Coaches completed these rating forms for all three years of the initiative.

Implementation Rubric. Evaluators created an implementation rubric to score each school on the following areas:

- Policy Changes
- Principal Ownership/Sponsorship
- Instructional Coach Effectiveness
- Teacher Involvement
- Changes in Teaching and Learning
- Implementation of Professional Learning Communities

Initiative Documents and Materials. Throughout the initiative period, evaluators examined applicable materials, including the Field Guide, Gateway document, Partnership proposal, agreement contracts between the schools and MMP, individual district improvement plans and policies, and training agendas and materials.

PROCESS STRAND: EVIDENCE OF IMPLEMENTATION

EVALUATION QUESTION ONE: To what extent do Partnerships develop around the initiative as intended?

Participating school districts developed partnerships at several levels throughout the initiative. The nature of the partnerships varied greatly among districts and among schools. In interviews and focus groups with school and district administrators, many indicated that the expectations for forming partnerships with families and community organizations were not very clear and did not develop to a great extent; however, many partnerships among the MMP districts and schools did develop. For the purpose of this report, the partnerships were classified into four basic categories: 1) Family and Community Partnerships, 2) Partnerships Among Districts, 3) Partnerships Within Districts, and 4) Partnerships Within Schools.

Family and Community Partnerships. Partnerships with families, with local corporations, and with public agencies developed slowly throughout the three years of the initiative. Partnerships with families were created in Years 1 and 2 of the grant through Math Nights. In Year 3 of the grant, the majority of the schools did not have Math Nights. One coach reported, “We used to have a math night. We have had one the last two years.” Some focus group participants claimed they discontinued math nights due to poor attendance. One person shared, “We have had a few math nights. They were not as well attended. We really struggle with that piece.” However, one school is having success with math nights. At this school, math teachers conduct mini-lessons for parents and include extra-credit for students who participate. The coach at this school reported, “This is the third time we had math parent night in the fall. The first time we had six people, then we had 50, and then 50 this year. This is not just an informational meeting, but a mini version of regular classroom.” Some schools continue to increase parent involvement by encouraging parents to help with after-school math tutoring.

Partnerships with community organizations did not develop to a great extent over the last three years, and most acknowledge these partnerships take time to develop and structures are not always in place to support these partnerships. Most of the community partnerships taking place at the MMP schools and districts were established before the initiative. Some of the organizations partnering with MMP schools include the Math Education Collaborative, Pearson, Texas Instruments, and Xbox. Some of the districts did connect with professional development providers through the MMP provided trainings. Several of the districts are now working on curriculum and instruction utilizing resources gained from MMP training opportunities.

Partnerships among Districts. During the course of the initiative, many partnerships formed among the MMP districts, and interview and focus group participants credited MMP for improving collaboration with other school districts. In particular, relationships among the MMP math coaches and school and district administrators improved because of the initiative. In all cases, interview participants felt that cross-district partnerships enhanced their progress towards initiative goals. One interviewee shared, “We are partnering with other districts definitely. We are sharing what we are doing, and we also go gather information from other districts.”



Regular meetings sponsored by the Puget Sound Educational Service District have promoted inter-district collaborations among coaches, administrators, and lead teachers. Some interviewees expressed some disappointment in having fewer regional meetings this year, as this is where most of the collaboration occurred. Despite meeting less frequently, coaches continued to utilize one another to discover what other districts are doing for math professional development, for curriculum alignment and implementation, for common assessments, and for changes to district-level math policies. For example, Seattle Public Schools partnered with Issaquah School District to redesign their math student placement policy. Many of the MMP schools also took the opportunity to visit another MMP school in a different district to observe classrooms and other school-based activities. One administrator reported, “This year some of our teachers took advantage of the opportunity to visit classrooms in other districts.”

District and school administrators also credit the Partnership for strengthening relationships across districts. As with coaches, the Steering Committee meetings and regular meetings sponsored by the Puget Sound Educational Service District have promoted inter-district collaboration among district and school administrators. Administrators share information around curriculum adoption and implementation and professional development. One school administrator commented, “I have really appreciated the opportunity to talk with other districts around the degree to which 8th graders are taking algebra. Our kids are in elementary school through 6th grade so it is a little more challenging to get kids ready for algebra by 8th grade, but the Partnership allows us to talk with other districts that are in the same position.”

Partnerships within Districts. In Year 3 of the initiative, there is evidence of greater collaboration among middle schools and junior high schools within the same district. One interview participant shared, “I know that within the district, it has created a partnership with all the middle schools. Before everyone was doing their own thing.” Much of this is due, in part, to coordination among the MMP coaches. In a few MMP districts, coaches have a chance to meet on a regular basis to share information and to provide district-wide trainings. “We have now built a really nice partnership between the buildings. There is a real camaraderie. Now people are really excited to sit by people from different buildings at trainings,” stated a math coach. The collaboration among coaches within the same district has led to the development of common assessments and tighter curriculum pacing in some districts.

Although the coordination of the math coaches within districts seems to be the main driver for collaboration, some districts are using late-arrival days to foster increased professional communication among math teachers. Within many of the buildings, teachers reported having stronger connections with colleagues. A few building administrators pointed out Partnerships strengthening between middle schools and feeder elementary schools as well. One principal shared, “What has happened with visitations being supported by MMP is that we are now connecting with the elementary school. We are getting teachers to come up here to see what we are teaching.”

Partnerships within Schools. One partnership developing in Year 3 of the grant is taking place within schools between different departments. In school visits, teachers and math coaches discussed math departments leading the way for their schools in the area of collaboration. School

administrators are now relying more heavily on math coaches and teachers to train teachers in other departments on professional learning community and instructional work. One teacher reported, “One thing we worked on this year was analyzing student work. Our principal wanted to present the protocol to all departments. They wanted us to share the good things we are doing.” Math coaches are increasingly working with coaches and teachers from other departments within their schools. One coach shared, “I don’t believe it is best for kids to totally separate subjects. I think it all goes together. So many teachers want to be part of math. We did all school PD (professional development) on data displays. I have loved collaboration with other coaches. The more common practices we can have the better off we are going to be.”



EVALUATION QUESTION TWO: To what extent do districts implement the initiative as designed?

For the purpose of this report, district implementation is evaluated according to criteria specified in MMP Agreement contracts between the Highline Schools Foundation for Excellence, the Puget Sound Educational Service District, and each of the participating school districts. As such, district duties and responsibilities include fulfillment of the defined functions of the math coach, implementation or refinement of professional learning communities, participation in professional development activities, development of formative and summative assessments, implementation of community outreach events, curriculum alignment, improvement in rigor of math course sequence, and development of extended learning opportunities for students. The most common strategies and activities are described below, along with a discussion of the obstacles to implementation, where applicable. In Year 2, evaluators created an implementation rubric to measure progress in implementing a variety of initiative goals. This rubric is presented below in Table 2. The number of schools falling into each category of the rubric is summarized where applicable in charts throughout the report.³

³ Evaluators did not complete the rubric for one school because of incomplete information provided by the school.

Table 2. Microsoft Math Partnership Implementation Rubric

	1	2	3	4	5
POLICY CHANGES	No changes in policy have occurred to support initiative goals.		Changes in policies being actively considered and plans are in place.		Policy changes have occurred.
PRINCIPAL OWNERSHIP/SPONOSORSHIP	Principal not demonstrating ownership or sponsorship for the initiative. Principal knows little about the initiative.		Principal aware of initiative work and verbally supports the work, but no evidence of sponsorship.		Principal is actively involved in initiative as evidenced by attending trainings, supporting the coach, and advocating for change.
INSTRUCTIONAL COACH EFFECTIVENESS	Coach not focusing on instruction, but rather on other issues such as curriculum and classroom management.		Coach working with teachers to build relationships in order to move forward with focusing on instruction.		Much of coach's time spent actively working with teachers on changing instructional practice (i.e. co-teaching, providing feedback, observing instruction).
TEACHER INVOLVEMENT	The majority of teachers are resistant to coaching and are not participating in initiative trainings.		About half of the teachers are working with the coach and involved in initiative trainings.		The majority of teachers are actively participating in working with the coach and are involved in initiative trainings.
CHANGES IN TEACHING AND LEARNING	No changes in teaching and learning are evident in the classrooms (using the STAR Protocol and interview/focus group data).		Changes in teaching and learning are evident in about half of the classrooms (using the STAR Protocol and interview/focus group data).		Changes in teaching and learning are evident in the majority of the classrooms (using the STAR Protocol and interview/focus group data).
IMPLEMENTATION OF PLCs	No evidence of PLCs.		PLCs exist, but are unstructured, inconsistent, and not focused on instruction.		PLCs exist and are working on common goals, meet consistently, and are focused mainly around instruction.

Role of the Math Coach

Coach Supports the Delivery of High Quality Instruction. In Year 3, teachers and principals continued to identify the instructional support provided by math coaches as one of the most valuable components provided by the Partnership. One building principal shared, “The number one most important thing we get is the coach. We have professional dialogues, and her lens is similar to my lens. She really gets good instruction. I believe that if we are providing more effective instruction, we will be able to identify struggling students earlier.” Another administrator shared a similar sentiment stating, “I would have to start with the coach. Having an effective math coach has been invaluable. Not just knowing math and curriculum but helping them plan and take risks. That has been a great help. If not for the coach, I would be providing that. I would not be able to give that level of support. The coach is my partner.”

Over the last two years of the Partnership, coaches reported they understand their roles to a greater extent and are better able to deliver services to their schools and teachers in a differentiated way. Evaluators rated instructional coach effectiveness using the implementation rubric (see Table 2). Figure 1 displays ratings for each school on this rubric. In Year 3, many of the schools moved up from threes to fours, and from fours to fives on this rating scale. Schools jumped from a three to a four if the coach moved beyond building relationships with teachers to actively working with teachers on changing instructional practice by co-teaching, providing feedback, observing instruction etc. Schools moved from a four to a five if the coach is working on the above activities the majority of the time and is working with the majority of math teachers on these activities.

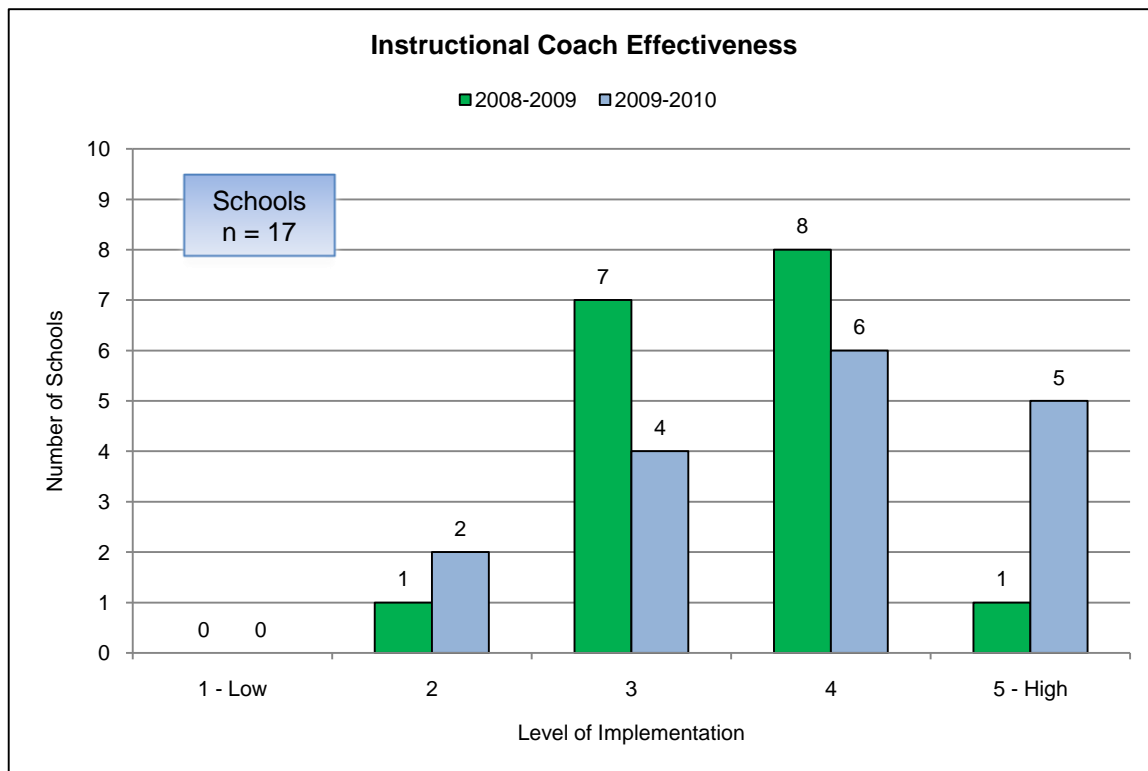


Figure 1. Implementation Rubric Rating – Instructional Coach Effectiveness

1 = Coach not focusing on instruction, but rather on other issues such as curriculum and classroom management.
3 = Coach working with teachers to build relationships in order to move forward with focusing on instruction.
5 = Much of coach's time spent actively working with teachers on changing instructional practice (i.e. co-teaching, providing feedback, observing instruction).

Some of the MMP coaches are ensuring the delivery of high quality instruction through a coaching process of collaboratively planning a lesson, observing the lesson, and then providing feedback. One coach shared, "Teachers have been great about having me in the classroom. I plan instruction with them. We discuss lessons during our planning time together. Without that person to help change their instruction, it would not happen." In Year 3, some of the coaches are collecting data in classrooms and providing it to teachers. For example one coach explained, "I might take a rubric from Marzano and then go observe teachers for 30 minutes at a time. I then track the types of questions they are asking, such as was this a higher level question? I then script what students are saying. Then the next day I can share it with the team. Then during the common planning time I can work on this with them." Another coach discussed going into classrooms and collecting data on 'blurtsouts'. This coach collects data, then works with teachers to come up with strategies to improve, and then tracks progress. In general, coaches believe supporting instructional practice to be one of their most important roles. However, some coaches expressed frustration about not accomplishing as much in this area due to a variety of factors, such as time constraints and lack of teacher buy-in.

In some buildings, the observation and feedback process has moved to the point where teachers are now visiting each other's classrooms. Where this is present, coaches and occasionally principals have supported the process by covering teachers' classes. Coaches also help facilitate this by making connections among teachers and offering suggestions around what might be most helpful to observe. The majority of teachers who observed colleagues reported the experience to be very valuable, and they would like to incorporate more of this in the future. Some of the coaches have been very creative in getting teachers to watch their peers teaching. Coaches are using Flip Cameras to videotape lessons. One teacher explained, "We are doing a Video Club four times per year. We basically videotape a lesson and then watch it together as a group to debrief. It allows us to be in each other's classrooms. We are getting more comfortable around each other and feeling more comfortable about going into someone else's classroom."

Coaches are also working to improve instructional practice by continuing to model instructional strategies for teachers and by co-teaching lessons. Coaches who are also teaching math courses are inviting teachers to observe them. One teacher commented, "She comes in and models some lessons for me because I have not taught the 7th grade material before." Another way coaches are focusing on improving instructional practice is by providing teachers with resources and research. A few of the buildings are taking on book studies with the help of the math coach.

Despite improvements in the ability of coaches to support effective instructional practice in classrooms, some interview participants continue to pinpoint limited coach availability as a barrier to implementing program objectives. The MMP supports a half-time coach, and some coaches work with two buildings and have responsibilities at the district level. One principal stated, "I would love to have a full time math coach. My frustration is that I have not had a dedicated full time coach." Interview participants also pointed to a struggle with time to have conversations and

discussions around instructional practice. This barrier appeared to be compounded in buildings with a large number of math teachers because often they do not have common planning time.

Similar to findings from previous years, not all buildings have attained the desired level of implementation in the area of instructional practice. Several coaches expressed frustration that their instructional work with teachers is limited to a select group. Interview participants explained that a small percentage of teachers continue to be wary of having a coach and are suspicious of Microsoft’s motives. Evaluators rated teacher involvement using the implementation rubric (see Table 2). Figure 2 displays ratings for each school on this rubric. This rating scale is based on each coach’s rating of the teachers at their school/s on a scale of 1-5 (1 being not involved at all and 5 being very involved). In Year 3, many of the schools moved up from threes to fours, and from fours to fives on this rating scale.

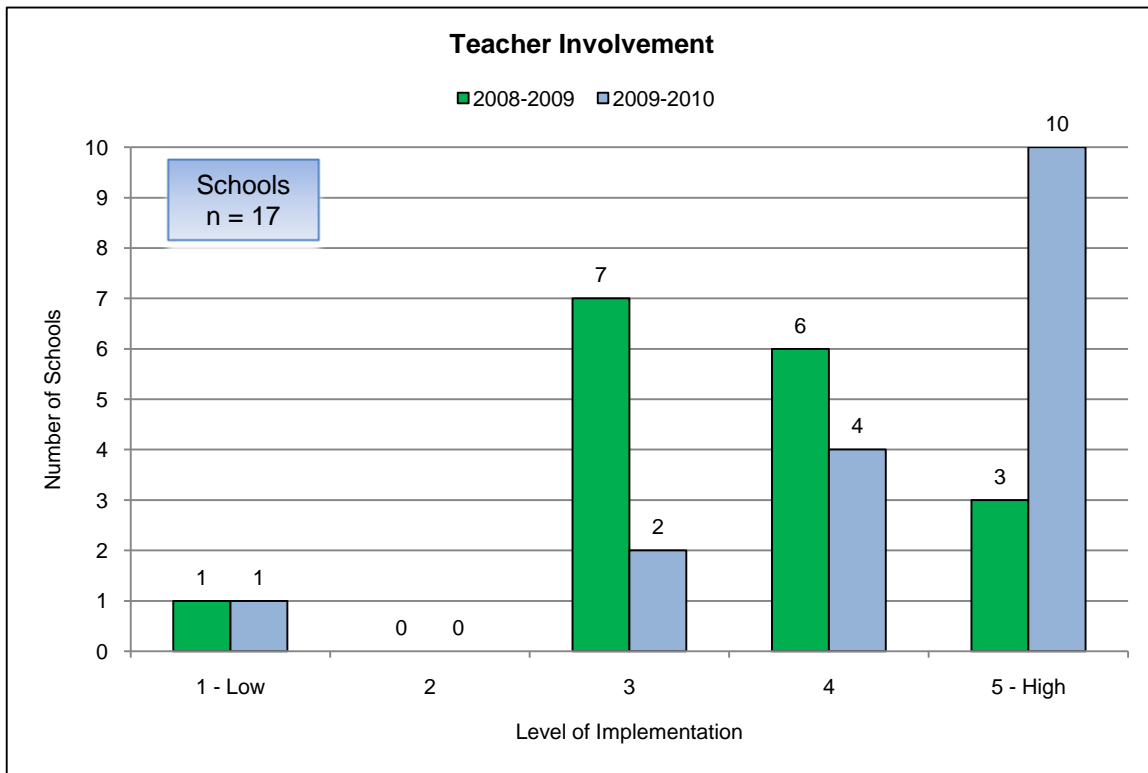


Figure 2. Implementation Rubric Rating – Teacher Involvement

- 1 = The majority of teachers are resistant to coaching and are not participating in initiative trainings.
- 3 = About half of the teachers are working with the coach and involved in initiative trainings.
- 5 = The majority of teachers are actively participating in working with the coach and are involved in initiative trainings.

Coaches Provide Targeted Professional Development. In Year 3 of the initiative, coaches continue to provide different types of targeted professional development depending on district, school, and individual teacher needs. In many of the MMP districts, there is the expectation for math coaches within the district to coordinate and to provide professional development for all

middle and junior high school math teachers. Other districts and buildings expect the coach to deliver professional development but are not as specific with their expectations.

This year, many of the coaches led and participated in professional development centered on aligning curriculum with new state math standards. Additionally, a few of the MMP districts implementing new math curriculum this year relied on the math coaches to help with training and supporting teachers during the process. “The curriculum change would be very difficult without the coach. We are working with our coach to bring raw math into a meaningful experience,” shared one teacher. Other coaches worked on creating common assessments. “One of the biggest things coming out of the grant is the use of common assessments. We have worked on creating these and are now working on grading them the same way. We want to make sure we have the same expectations no matter the teacher,” shared one math teacher. Coaches also are continuing to support new teachers coming to their buildings. In particular, coaches are working with those teachers to ensure they have the materials they need and are proficient in basic classroom management strategies.

Coaches Facilitate the Development or Refinement of Professional Learning Communities.

The implementation of PLCs or collaborative learning teams is underway in many of the MMP buildings. Similar to last year, the structure and the level of implementation of these vary greatly throughout the Partnership. Most coaches are working within the framework of pre-existing collaborative communities, while others are being very deliberate with their PLC work by starting with the vision and mission. In most cases, coaches are helping facilitate these groups during common planning time. In buildings where no common planning time exists, coaches are creating collaborative groups on early release days or during regularly scheduled department meetings.

The process of developing PLCs has gone smoother in buildings where the majority of teachers are working with the math coach and where the principal is sponsoring the work by creating a schedule where teachers have common planning time within the school day. In buildings where the principal, coach, and teachers have dedicated time to meet together and are committed to collaboration, PLCs have developed and participants are reporting them to be extremely valuable. One teacher shared, “Without having the foundation of being a PLC, I do not know how we would have made it this year. I was worried at the beginning of the year with the curriculum change, but then I remembered that together we are one.” An administrator stated, “The biggest benefit I have seen is our math teachers becoming a PLC. [It is a] way to have conversations about teaching and learning. It has moved it to another level.”

As in Year 2, the function, structure, and extent of collaborative teaming and PLC work varies from building to building. Some of the teams are having conversations around instruction, some are looking at student work and student assessment results, some are working on curriculum alignment, others are sharing information gained from professional development, and a few are doing research and book studies, among other activities. One coach explained part of their PLC work stating, “We have been doing staff development on [the] STAR Protocol and looking at student engagement. This is staff wide and is part of school improvement plan. We are doing this work at staff meetings and monthly PLCs. We will watch videos and do discussions about what we see on the videos.” In some schools, teachers report that PLCs are meeting as frequently as once or

twice a week. In other schools, coaches report difficulties in finding sufficient time to collaborate and may only get a chance to meet with a few teachers at a time rather than the entire department. Finding time for collaboration will require that schools confront the organizational constraints that have hindered PLC development. The findings also suggest that continued refinement of PLC models may necessitate additional investments in collaborative work time on the part of some Partnership districts.

Evaluators rated PLC implementation using the implementation rubric (see Table 2). Figure 3 displays ratings for each school on this rubric. A few schools moved up on this rubric from Year 2 to Year 3, but many did not. Additionally, no schools scored a five on this rubric, mainly because PLCs were meeting infrequently (once every few months) and were spending too much time on nuts and bolts rather than on instruction and student work.

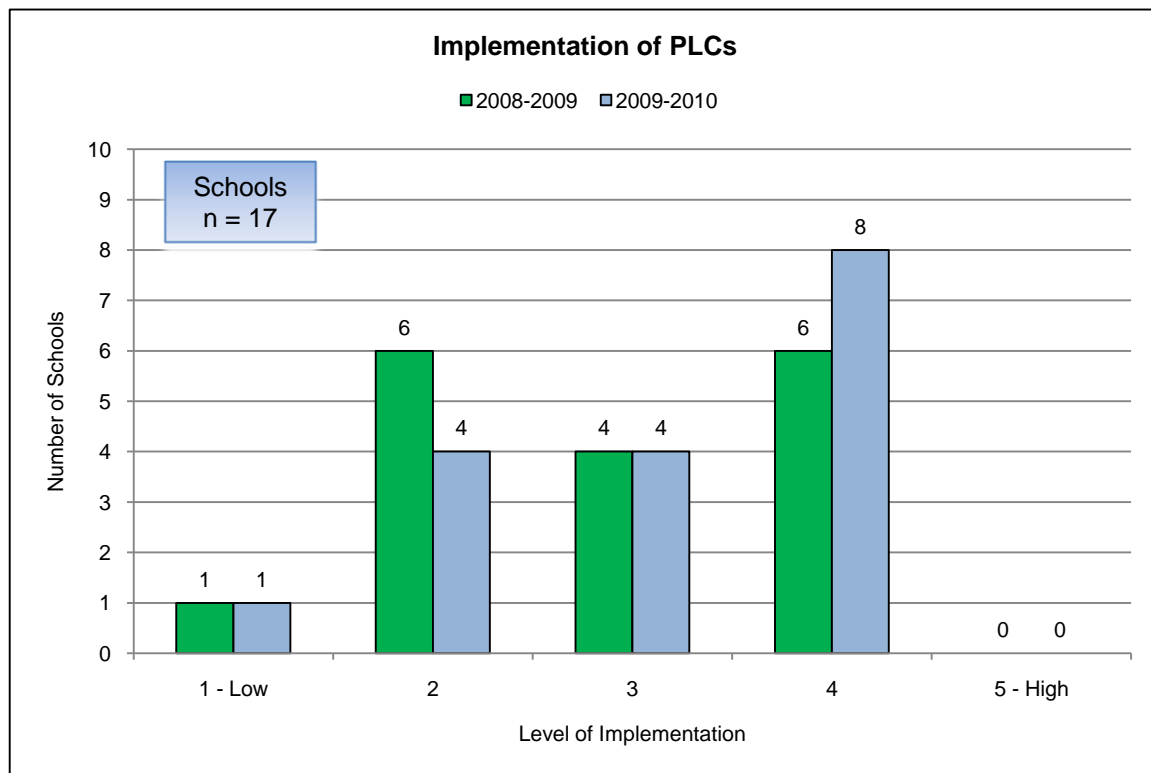


Figure 3. Implementation Rubric Rating – Implementation of PLCs

1 = No evidence of PLCs.

3 = PLCs exist, but are unstructured, inconsistent, and not focused on instruction.

5 = PLCs exist and are working on common goals, meet consistently, and are focused mainly around instruction.

Professional Development

In Year 3 of the Partnership, the structure of the professional development opportunities changed in order to build capacity within each school. Administrators and coaches continued to receive professional development in Year 3, but were encouraged to bring a lead teacher from their school with them to professional development. Most MMP coaches participated in all trainings offered,

but the level of involvement from administrators and lead teachers varied throughout the year. Schools getting the most out of the professional development this year appeared to be ones where administrators showed support for the work through attending the trainings and where lead teachers were intentionally selected because of their ability to continue to lead the work of the math department after the grant ends. Few schools had opportunities to share the professional development information with the rest of the teachers. One administrator shared, “Well I think the PD was fabulous for the teachers. One of the things that we need is some time to share.” Not having time to share the professional development information led many interview and focus group participants to report wanting teachers to be included in the trainings. “I miss not having the PD that was available for every teacher,” commented one person.


In general, participants were enthusiastic about the MMP professional development activities in Year 3 of the initiative, although some reported the trainings felt repetitive of activities offered in Years 1 and 2. Many believed the trainings to be relevant to their current work, and a few took the opportunity to share training information with teachers in other subject areas. Many interviewees also commented positively on the Partnership’s ability to make adjustments when needed to make the professional development more helpful. One participant shared, “I have enjoyed the training. It has been some of the best PD that I have ever had.”

The regional meetings continued to foster a sense of community among the participants and allowed for sharing between districts. The math coaches in particular appreciate the time to connect and to collaborate with one another. For the most part, building administrators were positive about the regional meetings, and most value the opportunity to meet with colleagues from other districts. One administrator reported, “I have gotten a lot of PD as an administrator. I feel like I can teach a math class. I also know what to look for in classrooms. It helps me with my evaluation conferences. A few interview and focus group participants mentioned that many of the meetings feel rushed. One person stated, “There are times when the PD felt rushed. I would say work from Duane was always rushed and never had enough time for him. I do not believe that stuff really transferred to teachers the way it should have.”

Along with the professional development opportunities provided by Puget Sound Educational Service District and the University of Washington, all of the schools participate in other district-based professional development. Often the district-based training is supported by MMP funds and is led by MMP math coaches. For example, some districts offered trainings for newly adopted mathematics curriculum. Teachers generally viewed the on-site professional development activities in a positive light; many felt these activities directly supported their efforts in the classroom. One teacher stated, “Ongoing, intensive, embedded PD for mathematics teachers is really important. We really need more opportunities for peer observation and conversations about instruction.” Many coaches and teachers commented on the difficulty of attending all of the trainings and were concerned about being out of their schools and classrooms too much.

Assessments

As in Year 2, many schools and districts continued to work on developing common formative and summative assessments in Year 3. The presence of conversations around assessment was evident at



all of the Partnership schools, but only a small subset of the schools and districts are implementing common assessments. In schools where this work is moving forward more quickly, the district has prioritized the work and is using the coaches along with teams of teachers to help develop these. A principal shared, “One of the things that has come out of the grant is realizing the need for common assessments. It really has formulated a framework for our district. We want to have these online eventually.” The MMP-sponsored formative assessment training helped with getting this work underway. Some coaches noted more teachers using formative assessments in their classrooms. “We are using some of the formative assessment training we received. I am doing a lot more exit tasks. Now it is less formal assessments. All of these came from the training,” commented one teacher. Despite the positive progress in this area, all agree that more work needs to be done. Additionally, some interview and focus group participants mentioned common assessments as being at risk for not being sustainable without the support of coaches. One person shared, “Without continued support on common assessments and common rubrics. I think they will start adapting it based on individual teachers.”

Communication with Parents and Community Stakeholders

In Year 3 of the initiative, very few of the Partnership schools held Math Nights. There appeared to be a variety of reasons for not having Math Nights this year. One coach shared, “We used to have a math night. We have had one the last two years. But I have not been given any agenda like you need to do these things as a math coach.” Another interviewee shared, “We had a parent Math Night in the past. I am not sure why we did not have one this year. What we have had every year is a night for 6th grade parents to come to talk about transition.” A couple of the schools conducting Math Nights this year reported very positive results. For example, one math coach reported increasing parent turnouts every year. In general, all participants reported wanting to have Math Nights, but were concerned about the sustainability of them without the coach to organize and plan them.

As in previous years, few schools are reaching out to community organizations. The most frequently mentioned challenge to establishing these partnerships is lack of time. Many coaches admitted they often have to take responsibility for planning parent nights or communicating with community organizations. The majority of interview and focus group participants expressed a desire for more parent and community involvement in the school, and many had ideas for partnerships they would like to develop in the future. A few interview participants continued to express a desire for a Microsoft presence at their events.

Curriculum Alignment

In Year 3 of the initiative, Partnership schools are continuing to make progress in the area of curriculum alignment. As in Years 1 and 2, some of the Partnership schools are in the midst of curriculum adoptions. Additionally, many of the schools are working on aligning existing curriculum to new state math standards. One teacher talked about this work stating, “Part of our work included looking at the state standards and making sure what we taught was aligned with the state standards. CMP did not always match them that closely. We created some lessons, assessments, and rubrics to supplement what we had been doing.” In most cases, math coaches at each school are involved in the process of curriculum alignment. One principal talked about the

coach's role in this process by stating, "This grant started around the same time as us implementing new curriculum. We would not have implemented the curriculum with as much fidelity without the coach. Having her has helped because teachers would not have been on board as quickly." Coaches from some of the schools also talked about finding computer programs to help supplement the core curriculum. Some schools are using the 'I Can Learn' computer program, as well as, Gizmo, Cognitive Tutor, and SuccessMaker.

In Year 3 of the Partnership, interview and focus group participants are beginning to have discussions around state standards being the 'curriculum' and textbooks being 'resources.' For example, one teacher explained, "This is not our curriculum, it is getting to the state standards. That has been a big piece. There is a focused intentionality on what we are doing in terms of instruction. The GLEs are the curriculum, and the book is a resource." Another person shared, "Standards are driving the curriculum." Finally, conversations with teachers, coaches, and administrators revealed that the topic of vertical curriculum alignment has received increased attention in many districts. A few of the districts are sending groups of middle school teachers to have discussions with elementary school teachers around vertical alignment, but this is happening infrequently. In general, vertical alignment is a growing concern in some districts.

Improvement of Rigor and Extended Learning Opportunities

In Year 3 of the Partnership, there continue to be indicators that districts are making efforts to improve the rigor of their math course offerings and that they are holding students to higher standards. Many interview and focus group participants reported that schools and districts have prioritized preparing students to complete algebra by the 8th grade. Districts are beginning to put structures in place to support students in more challenging courses. Two main strategies used by districts include offering a second math class to support students and offering tutoring opportunities.

There is evidence of providing math enrichment or double dosing at MMP schools in Year 3 of the Partnership. At schools offering these courses, select students receive two math classes a day. Interviewees explained that many of these support classes pre-teach and re-teach concepts that students receive in their regular math class. Most interviewees reported positive results from these courses. In general, these courses are most successful when aligned with the student's regular math class and used to extend and build upon learning rather than being a place for students to complete homework.

Interview participants credit MMP with providing time to develop and to implement interventions to help struggling students. Some schools now offer before or after school math support for targeted students. One coach stated, "We still have after-school tutoring and [are] now trying to get it more specific to be on math. We had a parent who wanted to do an after-school tutoring program. We also have a high school student who is doing this as part of her senior project." More and more of the MMP schools are using technology to provide students with extended learning opportunities. The mathematics-based computer programs mentioned in the previous section are becoming more prevalent in the MMP schools. In some cases, these are available to students during the school day, whereas in other cases, students use these programs in after-school support sessions.



Additionally, many MMP schools are beginning to use an inclusion model for their Special Education and English Language Learners so that these students are included into the general education classrooms. In most cases, these students are receiving support in the classroom from the presence of an additional teacher, and some participate in a smaller math support class. Other MMP schools are combining honors and general education classes even if students are in different grade levels. One administrator explained their plans for doing this next year stating, “One of the things we will be doing next year is to blend honors and regular math classes. We are looking at it being as close to 50/50 as possible. The reason to do that is to have the same expectations in both those groups. We are going to challenge all students and believe that all kids can do this level of mathematics.”

PRODUCT STRAND: EVIDENCE OF IMPACT

EVALUATION QUESTION THREE: To what extent are there identifiable changes in public policy, and what are the apparent underlying reasons for these changes in policies and practices?

Overall, more policy changes at the district and school levels occurred in Years 2 and 3 of the initiative compared to Year 1. Additionally, many of the MMP districts are gathering information and discussing the possibility of large-scale revisions in subsequent years, including changes to graduation requirements for the class of 2013 and beyond. Policy changes at the district and school level include revisions to student placement strategies, offering more support math classes for struggling students, providing more time for curriculum and assessment alignment, and including students who qualify as English Language Learners and for Special Education in mainstream math courses. Evaluators rated policy changes using the implementation rubric (see Table 2). Figure 4 displays ratings for each school on this rubric. From Year 2 to Year 3, many schools moved from a two to a three or a four. Much of this shift is due to schools actively putting plans in place for aligning curriculum and assessments, changing student placement strategies including placement of ELL students and students qualifying for special education services, and developing common assessments.

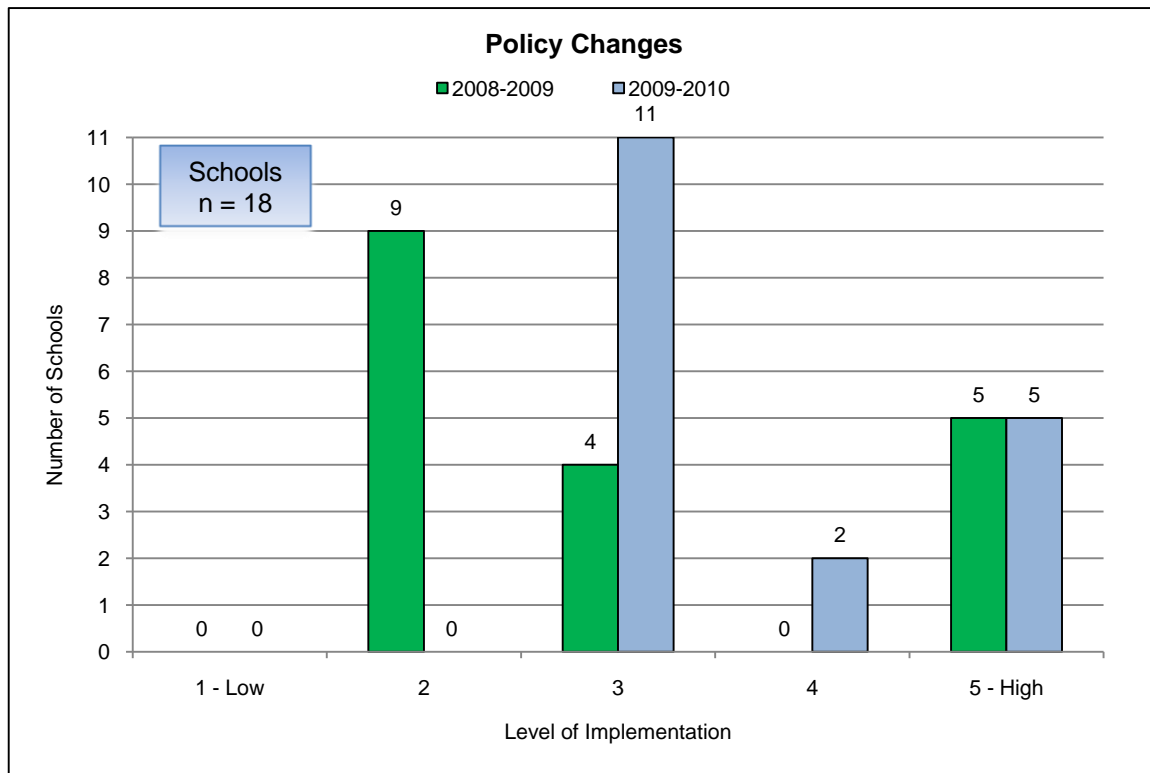


Figure 4. Implementation Rubric Rating – Policy Changes

- 1 = No changes in policy have occurred to support initiative goals.
- 3 = Changes in policies being actively considered and plans are in place.
- 5 = Policy changes have occurred.



As in Year 2, one of the most frequently cited policy changes occurring in the MMP school districts in Year 3 is revisions to course placement guidelines. In some districts, new guidelines for student placement in middle school and high school math are allowing larger numbers of students' access to high-level courses. Many interview and focus group participants discussed the movement toward students taking algebra in the 8th grade. Several of the MMP districts and schools set goals around this objective. For example, one district representative shared, "We want to get 50% of 8th grade students into Algebra. We are trying to align district goals with the goals of the initiative. We are looking at math pathways to make sure all kids are getting there." Districts moving toward this goal are setting up structures to support elementary school teachers in math content knowledge. Additionally, many interview and focus group participants pointed out that students who struggle will have extra support through extra math support classes and after school help. One principal commented, "We have created a math essentials class for students who are having difficulty with grade-level content, and they have the same teacher for their core math class. We learned about this pre-teaching method from another MMP district. Now these students become class experts. We are seeing growth in their student achievement."

Other districts are also starting to align course placement criteria. Previously, many of the districts placed students by teacher recommendation alone; now many of the districts are assessing readiness for certain math classes using more formalized assessments in addition to teacher recommendations. One district administrator commented, "In the past, students at different high schools took courses with different names and different expectations and were placed in middle and high school levels through a variety of methods. This change in policy reflects a move towards an aligned mathematics curriculum that prepares every student for college and careers."

In Year 3 of the initiative, several districts are in the process of developing and implementing common mathematics curriculum and assessments. In many cases, MMP coaches are creating materials and are providing support in this process. One district official shared, "It [the initiative] came at a great time for us. We were up for a curriculum adoption, and we drew heavily on our coaches. They helped and supported the teachers. They planned the scope and sequence. They are working on common assessments." Additionally, many districts are creating pacing guides to ensure common curriculum is being taught within a subject area and are beginning to align their curriculum across grade levels. A few districts are developing common assessments and are beginning to use data to drive decision-making. One school administrator commented, "All middle schools will be able to take advantage of the work on common unit assessments. We are also doing re-engagement lessons for those classrooms where they did not do so well at the common assessment."

Another policy change implemented by some of the MMP schools in Year 3 is the inclusion of some ELL and Special Education students in mainstream math courses. Several interview and focus group participants discussed the influence of the MMP trainings in encouraging their school to make this policy shift. "The Partnership was instrumental in coming up with this model because the math coaches from the district met at the MMP meeting and got together around ELL students so we chose to replicate what the coaches discovered at MMP," reported one interviewee. Schools implementing an inclusion model are offering support for these students through a sheltered math

class. One coach shared, “One of the things that I think has made a difference is how we are meeting the needs of our ELL students. Three years ago, I do not think we were servicing those kids. In the last couple of years, we learned about strategies for working with our ELL students. We have an ELL teacher. All students are in regular math, and then the ELL teacher works with the regular teacher on strategies for helping those ELL students. Those strategies are helping all of the students.” Interview participants at these schools also shared evidence of academic success of students being included in mainstream math courses. One coach stated, “We have a general ed. and special ed. teacher working together doing an inclusion model with about 4 adults with 30 kids. They are teaching it just like a regular classroom. The general ed. kids have not dropped and special ed. kids are gradually improving.”

In Year 3 of the initiative, more conversations and discussions are taking place in the MMP districts regarding revisions to high school graduation requirements; although no official changes have been made to the requirements for the next school year. Several of the districts are in the process of collecting data to determine how close their students are to meeting new graduation requirements for the class of 2013. Similar to Year 1 and Year 2 of the initiative, MMP district graduation requirements in Year 3 do not align with college entrance requirements. As of 2010, only two of the eight Partnership districts required three years of mathematics (see Figure 5). Thus, six of the MMP districts require fewer math courses than is necessary for entrance into a four-year university. In contrast, all eight districts require students to take at least three years of social studies. The State Board of Education recently revised high school graduation requirements. As of 2013, high schools must require students to take at least three years of mathematics. Because the MMP initiative is concerned with college and workplace readiness, it is anticipated that Partnership districts will revise their graduation requirements before 2013.

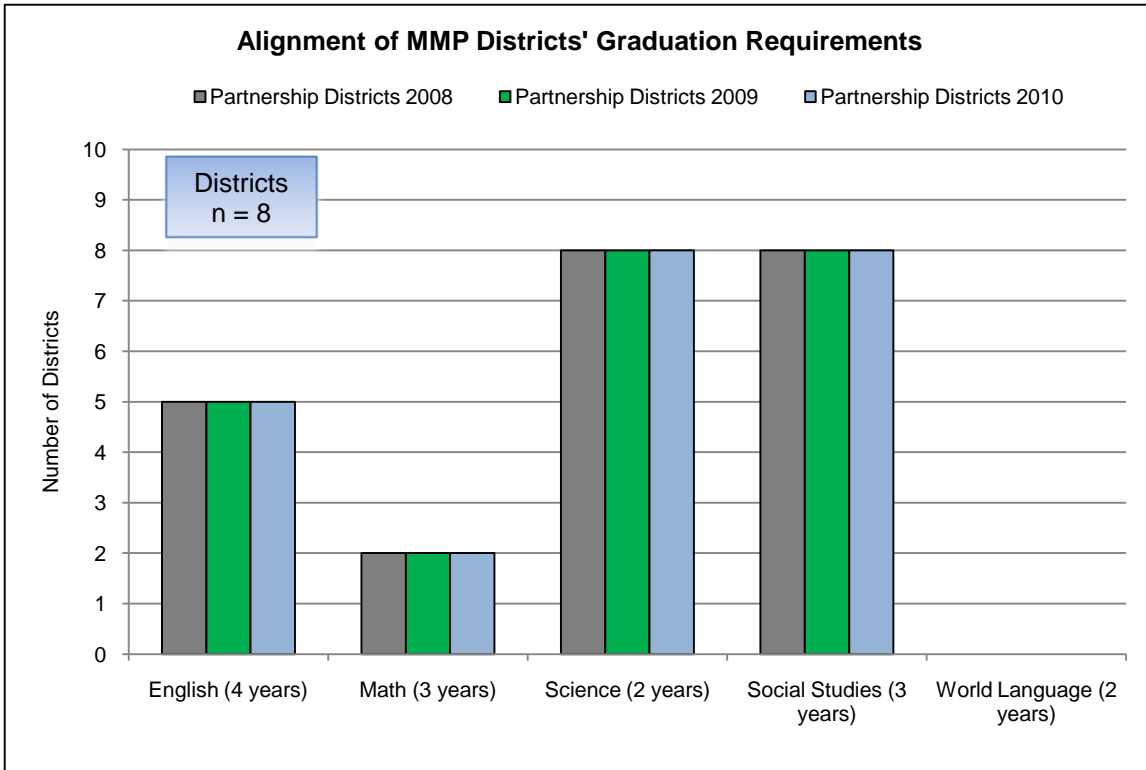


Figure 5. MMP Districts' 2008, 2009, and 2010 High School Graduation Requirements by Subject (includes Bellevue School District)

EVALUATION QUESTION FOUR: To what extent are there identifiable changes in teacher practice, and what were the apparent underlying reasons for these changes in teaching practices?

Researchers gathered perception data about teacher practice during interviews and focus groups conducted at each of the Partnership schools. In Year 3, many interviewees reported coaches having a positive influence on teacher practice. In particular, interviewees mentioned increased student collaboration, clear teaching objectives, increased use of formative assessment, and increased student discourse on math as classroom practices that have changed over the last three years of the initiative. One administrator talked about changes he is seeing in classrooms stating:

I am seeing a greater level of discourse among the students and questioning. Students are talking more about math and wrestling with meaningful concepts. There is more of a blend of concept and skills and students are getting their hands dirty with math. They are arguing and debating about math. Everyone in the classroom is acting like a mathematician, and teachers are encouraging students to justify their thinking. They are moving beyond right and wrong.

Teachers also reported changes to their practices, “I have objectives on my wall that I used to not have. [I have] more of a focus on what they [students] are thinking rather than what they are doing. I am more concerned with their thought processes,” shared one teacher. Coaches and administrators also reported more consistency in teaching strategies and pedagogy. One coach talked about this consistency saying, “I see teachers using some of the same strategies in different levels of classes. I see that going on. I see teachers willing to try something different in a non-threatening way.” Evaluators rated changes in teaching and learning using the implementation rubric (see Table 2). Figure 6 displays ratings for each school on this rubric. Further qualitative findings that relate to teacher practice are presented in Evaluation Question Two (To what extent do districts implement the initiative as designed?).

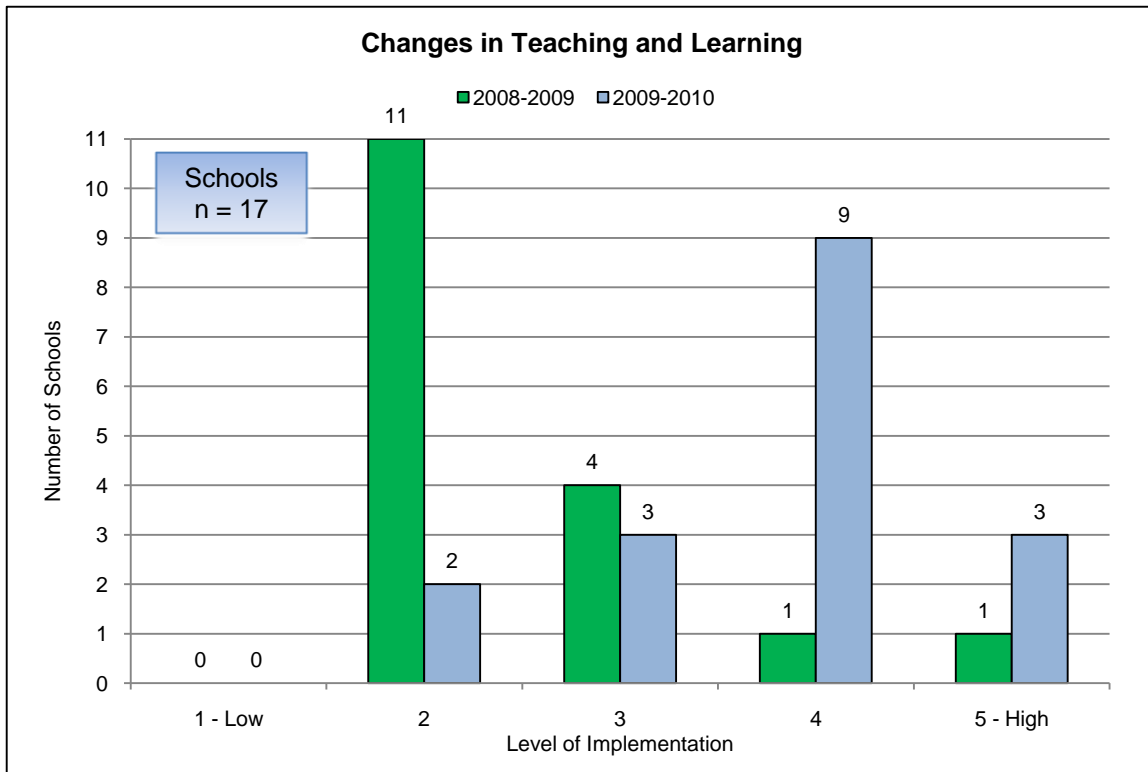


Figure 6. Implementation Rubric Rating – Changes in Teaching and Learning

1 = No changes in teaching and learning are evident in the classrooms (using the STAR Protocol and interview/focus group data).

3 = Changes in teaching and learning are evident in about half of the classrooms (using the STAR Protocol and interview/focus group data).

5 = Changes in teaching and learning are evident in the majority of the classrooms (using the STAR Protocol and interview/focus group data).

In addition to gathering perception data during the interviews, the research team also conducted classroom observations designed to determine the extent to which Powerful Teaching and Learning™ was present in the MMP schools. Scores do not reflect a particular school, but rather how most schools within the Partnership performed. Three schools from the Northshore School District participated in the classroom observations in Year 2 and Year 3, but did not participate in Year 1.

STAR Classroom Observation Protocol

The STAR Classroom Observation Protocol™ serves as an instrument to measure Powerful Teaching and Learning™. Powerful Teaching and Learning™ is a concept The BERC Group developed during evaluation work designed to represent classroom practices that align with how people learn and with brain-based research. This type of teaching and learning correlates highly with student academic achievement (Abbott & Fouts, 2003). The three essential components of Powerful Teaching and Learning™ (adapted from *How People Learn: Bridging Research and Practice*, National Research Council, 1999) in a standards-based technology-enabled environment are:

Active Inquiry: Students are engaged in active participation, exploration, and research; activities draw out perceptions and develop understanding; students are encouraged to make decisions about their learning; and teachers utilize the diverse experiences of students to build effective learning experiences.


In-Depth Learning: The focus is competence, not coverage. Students struggle with complex problems, explore core concepts to develop deep understanding; and apply knowledge in real world contexts.

Performance Assessment: Clear expectations define what students should know and be able to do; students produce quality work products and present to real audiences; student work shows evidence of understanding, not just recall; assessment tasks allow students to exhibit higher-order thinking; and teachers and students set learning goals and monitor progress.

Reference to Powerful Teaching and Learning™ describes what many refer to as student-centered teaching and constructivist learning. It is also referred to as reform-like teaching. Powerful Teaching and Learning™ has a sound base in instructional and learning theory and research supports the development of such teaching and learning practice (Abbott & Fouts, 2003).

Incorporated into Powerful Teaching and Learning™ is an emphasis on student engagement and teacher support. The teacher exposes students to authentic problems, and students learn through hands-on involvement and through real-life situations. Studies in cognitive psychology have suggested that students learn better from hands-on, holistic learning experiences (Dietel, Herman, & Knuth, 1991). Structured drills are not effective if the goal is to move the students toward higher, analytic ways of thinking. Researchers also suggest that “to know” something does not simply mean a student receives the knowledge; it means the student is able to interpret it and relate it to other knowledge. It is in the integration of skill efficiency and conceptual understanding (Hiebert & Grouws, 2008).

Several studies have revealed strong correlations between student achievement and the presence of Powerful Teaching and Learning™ in schools (Abbott & Fouts, 2003; Brown & Fouts, 2003; Fouts, Brown, & Thieman, 2002). These studies involved more than 1400 classroom observations over a two-year period. Although Powerful Teaching and Learning™ was observed in schools only 12-17% of the time (Fouts, Brown, & Thieman, 2002), there was a strong positive correlation between Powerful Teaching and Learning™ and student achievement. In addition, students of poverty appeared to benefit most from Powerful Teaching and Learning™ as described in the observation protocol (Abbott & Fouts, 2003). However, students of poverty receive Powerful Teaching and Learning™ the least.



Details of the studies and the development of the Teaching Attributes Observation Protocol (TAOP) are available on the Bill & Melinda Gates Foundation website.⁴

Observation instrument and procedures. Evolving from the TAOP, the STAR Classroom Observation Protocol™ (STAR Protocol) is a research instrument measuring the degree to which teachers are employing post-modern and constructivist teaching and learning ideals and/or whether those ideals are present during any given period of observation time in a classroom. The intent of the STAR Protocol is to measure what is going on in a given period of time for generalizing not to a single teacher, which would take more or longer observations, but to the school in the aggregate. In most cases, when conducting a study, two to four observers visit each school for one or two days, depending on the size of the school. At the end of 30 minutes, observers score all 15 items of the STAR Protocol and calculate a score for each of the five Essential Components of the protocol (0-4 point scales). Observers also give the class session an Overall Component Score of 1 to 4.

Classroom Observation Results

Two researchers from The BERC Group conducted classroom observations at all eighteen MMP-funded schools from March to June of 2010. In all, the researchers observed 106 classrooms. Researchers observed each classroom for approximately 25 to 30 minutes. Findings within this report highlight MMP schools' STAR classroom observation results for Year 3 in comparison to the Year 1 and Year 2 results and to the STAR average for middle school mathematics.⁵ Results are presented for all teachers observed each year and for teachers who were observed every year of the Partnership. Results compare ratings of 0 to 2, which is considered not aligned with Powerful Teaching and Learning, to ratings of 3 to 4, which is considered aligned with Powerful Teaching and Learning. Disaggregated data is available in Appendix A.

⁴ <http://www.gatesfoundation.org/Education/ResearchandEvaluation/>

⁵ The STAR average includes “first time” observations in middle school mathematics programs across Washington State.

The first Essential Component of the STAR Protocol, *Skills*, measures whether students were actively reading, writing, and/or communicating during a lesson. In all three years, the majority (69%, 77%, and 92% respectively) of the scores for MMP on this Component fell at or above a 3, indicating that students in most of the classrooms were practicing skills during their lessons (see Figure 7). As can be seen in Figure 8, a similar pattern existed for teachers observed all three years of the Partnership (64%, 76%, and 93% respectively). The percentage of lessons scoring a 3 or 4 on this Component increased every year of the Partnership, and the percentage of lessons scoring a 4 in this area increased substantially over the first and second years. In the few lessons scoring below a 3 on this Component, students were practicing skills at a level much too low to be relevant or engaging. Examples of this include students completing simple worksheets or copying information directly from text. While students in these classes were actively engaged in an activity, the activities were largely recall (see Table 3 - Indicator 2).

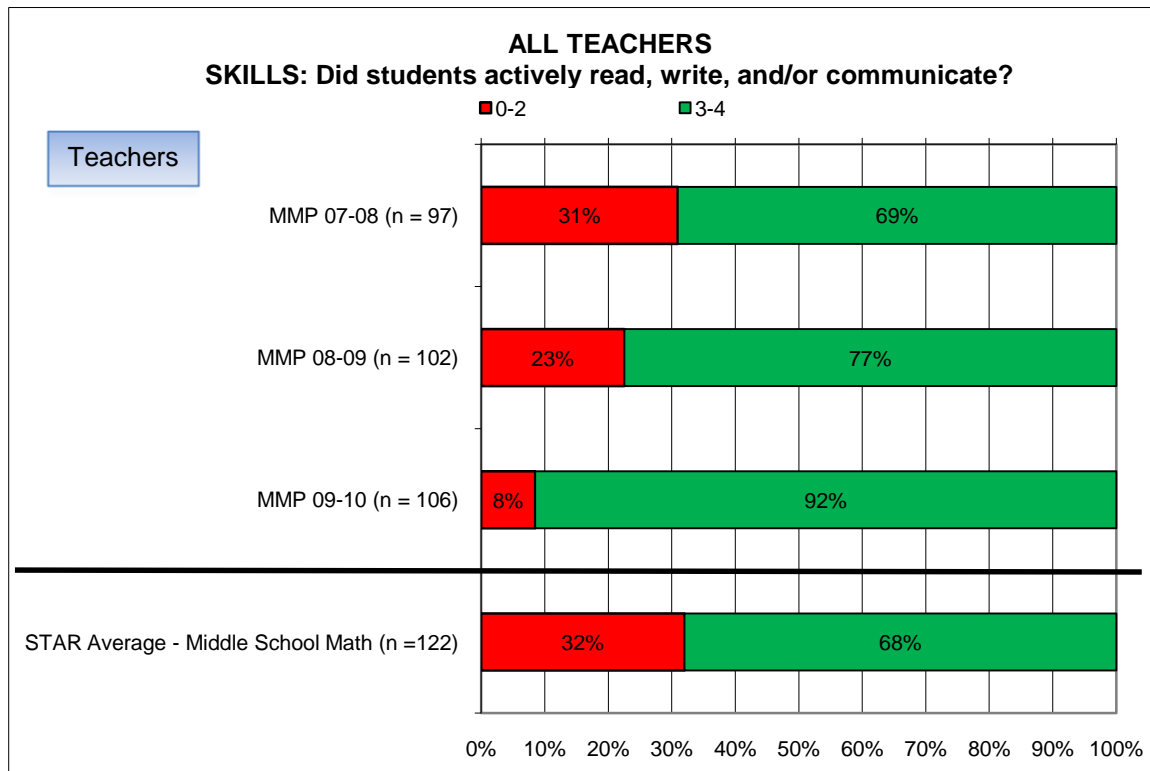


Figure 7. Frequencies of Scores for Skills – All Teachers

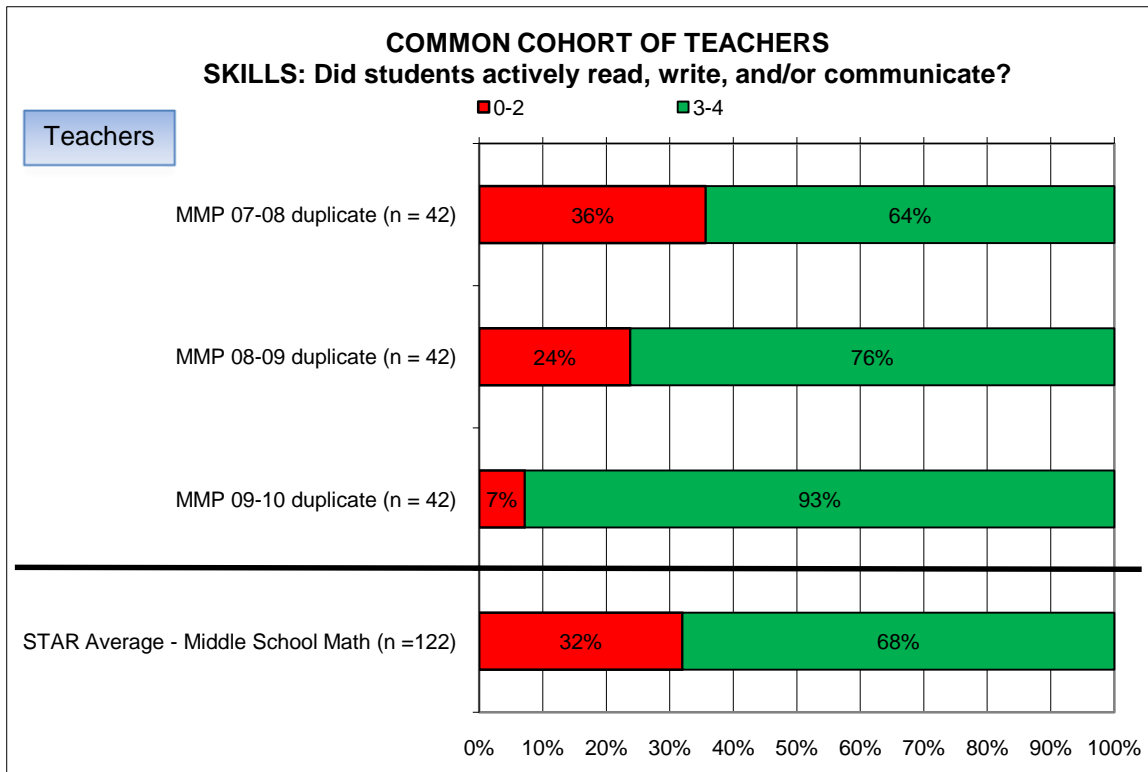


Figure 8. Frequencies of Scores for Skills – Common Cohort of Teachers

The second Essential Component of the STAR Protocol, *Knowledge*, measures whether students demonstrate conceptual understanding during a lesson. For Years 1 and 2, approximately half of the scores for MMP schools on the *Knowledge* Component fell at a 3 or 4, indicating that in many lessons students were demonstrating little conceptual knowledge (see Figure 9). In Year 3, in approximately 60% of the classrooms, engaging discussions around relevant topics and clearer lesson objectives improved the score substantially on this Component (score of 3 or 4). Teachers observed all three years of the Partnership showed a similar trend for substantial improvement in Year 3 and had more lessons scoring a 3 or 4 on this Component in Year 3 compared to teachers not observed all three years (see Figure 10).

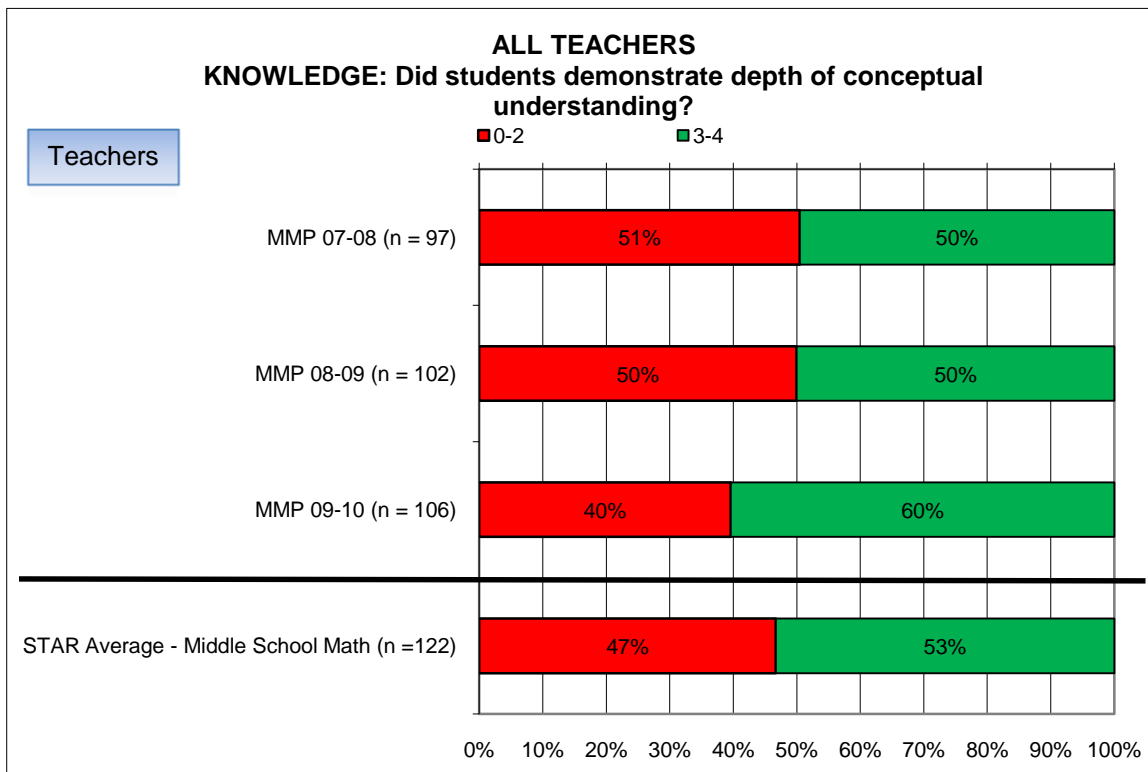


Figure 9. Frequencies of Scores for Knowledge – All Teachers

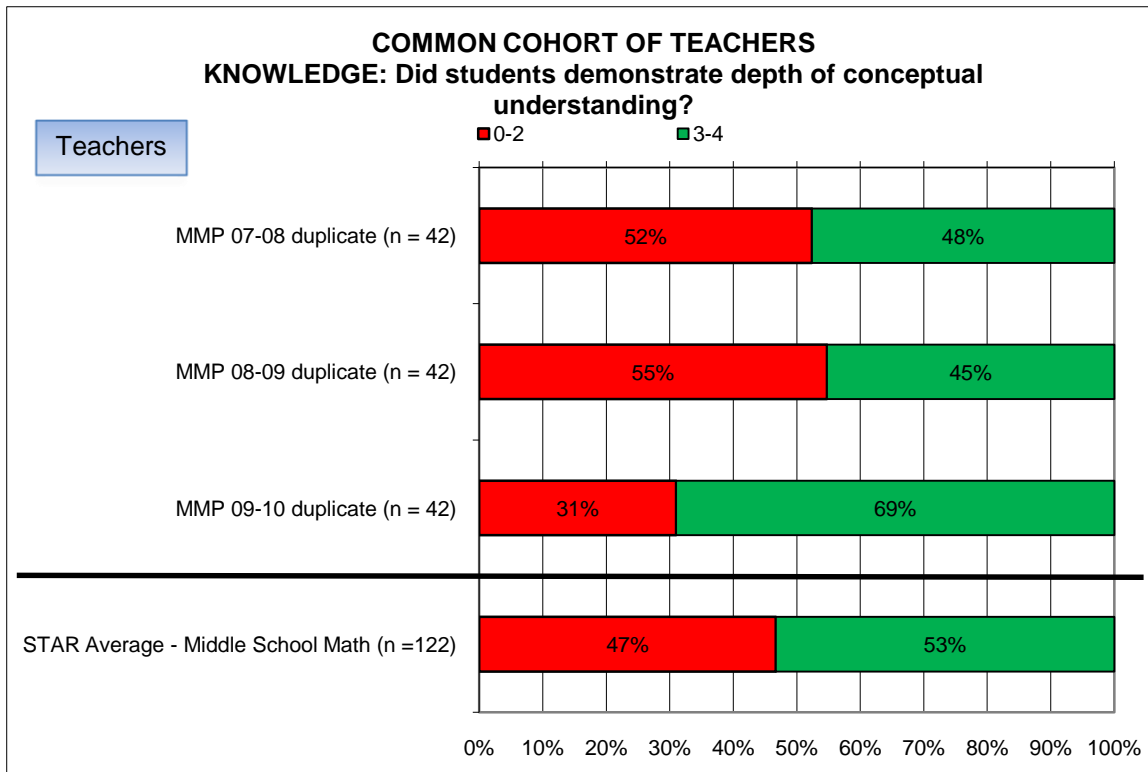


Figure 10. Frequencies of Scores for Knowledge – Common Cohort of Teachers

The third Essential Component of the STAR Protocol, *Thinking*, measures whether students demonstrate metacognition and/or reflection during a lesson. Scores for this Component improved each year of the Partnership, with the most substantial increase recorded in Year 3 (see Figure 11). Likewise, teachers observed all three years also improved each year and scored more threes and fours on this Component each year compared to teachers not observed all three years (see Figure 12). Although teachers are beginning to ask more open-ended, higher-level questions, rarely are students given time to reflect on their own learning (see Indicator 9 in Table 3). In classes scoring 3 or higher, teachers asked students to explain their thinking or to provide extended answers to questions.

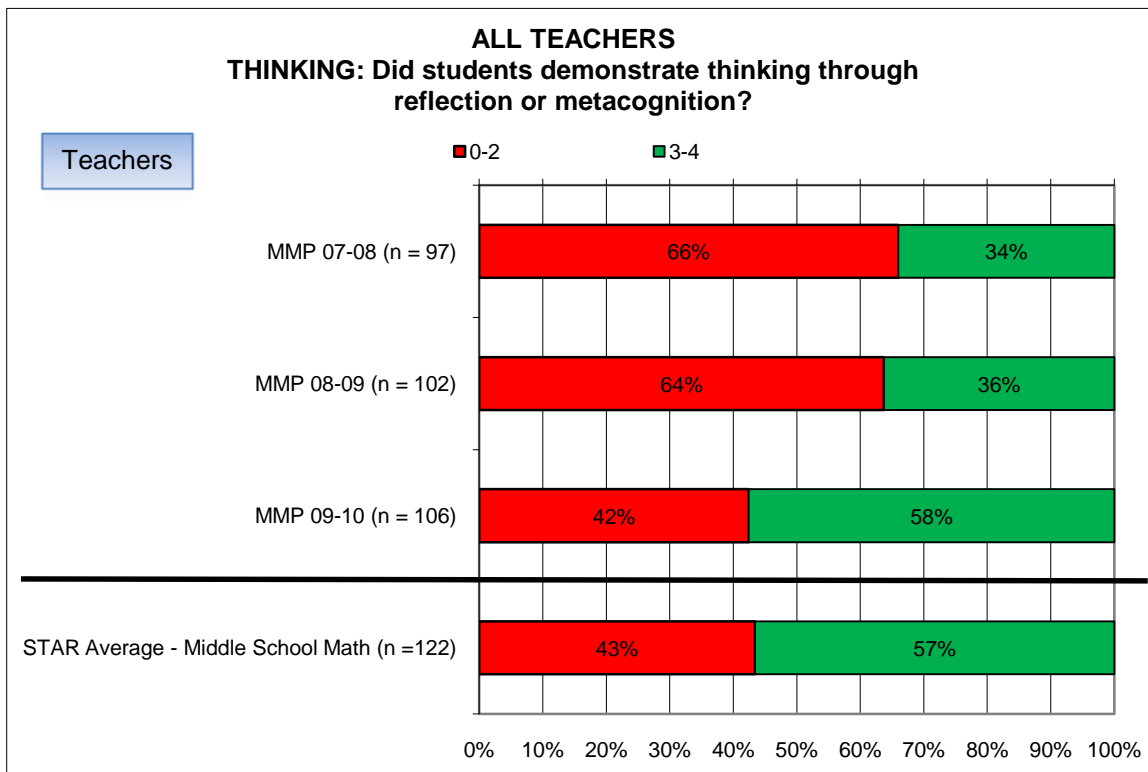


Figure 11. Frequencies of Scores for Thinking – All Teachers

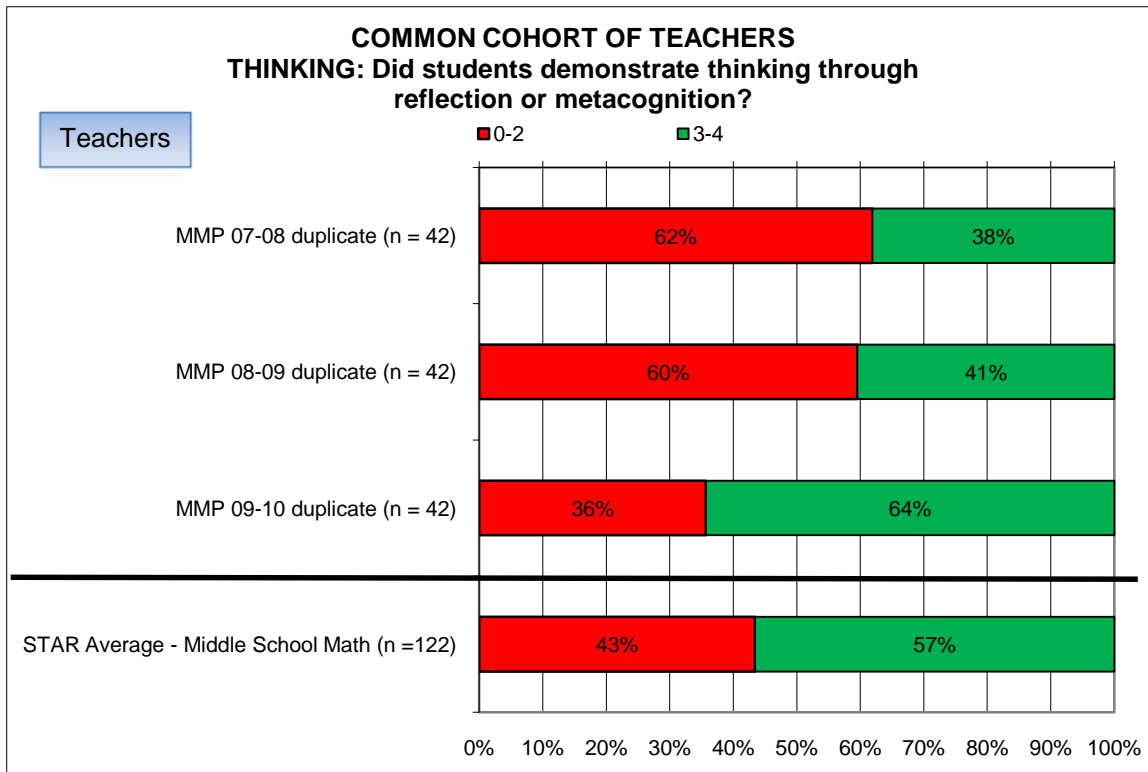


Figure 12. Frequencies of Scores for Thinking – Common Cohort of Teachers

The fourth Essential Component of the STAR Protocol, *Application*, measures whether students extend their learning into relevant contexts. This Component continues to be one of the weakest for MMP schools, with 29% of lessons scoring 3 or higher in Year 3 (see Figure 13). However, this does represent an improvement over previous years and is an increase of 16 percentage-points from last year. In classrooms of teachers observed all three years, only 21% of the lessons showed clear evidence (scoring a 3 or 4) of this Component in Year 3; however, this is an 11 percentage-point improvement from Year 2 (see Figure 14). In most classroom lessons observed, there were few instances of teachers and students relating disciplinary knowledge to other subject areas, to personal experiences, or to contexts outside the classroom. If lessons incorporated *Application* it was typically within the context of story problems, which were not always well developed or discussed.

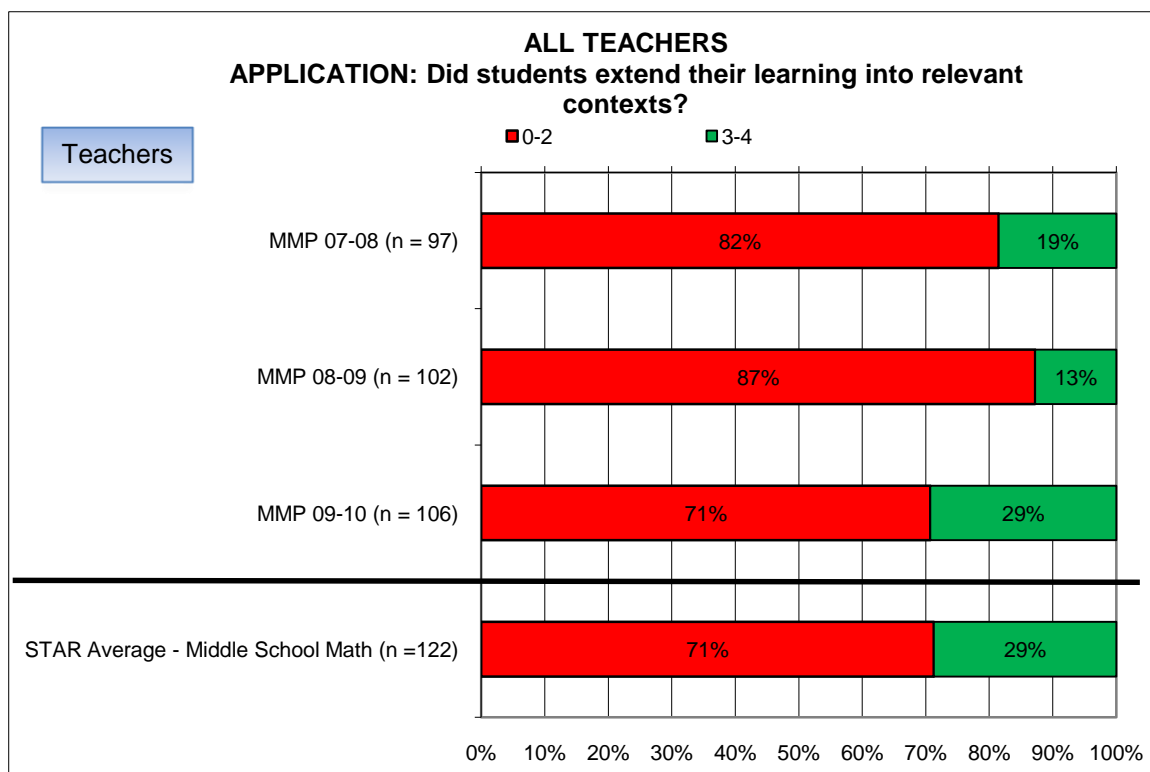


Figure 13. Frequencies of Scores for Application – All Teachers

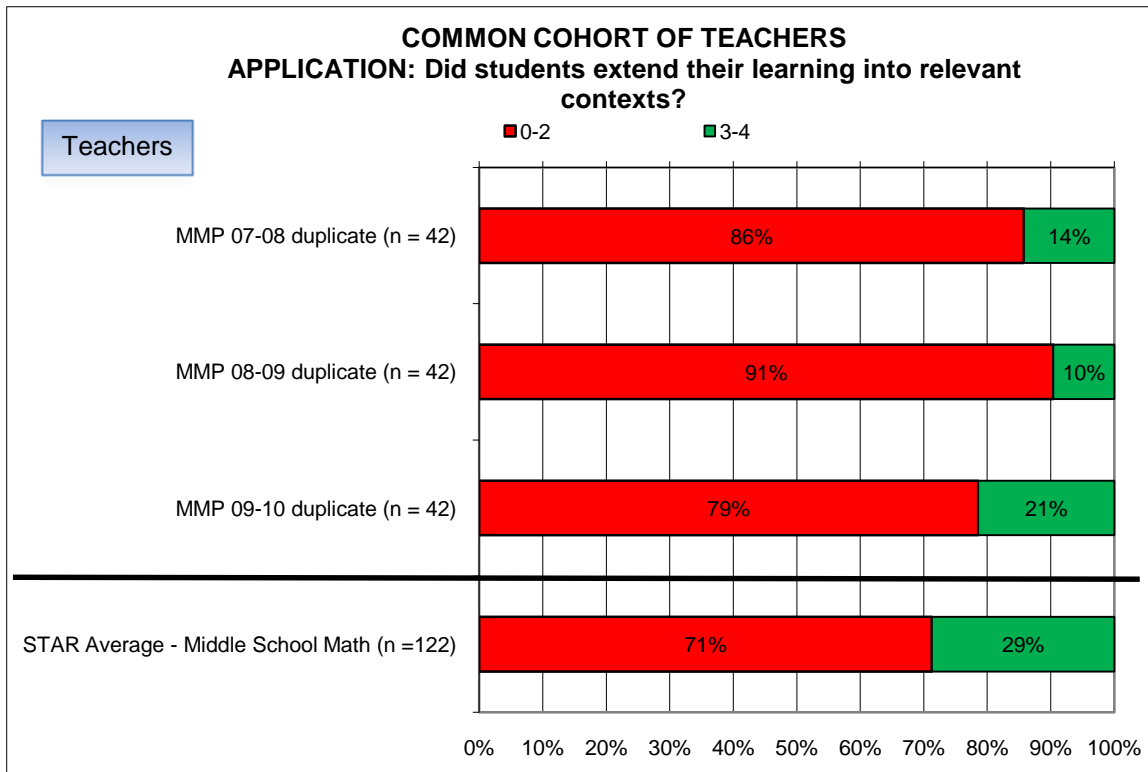


Figure 14. Frequencies of Scores for Application – Common Cohort of Teachers

The fifth Essential Component of the STAR Protocol, *Relationships*, measures whether the interpersonal interactions in the classroom reflect a supportive learning environment. The majority of classroom lessons for all three years scored at or above a 3 on this Component, indicating strong and supportive interactions between students and teachers (see Figure 15). Teachers observed all three years of the Partnership also showed substantial improvement in this area (see Figure 16). From Year 1 to Year 3, teachers observed all three years made a 23 percentage-point gain on this Component. When compared to all teachers observed this is an impressive gain. On the other hand, only about one-third of the lessons scored a 4 in this area. In many cases, lessons lacked sufficient challenge. Additionally, in some classroom lessons, students only occasionally collaborated with one another to share knowledge or to work on projects. Finally, while some lessons emphasized differentiated instruction by allowing for student choice, many lessons did not provide the appropriate level of rigor for a diverse group of students.

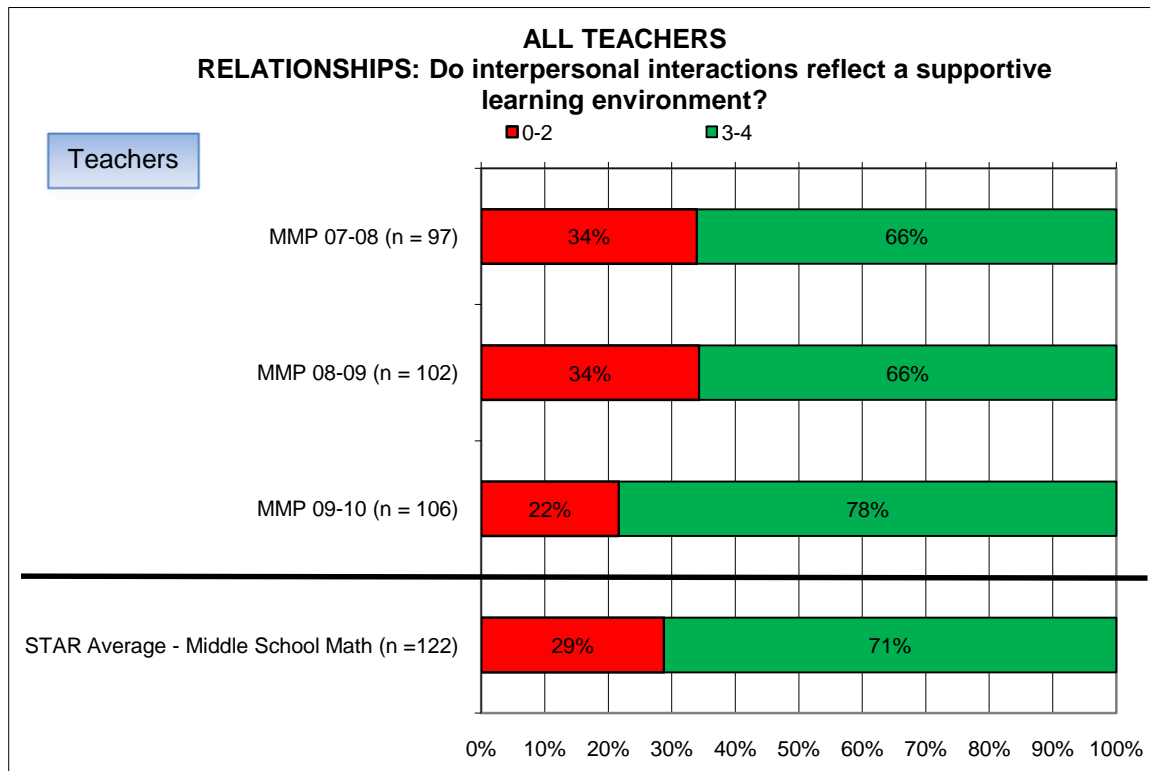


Figure 15. Frequencies of Scores for Relationships – All Teachers

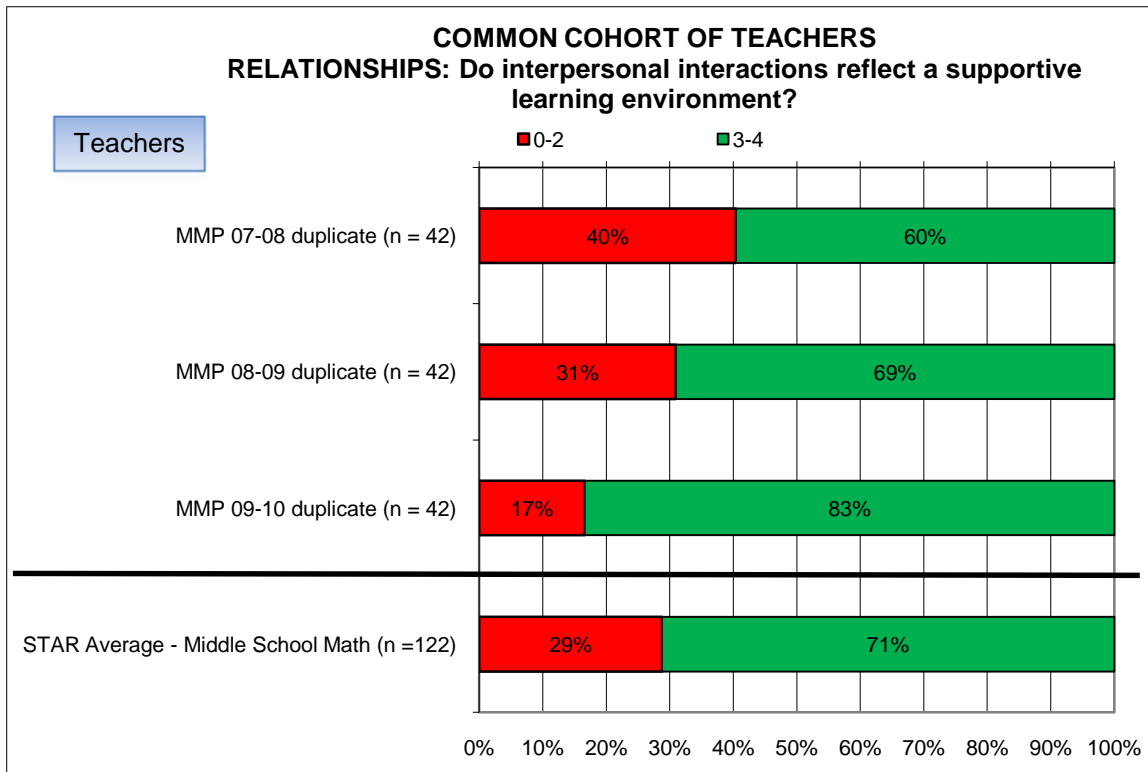


Figure 16. Frequencies of Scores for Relationships – Common Cohort of Teachers

On the Overall Component of the STAR Classroom Observation Protocol™, the majority of scores for MMP schools fell in the *Very Little* to *Somewhat* range in Year 1 and Year 2 of the initiative. In Year 3, more classroom lessons scored at the *Very* level and 66% of lessons observed were aligned with Powerful Teaching and Learning (i.e. 66% of the observed lessons received a score of *Somewhat* or *Very* – see Figure 17). This represents a 16 percentage-point increase from Year 2, a 12 percentage-point increase from Year 1, and falls 9 percentage-points above the STAR Average for middle school math. Similarly, teachers observed all three years of the Partnership showed substantial improvement from Year 1 to Year 3 (see Figure 18). In Year 3, 79% of these lessons were aligned with Powerful Teaching and Learning, which represents a 29 percentage-point increase from Year 1 and Year 2 and falls 22 percentage-points above the STAR Average.

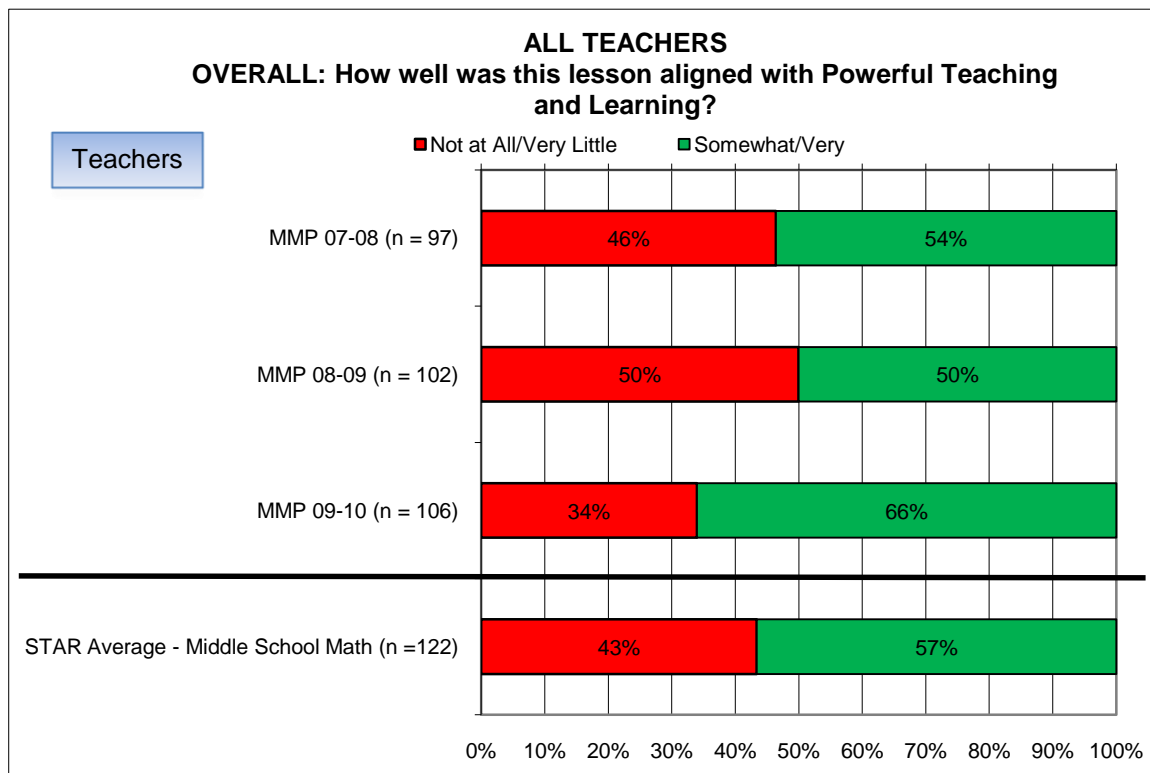


Figure 17. Frequencies of Scores for the Overall Score – All Teachers

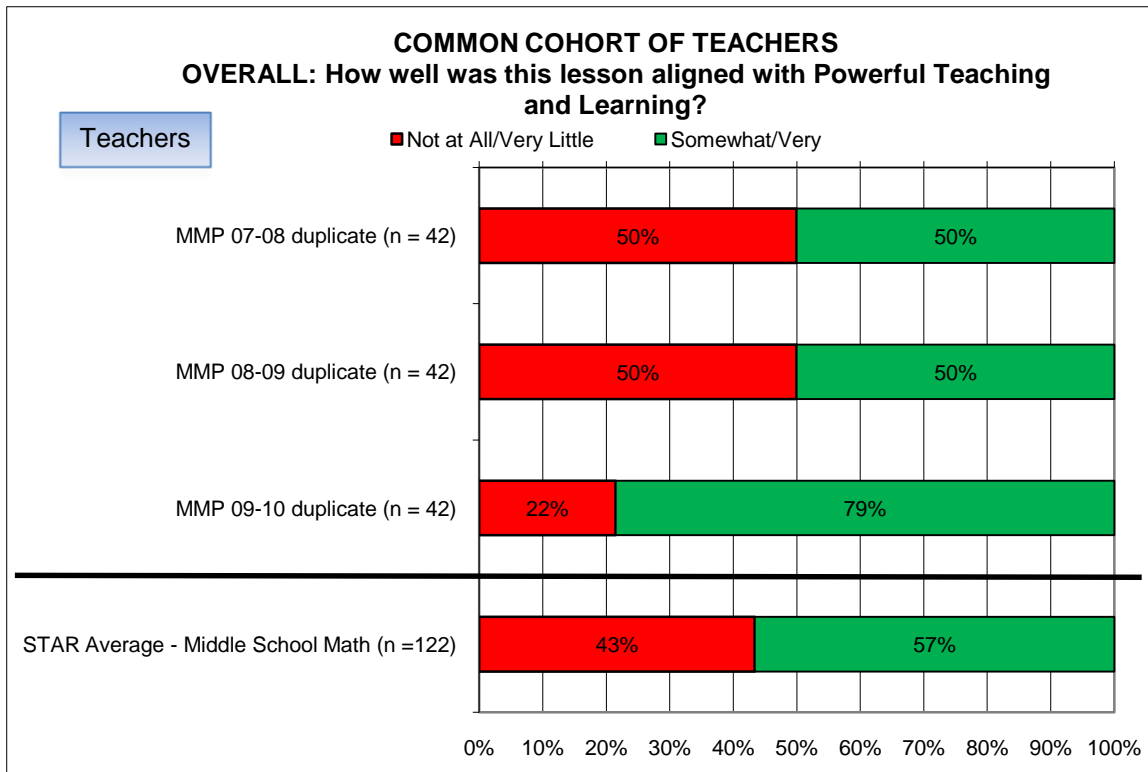


Figure 18. Frequencies of Scores for the Overall Score – Common Cohort of Teachers

Table 3.

Disaggregated STAR Indicator Results

<i>Skills Indicators</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1. Teacher provides an opportunity for students to develop and/or demonstrate skills through elaborate reading, writing, speaking, modeling, diagramming, displaying, solving and/or demonstrating.	0%	0%	3%	34%	63%
				97%	
2. Students' skills are used to demonstrate conceptual understanding, not just recall.	0%	4%	31%	49%	16%
				65%	
3. Students demonstrate appropriate methods and/or use appropriate tools within the subject area to acquire and/or represent information.	1%	3%	10%	31%	55%
				86%	
<i>Knowledge Indicators</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
4. Teacher assures the focus of the lesson is clear to all students.	1%	5%	12%	31%	51%
				82%	
5. Students construct knowledge and/or manipulate information and ideas to build on prior learning, to discover new meaning, and to develop conceptual understanding, not just recall.	0%	6%	36%	40%	19%
				58%	
6. Students engage in significant communication, which could include speaking/writing, that builds and/or demonstrates conceptual knowledge and understanding.	0%	15%	29%	42%	13%
				56%	
<i>Thinking Indicators</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
7. Teacher uses a variety of questioning strategies to encourage students' development of critical thinking, problem solving, and/or communication skills.	2%	8%	30%	33%	26%
				59%	
8. Students develop and/or demonstrate effective thinking processes either verbally or in writing.	1%	9%	31%	39%	20%
				58%	
9. Students demonstrate verbally or in writing that they are intentionally reflecting on their own learning.	7%	26%	27%	33%	7%
				40%	
<i>Application Indicators</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
10. Teacher relates lesson content to other subject areas, personal experiences and contexts.	25%	23%	25%	20%	8%
				28%	
11. Students demonstrate a meaningful personal connection by extending learning activities in the classroom and/or beyond the classroom.	30%	16%	23%	23%	8%
				31%	
12. Students produce a product and/or performance for an audience beyond the class.	97%	1%	1%	0%	1%
				1%	
<i>Relationships Indicators</i>	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
13. Teacher assures the classroom is a positive, inspirational, safe, and challenging academic environment.	0%	8%	6%	38%	48%
				86%	
14. Students work collaboratively to share knowledge, complete projects, and/or critique their work.	7%	9%	22%	30%	32%
				62%	
15. Students experience instructional approaches that are adapted to meet the needs of diverse learners (differentiated learning).	9%	19%	38%	21%	13%
				34%	



A one-way multivariate analysis of variance (MANOVA) was performed in order to determine if differences in Powerful Teaching and Learning™ existed between the three years of the initiative. Only teachers with scores for all three years were included in the analysis. The Overall STAR score and five Essential Component scores served as the dependent variables and year served as the independent variable. The overall results for the MANOVA were statistically significant ($F_{(12, 236)} = 2.87, p < .001$) and revealed a medium effect size (partial $\eta^2 = .13$). Post-hoc tests revealed statistically significant differences on the *Skills*, *Thinking*, and *Application* Component scores, and on the Overall score. In every case except for one, the statistically significant difference existed between Year 3 and Years 1 and 2. The mean Essential Component scores and Overall score for each year are presented in Table 4.

Table 4.
Mean STAR Classroom Observation Results

STAR Component	Results		
	Year 1	Year 2	Year 3
Overall	2.5	2.6	3.0
Skills	2.8	3.1	3.5
Knowledge	2.5	2.5	2.9
Thinking	2.2	2.2	2.8
Application	1.2	1.0	1.8
Relationships	2.8	2.9	3.1

EVALUATION QUESTION FIVE: To what extent are there identifiable changes in student outcomes?

There are several student outcomes that evaluators are gathering and tracking over time. The 2007-2008 data represent baseline outcomes for the MMP initiative. It is reasonable to expect some outcomes to surface quickly in the process, whereas others may take years before school and district redesign leads to measurable changes. The purpose of this section of the report is to keep short-term, mid-term, and long-term measures of success out in front of school and district staff as formative indicators of redesign efforts. The following section represents data provided by district staff and state databases to indicate areas of progress over the course of the grant.

Math Achievement

The 6th, 7th, and 8th grade student math academic achievement data for the MMP schools versus the state average are presented in Figures 19 to 21.⁶ Scores do not reflect a particular school, but rather how participating schools within the Partnership performed on average. There is variation among the scores of individual schools that make up the Partnership. However, for the purpose of the evaluation, scores are aggregated at the initiative level. In general, the percent of students in MMP middle and junior high schools meeting or exceeding state standards on the state math achievement test is consistently higher than the state average.

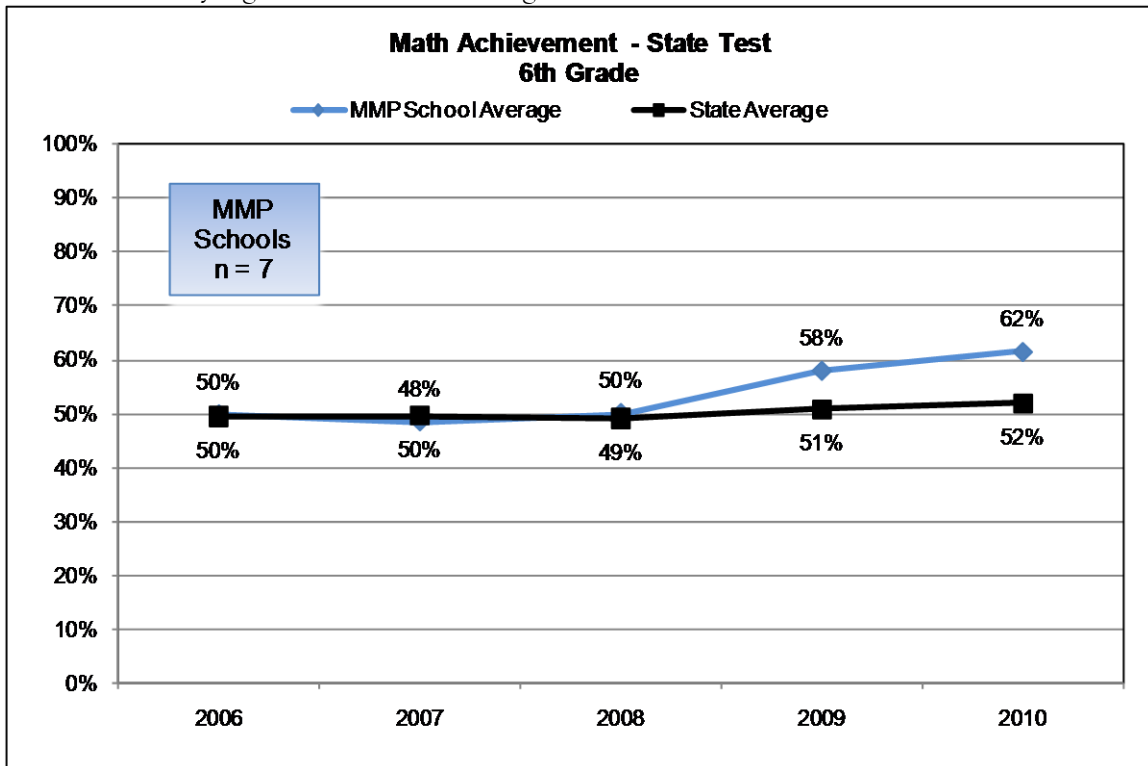


Figure 19. Math Achievement for 2006 to 2010 – 6th Grade

⁶ Only seven out of the 18 Partnership schools have data for 6th grade students.

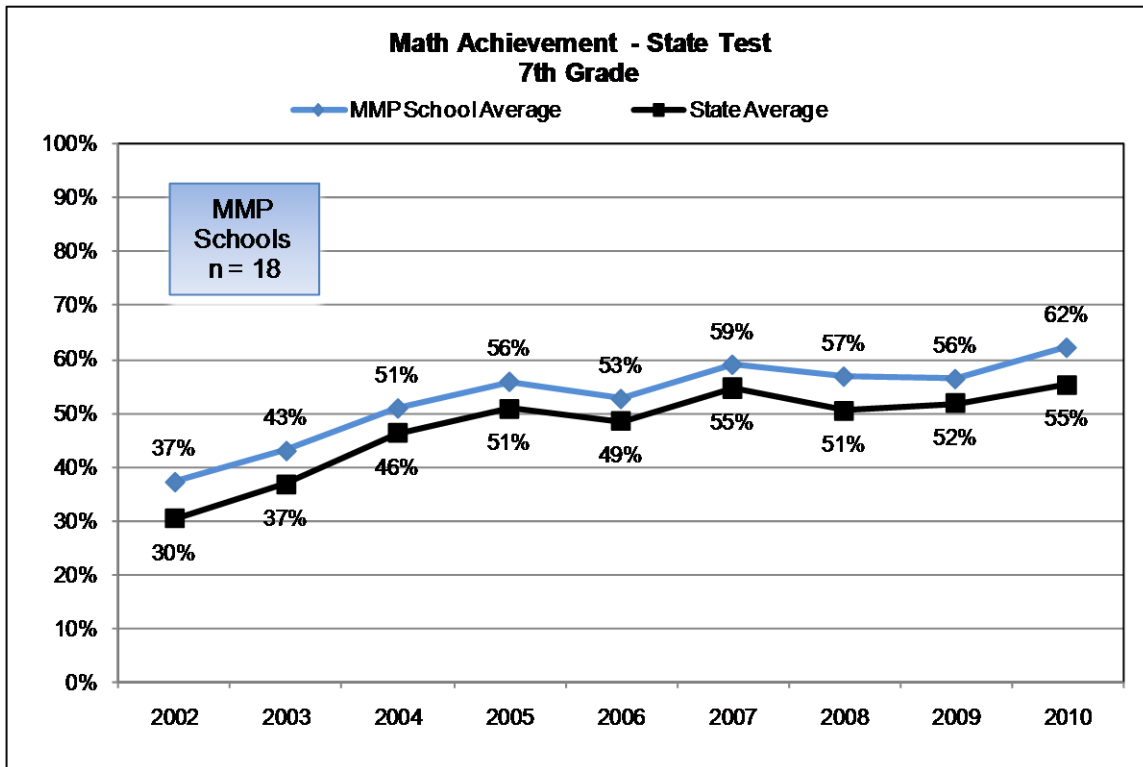


Figure 20. Math Achievement for 2002 to 2010 – 7th Grade

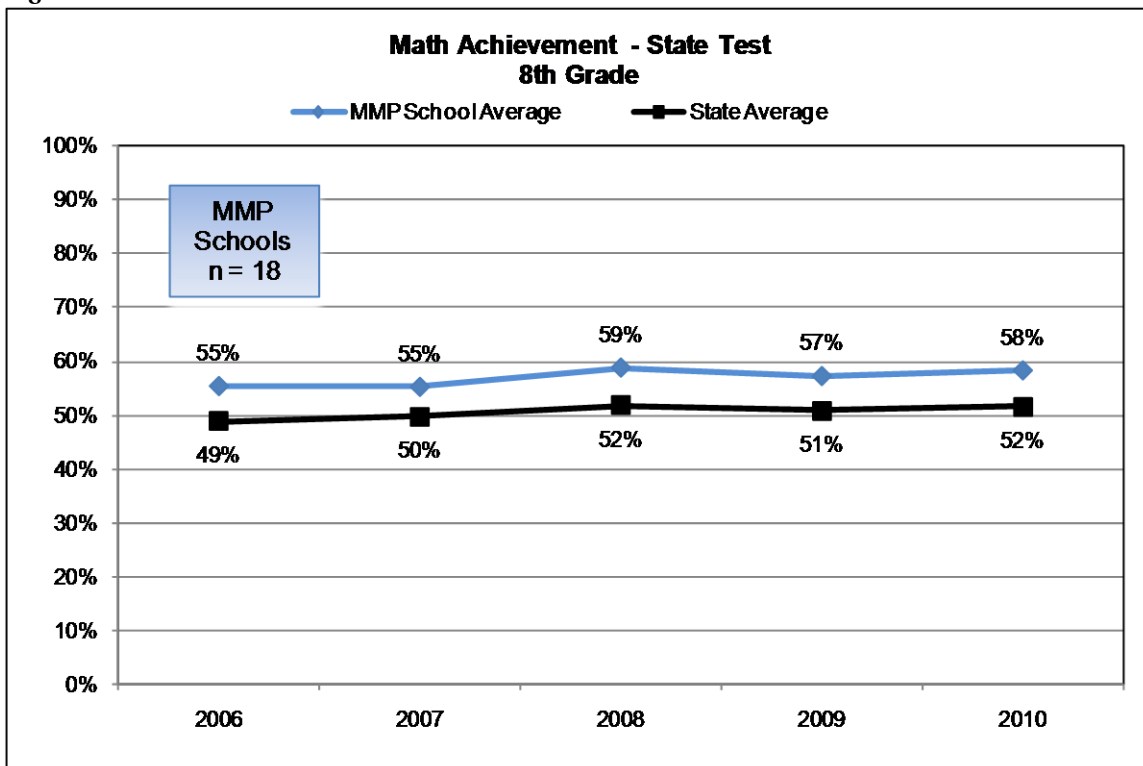


Figure 21. Math Achievement for 2006 to 2010 – 8th Grade

Middle School and Junior High School Course Enrollment Patterns

The evaluators gathered and analyzed course enrollment data at each of the Partnership schools to determine course enrollment patterns in the 2006-2007, 2007-2008, 2008-2009, and 2009-2010 school years. Data were collected at the 8th grade level in order to determine the extent to which students took algebra by the 8th grade. Districts were asked to use their judgment in determining what courses in their districts met the following criteria:

Algebra or Beyond: Completion of a class equivalent to Algebra I in the 8th grade, with the intended enrollment in Geometry or above in the 9th grade

Below Algebra: courses designated as remedial or algebra prerequisites

Seven Partnership districts provided data for the 2007, 2009, and 2010 school years and six Partnership districts provided data for the 2008 school year.⁷

Eighth grade math course enrollment data are shown in Figure 22. In all four years, the majority of students were enrolled in courses that were classified as below algebra. However, the percentage of students enrolled in algebra or beyond courses increased from the 2006-2007 school year to the 2009-2010 school year.

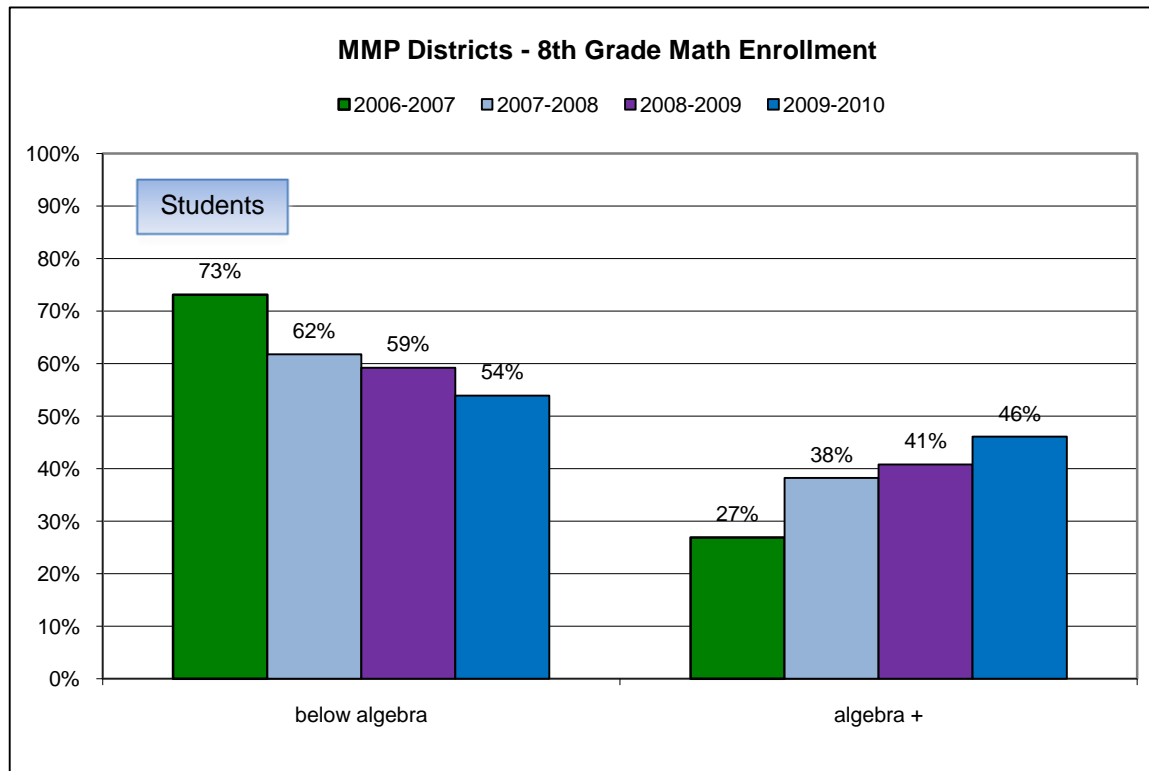


Figure 22. MMP Districts – 8th Grade Math Enrollment

⁷ Seattle Public Schools did not provide data for the 2007-2008 school year.

High School Course Enrollment Patterns

The evaluators obtained transcripts for 9th and 10th grade students at select high schools in the 2006-2007, 2007-2008, 2008-2009, and 2009-2010 school years, along with course catalogs describing the schools' classes. Eleven high schools were selected according to the feeder patterns of the funded middle and junior high schools. For Partnership districts with three funded schools, evaluators analyzed student data at two high schools. For Partnership districts with two funded middle or junior high schools, evaluators analyzed student data at one high school (see Table 5). It should be noted that not all graduates of the funded middle schools and junior high schools attend the selected high schools. Similarly, the student enrollment of the selected high schools is not exclusive to the funded middle and junior high schools.

Table 5.
MMP High Schools Analyzed

District	School
Bellevue*	None
Highline	Highline High School
Issaquah	Issaquah High School, Pacific Cascade Freshmen Campus
Kent	Kentlake High School, Kentridge High School
Lake Washington	Juanita High School, Lake Washington High School
Northshore	Bothell High School, Inglemoor High School
Renton	Renton High School
Seattle	Franklin High School, Garfield High School

*Note. Bellevue School District (BSD) serves in an advisory role. The analyses presented in this report do not include data from BSD unless noted.

A trained team of researchers, college admissions specialists, and school counselors analyzed the transcripts and placed the math courses into three levels of rigor:

Below Standard: less than algebra at the 9th grade and less than geometry at the 10th grade

Standard: algebra at the 9th grade and geometry at the 10th grade

Above Standard: above algebra at the 9th grade and above geometry at the 10th grade

The math course enrollments from 2006-2007, 2007-2008, 2008-2009, and 2009-2010 are shown in Figures 23 and 24. At the 9th grade level, the percentage of students taking 'Beyond Algebra' or above grade level courses increased from the 2006-2007 school year to the 2009-2010 school year, with a corresponding decrease in the percentage of students taking courses at grade level. A similar pattern emerged at the 10th grade level, with the percentage of students taking 'Beyond Geometry' or above grade level courses increasing from 2006-2007 to 2009-2010 by 8 percentage-points.

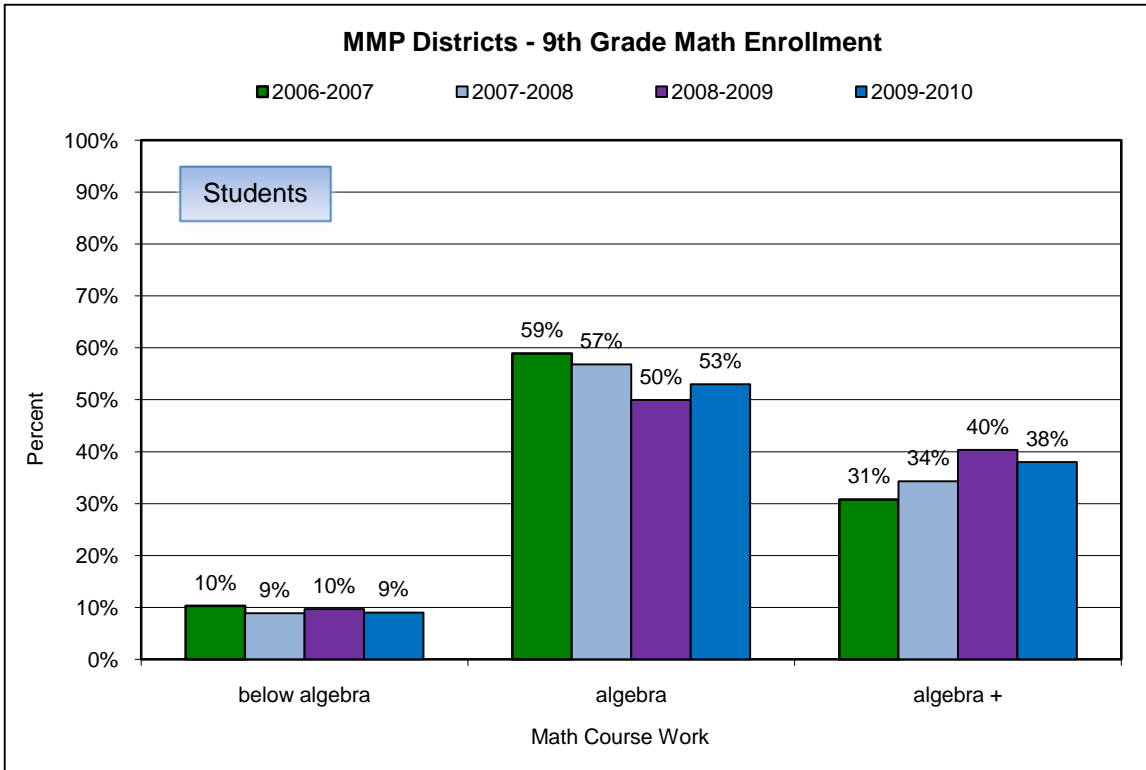


Figure 23. MMP Districts – 9th Grade Math Enrollments

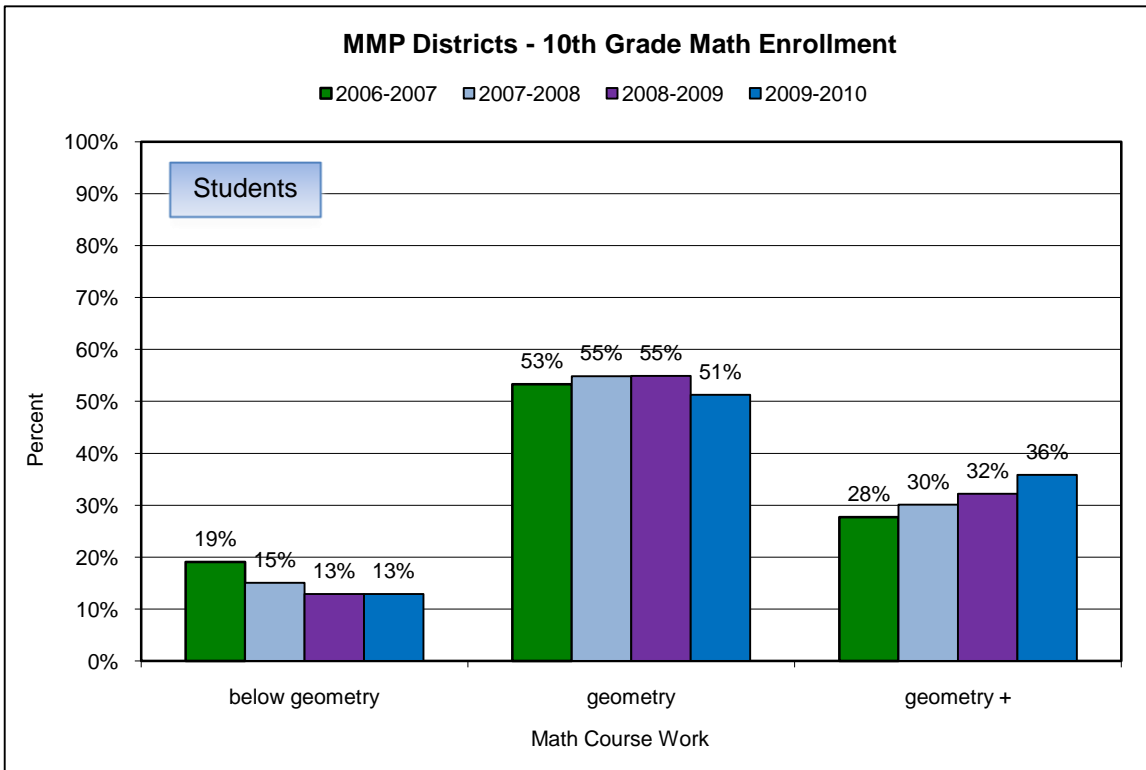


Figure 24. MMP Districts – 10th Grade Math Enrollments

High School Course Enrollment Patterns – Transcripts

The evaluators obtained transcripts for all 12th grade students in the 2006-2007, 2007-2008, 2008-2009, and 2009-2010 school years, along with course catalogs describing the schools' classes. A trained team of researchers, college admissions specialists, and school counselors analyzed the transcripts to determine if the courses taken met the Washington State 4-year college and university admission standards. Although there was some variation among colleges, the general math requirements include three of mathematics, which must include an introduction to trigonometry. Usually advanced algebra or integrated mathematics III satisfied this requirement.

For the purpose of this evaluation, enrollment patterns were analyzed for mathematics only. The percentage of college eligible students (math only) increased by 9 percentage-points from 2007 to 2010. This data indicates that the MMP districts are improving in the percentage of students who are college eligible (math only), however in 2010 about one-quarter of students graduating from these schools continue to not be eligible for college admittance by Washington State HEC Board standards because of course-taking deficiencies (see Figure 25). Overall results indicate that while the graduation requirements meet the state's minimum requirements for a high school diploma, requirements do not align with the colleges' admission requirements.

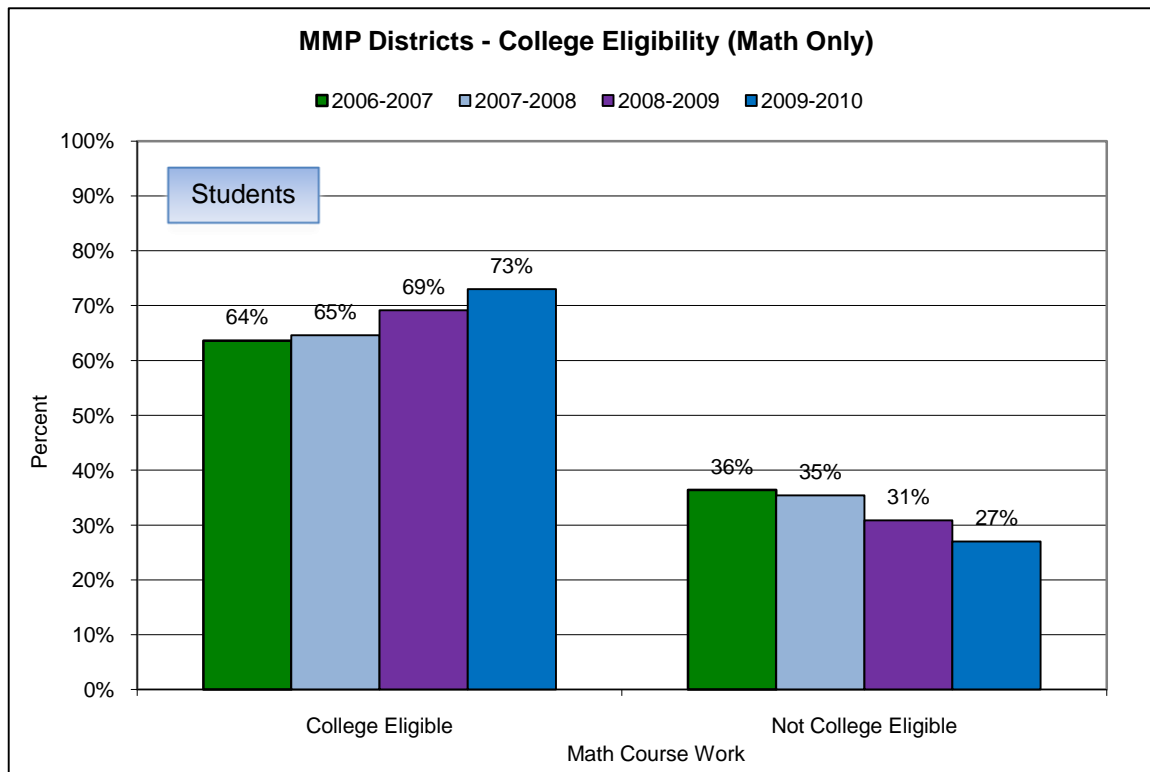


Figure 25. Percent of Graduates Meeting High School Course Requirements for Admissions to a Washington 4-year College (Math Only)

EVALUATION QUESTION SIX: Did this initiative assist in developing sustainability over time and how?

In Year 3, some initiative activities are developing sustainability in many of the Partnership schools. Interview and focus group participants mentioned the following areas as sustainable: 1) School Culture, 2) Technology, 3) Curriculum and Assessment, 4) Collaborative Teaming, and 5) Changes in Classroom Practices. Each of these areas is discussed below, along with challenges to sustainability.

School Culture. Many of the MMP schools have created structural changes to support the work of the initiative, such as schedule changes and student placement changes, but in Years 2 and 3 some interviewees also mentioned second-order changes taking place within their schools. One of these shifts is in staff members beliefs around collaboration. Teachers who have seen positive benefits for themselves and their students when they collaborate with colleagues are more likely to sustain the work of the initiative. One teacher described this change by stating, “I think the culture we have been building here will sustain. We all meet as a department and discuss. We have openness and that will continue. We are open to talking and to having conversations.” Coaches and principals in some of the buildings are being very deliberate to spread the work and collaborative culture of the math department to other departments in their schools, and this will help sustain the work. One interviewee shared, “My personal opinion is that the only thing that will sustain this is building a culture where people really buy in. We are training math people and then spreading out the math department to help with the rest of staff. [We] now use math team and create activities for the whole staff with their leadership.”

Technology. Some of the Partnership schools used Partnership funds to purchase technology in accordance with the funding structure for technology purchases outlined in the grant proposal budget. Schools were able to purchase graphing calculators, smartboards, laptops, and flip cameras. The teachers who use this technology on a regular basis will continue to use it after the initiative ends. One person stated, “Definitely the use of technology is sustainable. The technology will stay.” A coach also shared, “Technology and seeing how it affects learning has been powerful for teachers. I could go away tomorrow, and there is enough excitement that they would continue.” Some schools also used grant funding to purchase software licenses, and many were concerned that this would not be sustainable.

Curriculum and Assessment. Curriculum changes have taken place in many of the Partnership districts in the past few years. Teachers in districts with newly adopted curriculum typically received extensive training from curriculum providers, from their districts, and at the school-level from their math coaches around the curriculum. In most cases, teachers seem to have embraced the new curriculum, which should support sustainability over time. One interview participant stated, “The alignment work will be sustained.” Additionally, a few of the districts are using coaches along with teams of teachers to create common assessments aligned with the curriculum and state standards. The groups doing this work believe it to be sustainable even without initiative funding. However, many teachers wondered whether the common assessments and common rubrics being created would start to be adapted without the support of coaches to continue to revise the



assessments. One teacher commented, “Without continued support on common assessments and common rubrics, I think they will start being adapted based on individual teachers.”

Collaborative Teaming. As mentioned in previous sections, some of the work over the last two years of the initiative is around building professional learning communities. Although, most math departments are not functioning at the level of a PLC, many are participating in purposeful collaborative teaming. Many interview and focus group participants shared the notion that maintaining collaborative work time in the future would be essential for sustaining all initiative objectives. Interviewees in buildings that have well established, structured, frequent collaborative teaming taking place during school hours are more likely to view the initiative as developing sustainability. Without the coach, much of the work will continue within the structure of a collaborative team of teachers with the help of teacher leaders facilitating the work. In order for collaborative teaming to continue, administrators will need to set this as an expectation and allow time for teachers to meet during school hours.

Changes in Classroom Practices. Another area mentioned as being sustainable by the majority of interview and focus group participants is changes in classroom practices. In focus groups with teachers in Year 3 many mentioned doing things differently in their classrooms because of coaching and MMP trainings. One principal talked about the sustainability of these changes stating, “Some of my teachers have transformed their teaching. This is just who they are as a teacher now.” Teachers attribute many of these changes in their classrooms to observing peers, lesson planning together, and to using videotaping to view and debrief their own lessons. One teacher reported, “We have made fundamental changes to our practice.” Some teachers were concerned that without the coach there will be less accountability for them to be consistent with these best practices.

Barriers to Sustainability. In discussing sustainability with Partnership schools, several interview and focus group participants mentioned barriers to sustainability. Interview participants continued in Year 3 to indicate that sustainability will be greatly affected by the loss of a math coach. One principal explained, “The difficult thing will be sustaining it without the release time for a coach. I am hoping we can put in a stipend or give her at least one free period.” Despite efforts this year to build capacity by inviting lead teachers to attend MMP trainings, many lead teachers admitted they do not have the time to continue effectively with the activities of a coach. Some administrators believe the coach position to be so essential that they will try to continue to fund the coach position after the grant ends. Others mentioned teacher turnover and teacher engagement as barriers to sustainability. In schools with less than half of the math teachers actively participating in initiative trainings and coaching, it is unlikely that any changes will be sustainable.

EVALUATION QUESTION SEVEN: To what extent have there been changes in public support and attitudes related to middle school mathematics?

Data were not available for this question.



PROMISING PRACTICES

A number of effective or promising practices are emerging at many of the MMP schools. Some of the promising practices are around changes in classroom practices, math departments leading the way, the coaching cohort, and administrative sponsorship.

Changes in Classroom Practices

A major question asked by this evaluation process is whether initiative activities are leading to changes within the classroom. In the first two years of the initiative, coaches in particular expressed concern about whether classroom practices were changing in measurable ways, and researchers observed little evidence of change in classroom observations. In Year 3, administrators, coaches, and teachers identified numerous specific ways in which classrooms looked different from the beginning of the initiative to this year. One principal shared, “Math instruction I see happening in classrooms is so much more powerful now than before we had the grant. So much is related to the coach’s work. The work that she has done with beginning teachers is great. Teachers are making changes in their plan on the spot.” Participants identified having a clear teaching point, encouraging more student discussions, devising ways to have students work together, and encouraging students to justify and defend their thinking as some of the ways classrooms look different now. Evaluators also observed the presence of significantly more Powerful Teaching and Learning in classrooms. In general, teachers are more intentional about planning the pedagogy of their lessons and not just the activities.

Teachers are becoming less isolated in their practice and more are becoming open to the idea of watching one another teach. Teachers reported, “I like the fact that we have come together as a department. The first couple of years I felt like I was teaching math on my own;” and “When I started, people were used to shutting their doors and doing their own thing. I can walk into any classrooms at any time now.” Getting the opportunity to observe peers teaching is one thing many teachers reported wanting to do more of in the future. One coach shared, “Being able to work together and see what others are doing and let others observe us really helps people to grow their practice.” Some of the MMP coaches are being very creative in their attempts to get teachers into each other’s classrooms more often. Some coaches and administrators are covering classes for teachers; others are providing substitutes for teachers wanting to do this. Coaches are videotaping lessons for teachers and using the video as part of professional development with an individual teacher or an entire department. Coaches and teachers are also using Flip Cameras to videotape student work and student interactions. In one case, the coach is showing students footage of themselves working together as a way for them to reflect on how they can better work together in groups.

Changes in classroom practices and ultimately in student achievement are unlikely to occur in the presence of little relational trust and low teacher involvement. Some Partnership teachers continue to struggle with moving beyond a closed-door mentality, and trust issues continue to limit coaches’ instructional work in some cases. Teacher involvement in initiative activities has improved every

year (see Figure 26). In Year 3, 80% of teachers are involved in initiative activities at a high level (4 or 5 on the teacher involvement rating scale).

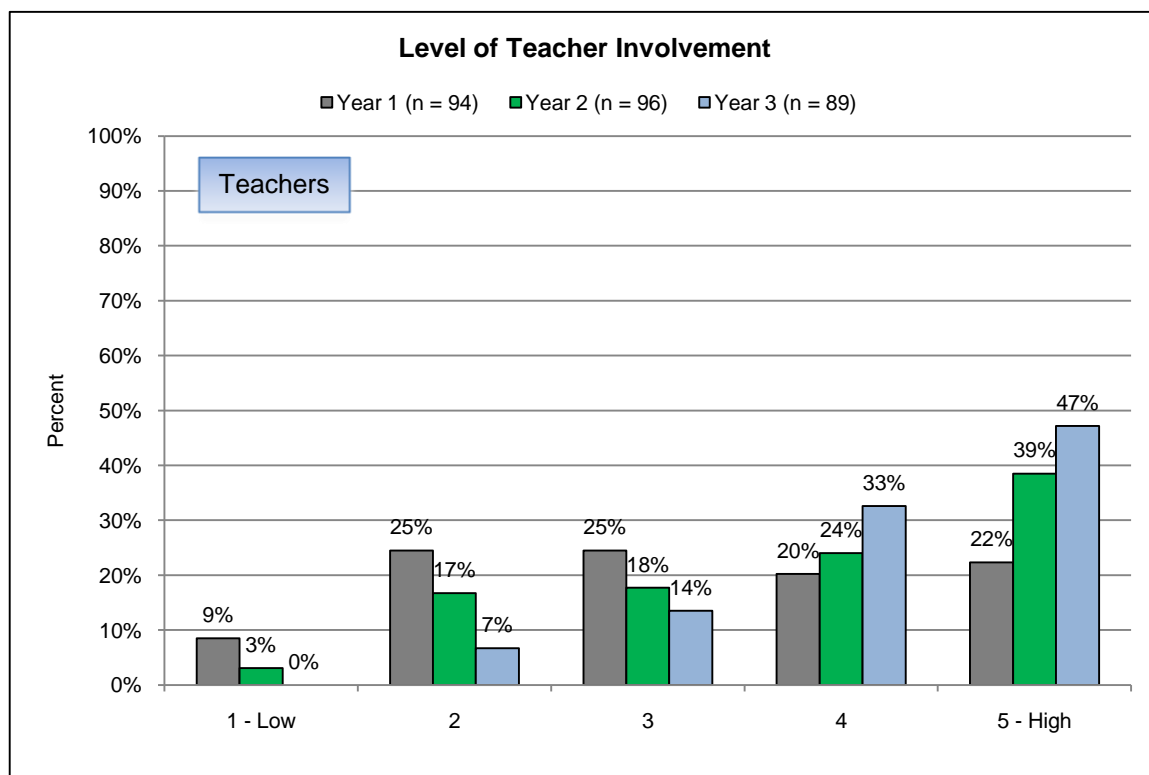


Figure 26. Level of Teacher Involvement (rated by coaches)

Note. Three schools not included in this analysis due to lack of information.

Math Departments Leading the Way

In some of the MMP schools, the math department is working together in a highly collaborative and focused team. At these schools, administrators and teachers from other departments are noticing the benefits of this type of work. Some administrators are beginning to use their math departments as models for the rest of the school. One person shared, “In a way, what has happened is that we are infusing MMP into the rest of our faculty;” and “My vision is that the math department will become teacher leaders of the school to other departments. What it has done is given us tools to apply to other aspects of the school.” Some administrators are having math coaches and teachers lead trainings at their schools, and a few are making plans to have other departments visit collaborative math team meetings.

Coaching Cohort

One of the most beneficial activities of MMP throughout the three years of grant was the development of a coaching cohort made up of all of the coaches from the seven different districts. Universally, coaches reported the collaboration with their coaching colleagues as being one of the most valuable parts of the initiative for them. Coaches mentioned the sharing of ideas among

coaches as being critical in their ability to enact change within their own schools. Most coaches thought of the coaching cohort as a PLC and used the collaborative time with the other coaches to get ideas, to share struggles, and to further understand their roles as coaches.

Administrative Sponsorship

A promising practice continuing from Year 2 of the grant is a high level of administrative sponsorship for the initiative goals and objectives. Administrators at the district level sponsored the initiative to a greater extent this year by incorporating more of the grant goals and objectives into their district improvement plans. Building administrators supported and sponsored the work by attending MMP trainings and by working closely with their math coaches. Administrators also worked this year to ensure systems and structures were in place to allow teachers to have collaborative time within the school day. Although this did not happen at all schools, all administrators recognize the importance of this and have plans in place to make this happen next year. Administrators at many of the schools are also being intentional about involving full-time staff in the design and implementation of initiative activities. Evaluators rated principal ownership/sponsorship of initiative efforts using the implementation rubric (see Table 2). Figure 27 displays ratings for each school on this rubric.

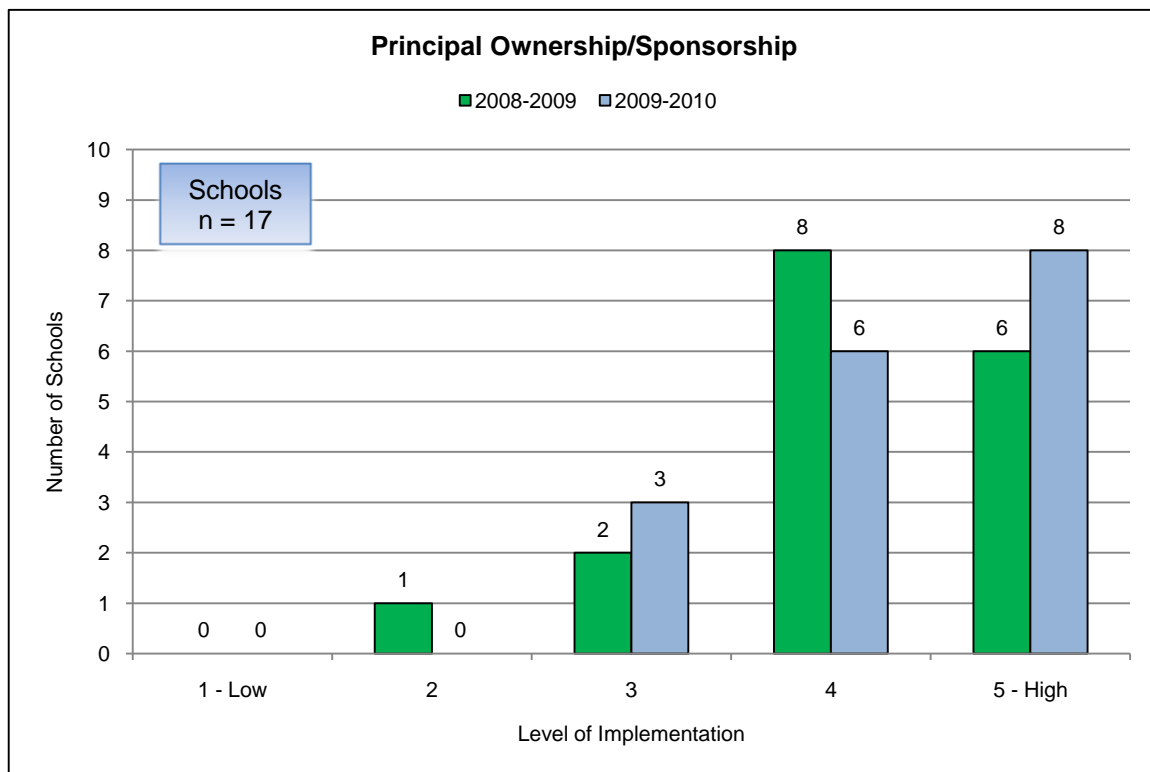


Figure 27. Implementation Rubric Rating – Principal Ownership/Sponsorship

1 = Principal not demonstrating ownership or sponsorship for the initiative. Principal knows little about the initiative.
 3 = Principal aware of initiative work and verbally supports the work, but no evidence of sponsorship.
 5 = Principal is actively involved in initiative as evidenced by attending trainings, supporting the coach, and advocating for change.

CONCLUSIONS AND RECOMMENDATIONS

It was apparent throughout the interviews and focus groups that substantial gains were made in several areas throughout of the three years of the initiative. Math coaches in each of the schools continue to be more confident in the expectations for their work with teachers and are creating the vision for what their work will look like in the future. Coaches are helping to align curriculum, instruction, and assessment; they are working with teachers on improving instructional practice; and they are starting to create collaborative teacher teams around common goals, among many other activities. Administrative support and sponsorship of the initiative is high in the majority of buildings, and participants appreciated the professional development provided by the Partnership this year. The following sections define specific conclusions and recommendations that may assist in the ongoing implementation of the initiative.


Focus on Sustainability

Since, many participants believe the coach to be critical in efforts to improve math achievement; plans must be put in place for how to continue some of the work of the coach after the grant ends. In some cases, district and school administrators may decide to think creatively about how to provide for a math coach after the grant ends, even if on a more limited basis. Additionally, building sustainability will include building more effective teacher leaders, devising ways to provide time for purposeful math department collaboration, providing teachers with opportunities to see colleagues teaching, and having time for teachers to discuss student learning. In Year 3, with many of the districts receiving some continued funding for Year 4, it will be imperative for districts and schools to have discussions and to create plans for how to sustain work from the last three years.

Sustainability will be greatly assisted by district- and school-level efforts. In Year 3, districts and schools are aligning their vision and missions with the objectives of the initiative and this should help with sustainability. Districts will be more successful in their efforts to sustain the work if the objectives and strategies from MMP are embedded across all schools rather than just the MMP schools. Likewise, schools will be more successful in sustaining the work if it is embedded across all departments within the school. For example, some of the MMP schools are using the collaborative teaming of the math department as a model for other departments. It is essential for districts and schools to identify the activities having the greatest positive impact on student learning and then put structures in place to support those activities.

Provide Time for the Work

Throughout the three years of the initiative, one of the biggest perceived barriers to implementing grant objectives is time. As administrators and teachers continue seeing the positive benefits of having a math coach and of having time for collaborative teaming as a department, they recognize that time is their biggest barrier. The majority of administrators and coaches report that a half-time math coach is not enough. One coach reflected, “Honestly I could be full-time at this school and full-time at my other school. I need to be in the classroom five days a week.” A teacher also shared, “It would be nice if each school had their own full-time coach because the impact the coach has on the building is huge. You start to make growth and then you fall back if they are not here more



often.” Many teachers also reported wanting more time to share learnings with one another. This year teacher leaders participated in professional development along with coaches, and while they report great benefits of the training for their own practice, this really has not spread to their colleagues. “For me one of the biggest barriers is having time to share trainings with one another. It would be great to have the ability to come back and have a specific targeted time to go over it.” Although, many teachers report meeting together more than they did before the grant started, some wish that there were more opportunities to do this during the school day.

Continue to Focus on Improving Access for Special Populations and Support for Struggling Students

A few interview participants mentioned needing to focus math improvement efforts on some special student populations still not being successful in math. Some mentioned ELL students, others mentioned Special Education students, and many identified certain ethnic groups as students who they are still struggling to support. A few of the districts are implementing strategies to focus efforts on improving access to higher levels of math for special populations of students such as the ones mentioned above. Many of these districts are finding success with having more classrooms using core curriculum. One participant stated, “Since the Partnership began, we have gradually increased the number of special education classes that are using the core math resource.” Other schools are piloting inclusion models. ELL students are dispersed into regular education math classrooms with the support of an ELL teacher in the classroom. The Partnership, the districts, and the buildings must continue to investigate new strategies to support all students in having access to higher levels of math.

Districts and schools are providing lots of support for struggling students, including extra math courses and tutoring opportunities. Despite the extra support, many interview and focus group participants continue to feel they are not meeting the needs of all students. A few administrators discussed the gaps between certain groups they are still seeing in student achievement data. One person commented, “Our gaps are still in Sped, ELL, and in Hispanic students, and recently there have not been many trainings on these. My Hispanic students are still struggling in math. That would have been the area we would have liked to have more targeted PD in. There are things that work that I would have liked to learn about those things.” Another interview participant admitted,

When I went to that dinner, one of the things that was said was that they were going to focus on Special Education, and it really is not there. I feel like we just deal with the general ed. kids. My concern is that I had 19 kids in Special Ed. math and now I have 40 kids in it. We need to figure out the best ways to support these students. I just get disappointed that this issue is never addressed.

Some of the MMP districts are providing second math classes to struggling students to support their work in their regular math course. Many participants believe these courses to be very helpful to students given the right conditions. For example, participants believe it is helpful if these courses are taught by the same instructor or for these teachers to have common planning time. Additionally, many thought these classes to be more effective if the learning is closely aligned with what students are learning in their other math course, but this is not always the case. In some cases,

these courses are just extra time for students to do their math homework. It is important for schools and districts to collect evidence of the most effective way to use these support classes and then to provide teachers with the support to deliver the course as intended. Finally, some of the MMP schools are using tutoring as a way to support struggling students. In many cases, the tutoring is very dependent on the math coach organizing and delivering the tutoring. If this intervention is to be sustained after grant funding ends schools will need to develop other ways to support the tutoring.

Develop, Revise, and Use Common Assessments

In Year 3, many of the districts began the development of common assessments for their math courses. In many cases, math coaches are contributing to work in this area. While a couple of the districts are ahead in this work, the majority will need to move forward in this area next year. In addition to developing the assessments, districts will need to establish a long-term plan of how they will support the continued revisions of the assessments. One district doing a lot of work in this area shared, “We are committed to continued refinement of these assessments and developing teacher capacity at analyzing the results of the assessments to influence instructional planning in order to improve instructional quality, student achievement, and close the achievement gap.” Finally, administrators, coaches, and teachers will need more training on how to use the assessments to make changes and to develop strategies for what to do if students do not understand a concept.

Focus on Changes at the Classroom Level

In Year 3, the presence of Powerful Teaching and Learning is more evident in the math classrooms at MMP schools. MMP school districts are beginning to work on having a common vision for instruction within their districts, and this is helping to support the MMP work. District and school administrators must continue to support teachers in providing a rigorous and engaging instructional experience for all students by providing opportunities for teachers to observe colleagues. Many of the MMP coaches reported observing others teach as one of the best strategies for improving their own teaching. One coach shared, “Getting into each other’s classrooms. That is the one thing that I would love for us to do. If everyone got to see what I saw. That would be very powerful.” Likewise, another coach commented, “Seeing what other people do has helped me think about how I would do something differently now than what I would have done before in my teaching.” Although, MMP classroom lessons showed more evidence of making learning relevant to students in Year 3 compared to previous years, this continues to be an area for improvement. Coaches and collaborative teacher teams should be used to help plan lessons that make learning more relevant to students. Relevancy in math classrooms needs to go beyond curriculum story problems.

Develop Parent and Community Partnerships

In general, partnerships with families, with local corporations, and with public agencies developed slowly throughout the three years of the initiative. Moreover, partnerships that did develop varied greatly among districts and among schools, and many admitted that the expectations for forming partnerships were not very clear. In Years 1 and 2 of the grant, some schools tried to develop partnerships with parents and families using Math Nights, but in Year 3 the majority of the schools



did not have Math Nights. When Math Nights did occur, most of the work to organize and develop the night was placed on math coaches, so the sustainability of these nights is low. Similarly, partnerships with community organizations did not develop to a great extent over the last three years, and some questioned whether schools and districts had the structure and resources to support these. Some of the districts did connect with professional development providers through the MMP trainings, and these connections appear to be very beneficial for the districts pursuing them. If the Partnership is interested in building parent and community partnerships, districts and schools need to know the specific expectations for building these.

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APPENDIX A: Raw STAR Classroom Observation Protocol Results

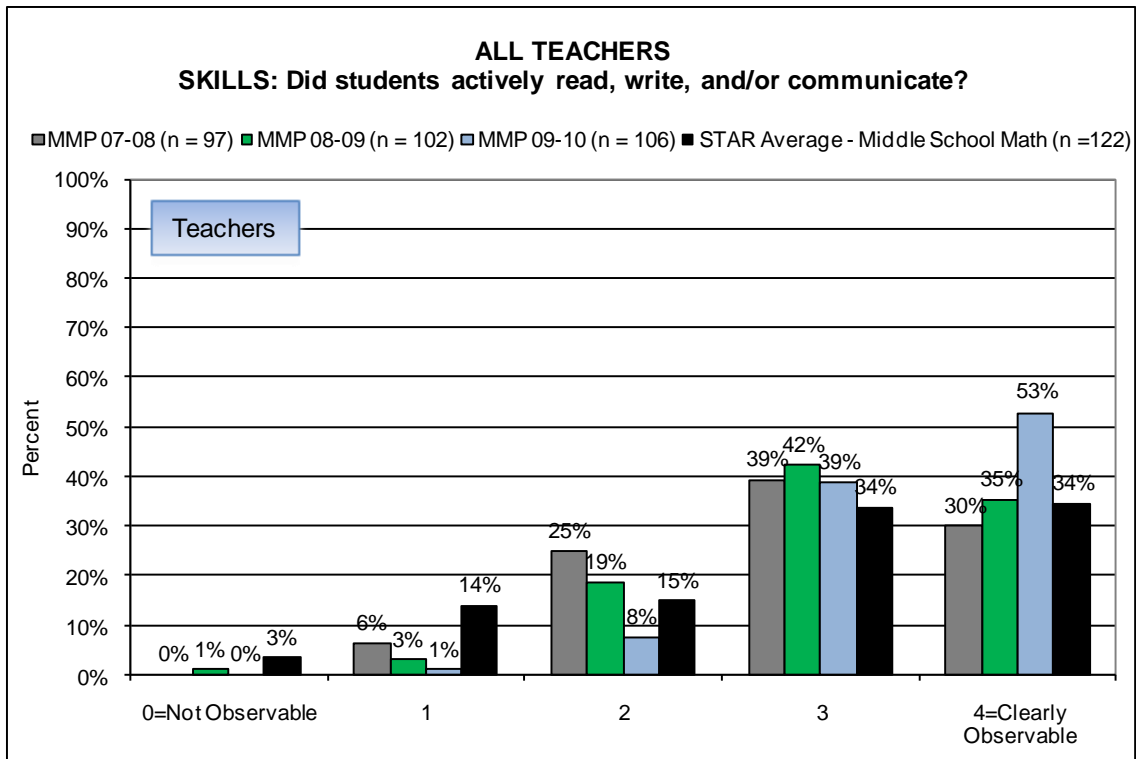


Figure 28. Frequencies of Scores for Skills – All Teachers

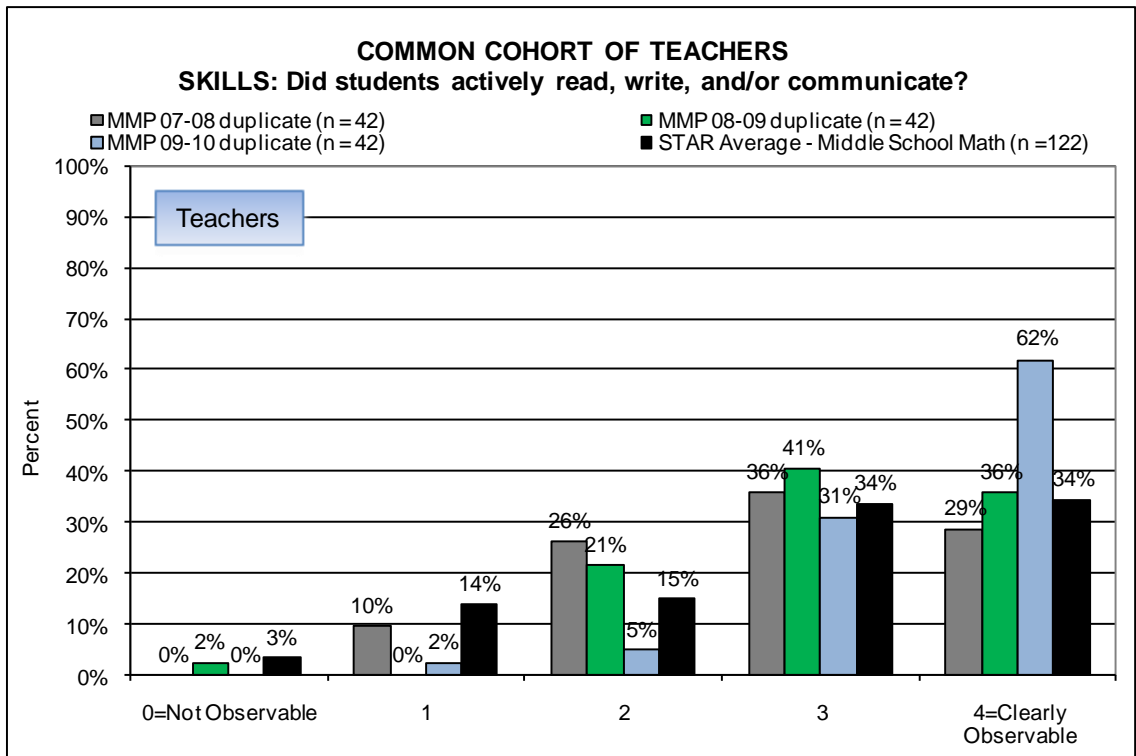


Figure 29. Frequencies of Scores for Skills – Common Cohort of Teachers

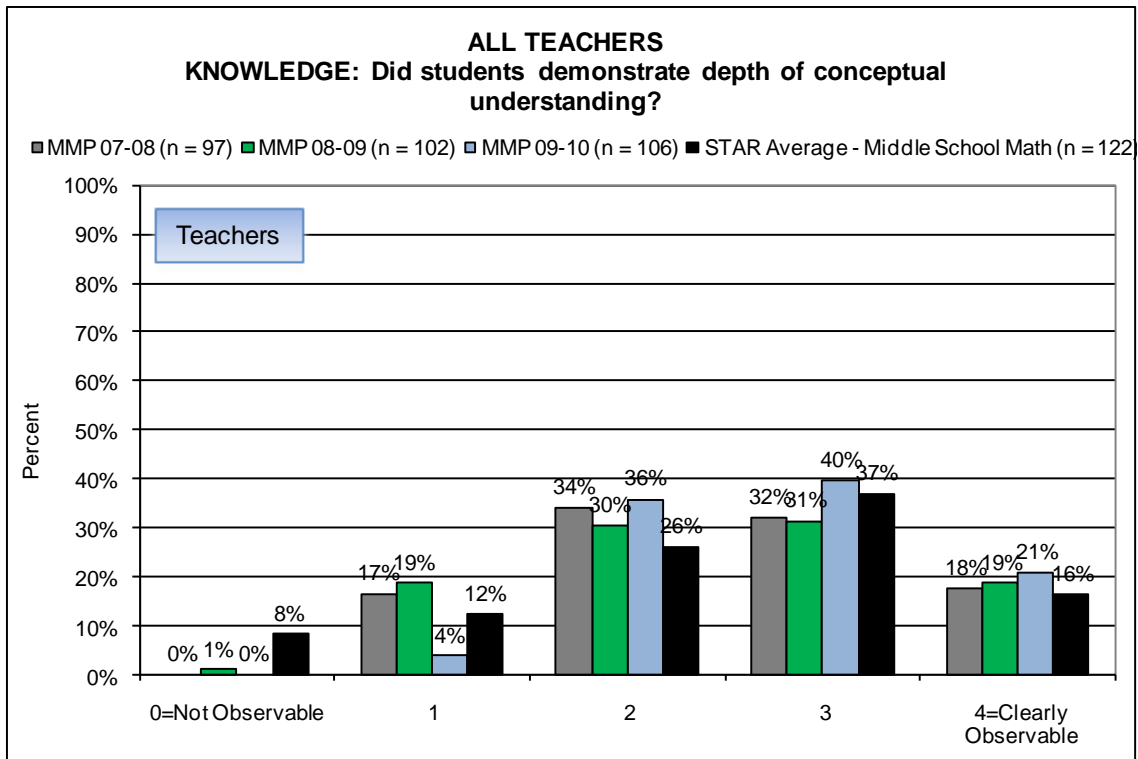


Figure 30. Frequencies of Scores for Knowledge – All Teachers

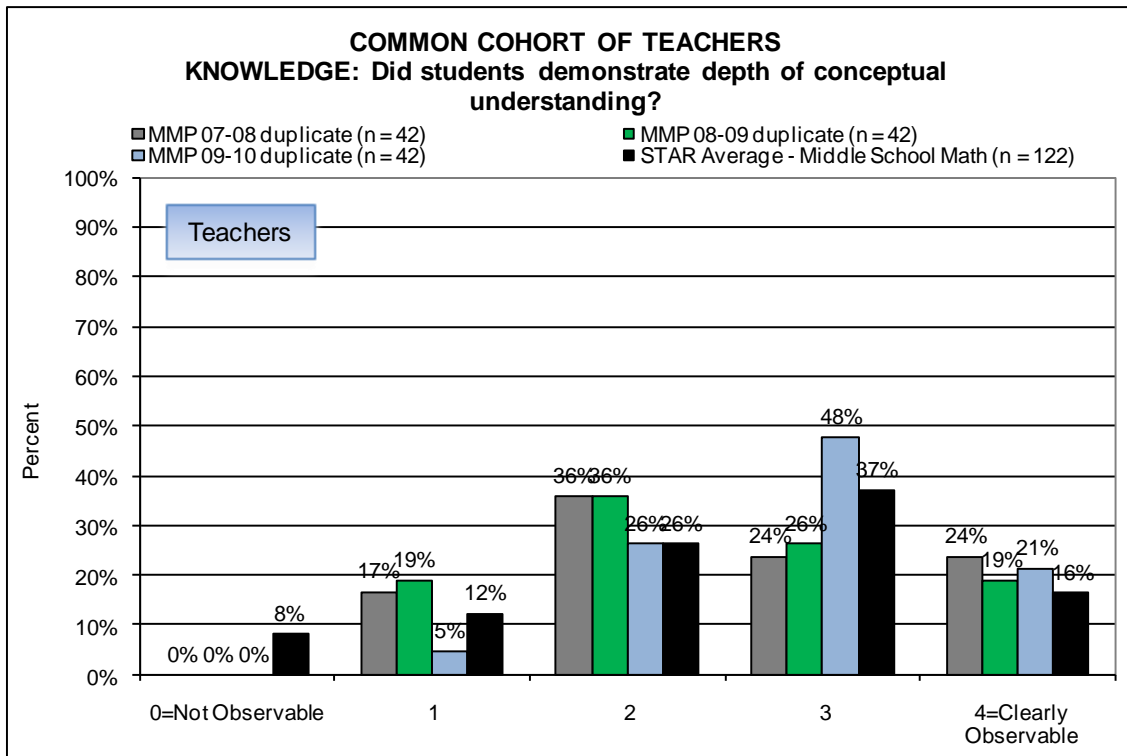


Figure 31. Frequencies of Scores for Knowledge – Common Cohort of Teachers

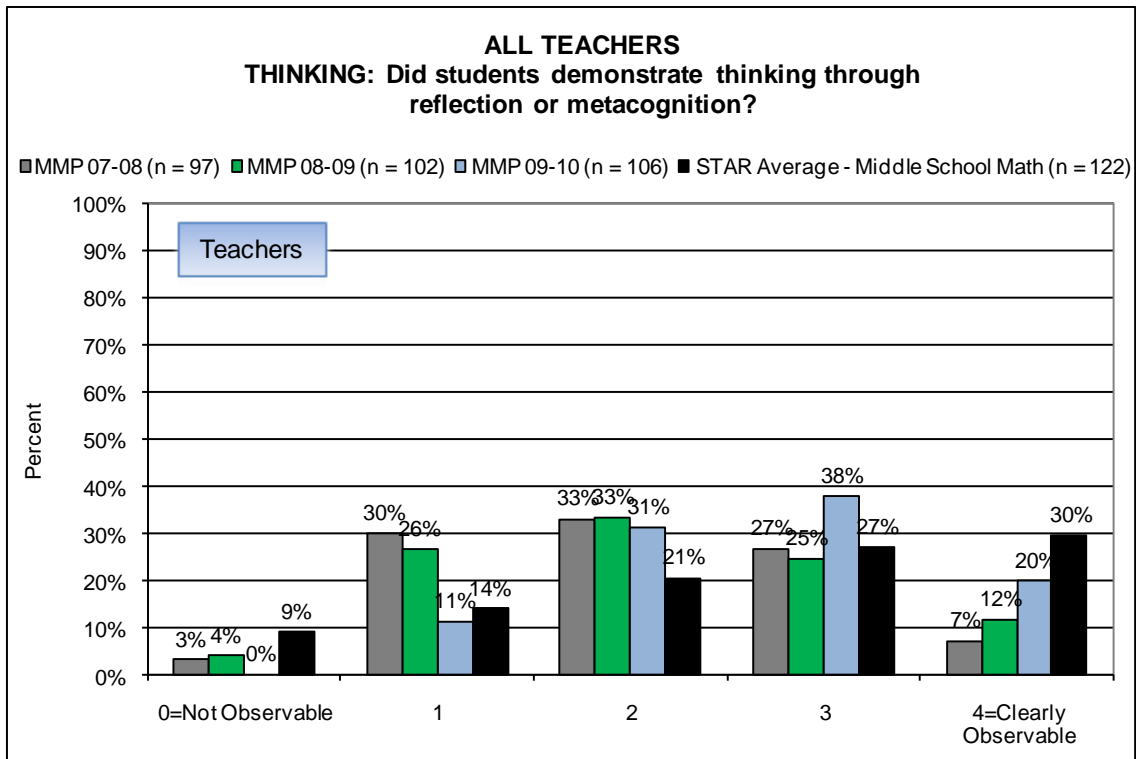


Figure 32. Frequencies of Scores for Thinking – All Teachers

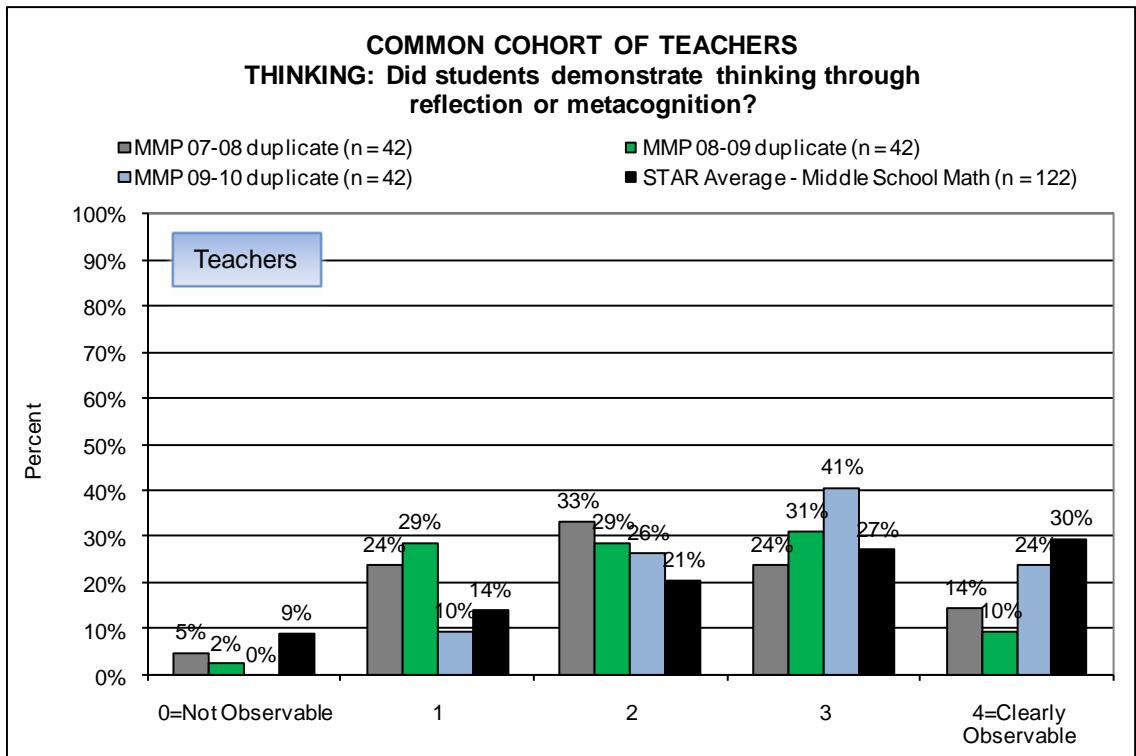


Figure 33. Frequencies of Scores for Thinking – Common Cohort of Teachers

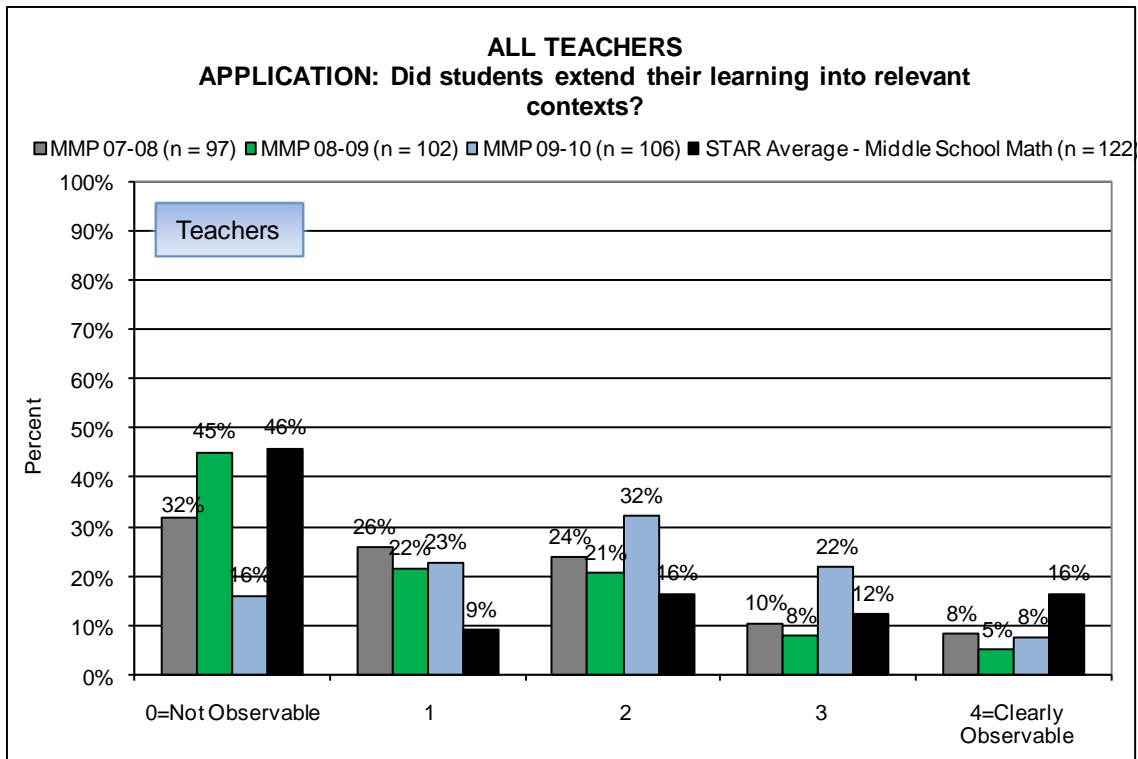


Figure 34. Frequencies of Scores for Application – All Teachers

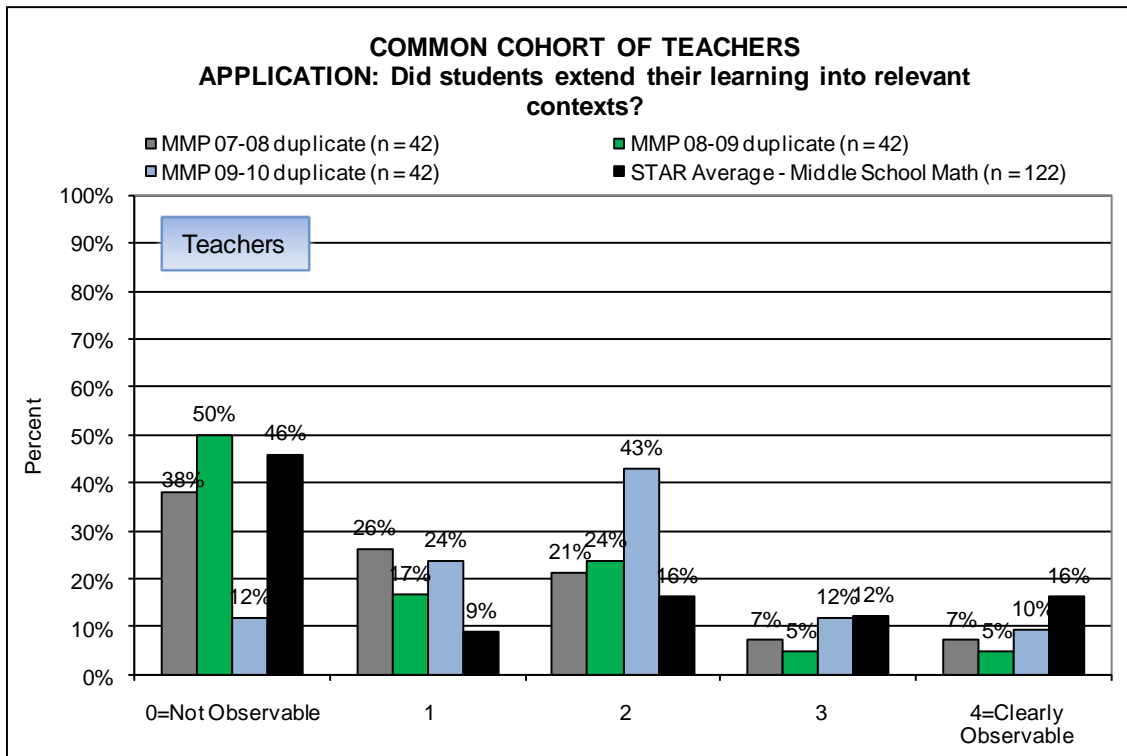


Figure 35. Frequencies of Scores for Application – Common Cohort of Teachers

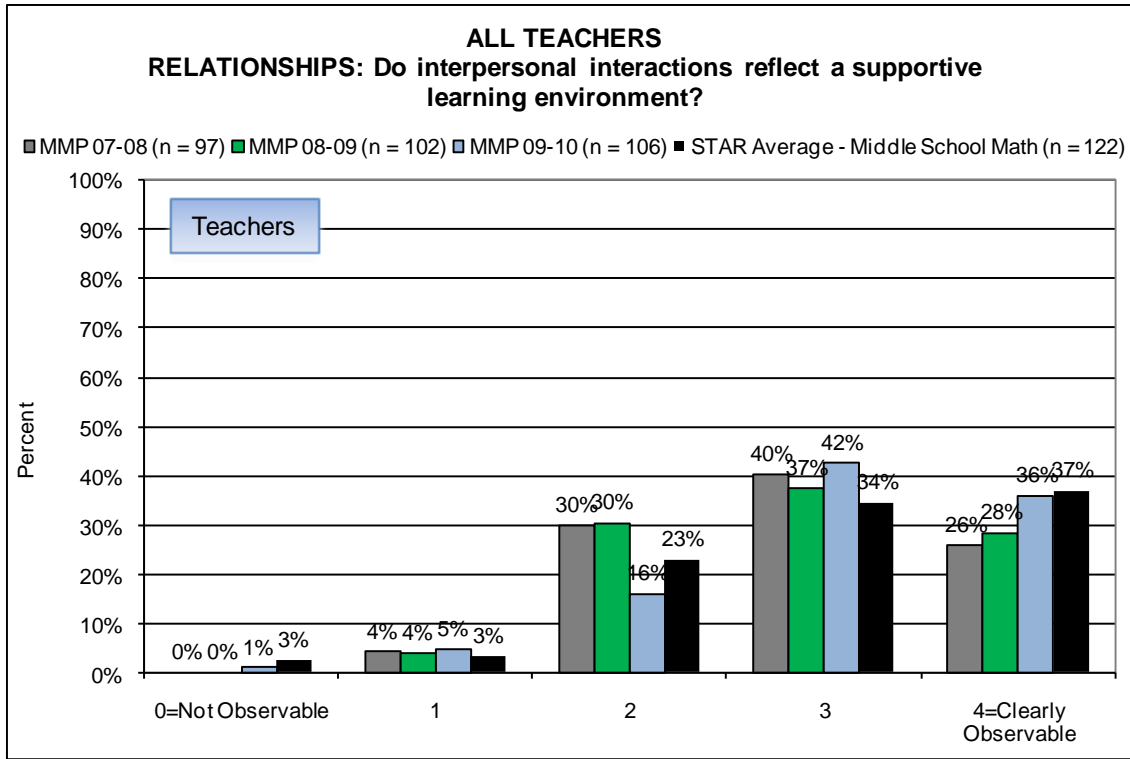


Figure 36. Frequencies of Scores for Relationships – All Teachers

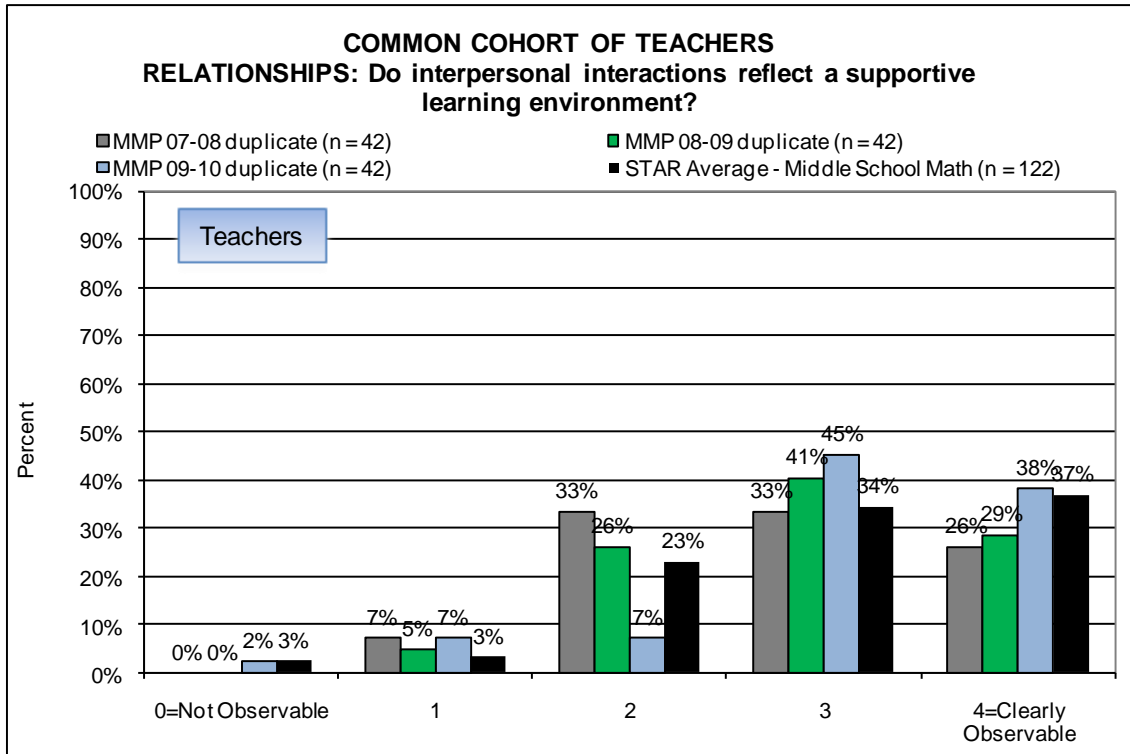


Figure 37. Frequencies of Scores for Relationships – Common Cohort of Teachers

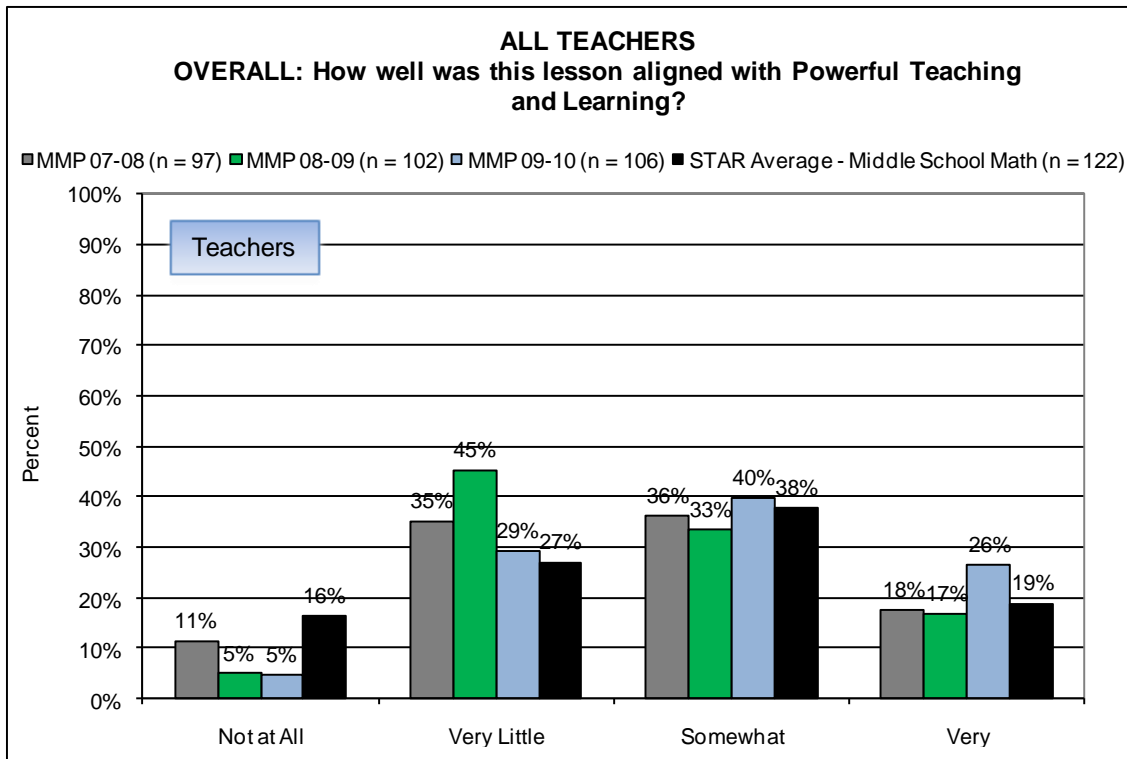


Figure 38. Frequencies of Scores for Overall Score – All Teachers

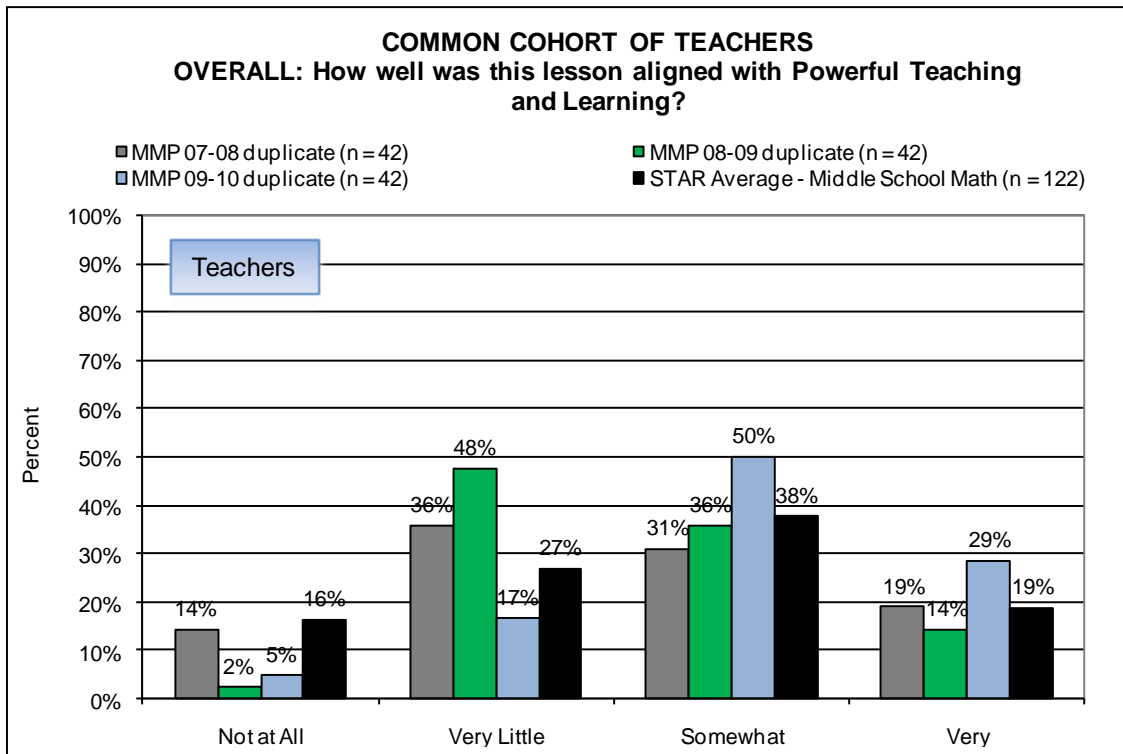


Figure 39. Frequencies of Scores for Overall Score – Common Cohort of Teachers

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