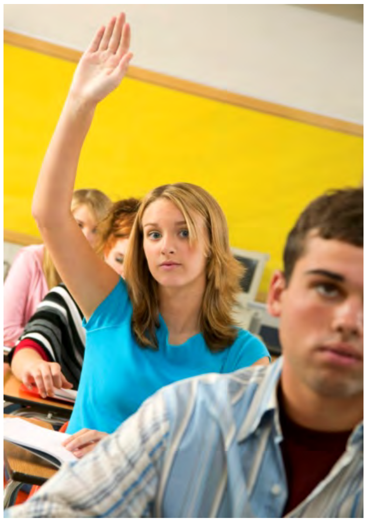
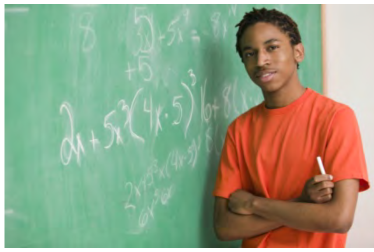




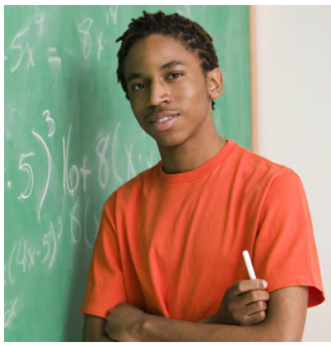
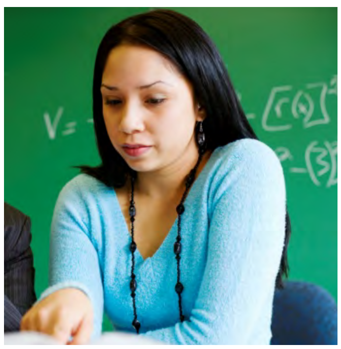
ICF INTERNATIONAL

Evaluation of the Mathematics Instructional Coaches Pilot Program: A High School Success Pilot Program

February 2011 Report

Submitted to:

Texas Education Agency

Evaluation of the Mathematics Instructional Coaches Pilot Program: A High School Success Pilot Program

February 2011 Report

Submitted to:

Texas Education Agency

Submitted by:

ICF International

CREDITS

ICF International

ICF International (NASDAQ: ICFI) partners with government and commercial clients to deliver consulting services and technology solutions in the social programs, health, energy, climate change, environment, transportation, defense, and emergency management markets. The firm combines passion for its work with industry expertise and innovative analytics to produce compelling results throughout the entire program life cycle, from analysis and design through implementation and improvement.

For additional information about ICF, please contact:

ICF International

9300 Lee Highway
Fairfax, VA 22031-1207
USA
Phone: 1.703.934.3603 or 1.800.532.4783
Fax: 1.703.934.3740
Email: info@icfi.com

Contributing Authors

Stacey Merola, PhD
Thomas Horwood
Allison Nebbergall, PhD
Kazuaki Uekawa, PhD
Katerina Passa, PhD
Amy Mack, PsyD
Jing Sun, PhD

Other Project Contributors

Felix Fernandez, PhD
Jacqueline Schmidt
Daniel Fien-Helfman
Jessica DeFeyter
Kelle Basta
Robert Leos, PhD

Prepared for

Texas Education Agency
1701 North Congress Avenue
Austin, Texas 78701-1494
Phone: 512-463-9734

Research Funded by Texas Education Agency

COPYRIGHT NOTICE

Citation:
Merola, S., Horwood, T., Nebbergall, A., Uekawa, K., Passa, K., Mack, A., & Sun, J. (2011). *Evaluation of the Mathematics Instructional Coaches Pilot Program: A High School Success Pilot Program, February 2011 Report.* Fairfax, VA: ICF International.

This report is available at the Texas Education Agency's website:
http://www.tea.state.tx.us/index2.aspx?id=2914&menu_id=949

Table of Contents

Table of Tables

Table of Figures

Abbreviations Key

AEIS – Academic Excellence Indicator System
ASP – Approved Service Provider
CDR – Collaborative Dropout Reduction
CISD – Consolidated Independent School District
HERC – Higher Education Readiness Component
HLM – Hierarchical Linear Modeling
HSSPP – High School Success Pilot Programs
HB2237 – House Bill 2237
IHE – Institution of Higher Education
ISAS – Integrated Statewide Administrative System
ISD – Independent School District
ISP – Intensive Summer Programs
LEA – Local Education Agency
LEP – Limited English Proficient
MOU – Memorandum of Understanding
MIC – Mathematics Instructional Coaches
PD – professional development
PEIMS – Public Education Information Management System
ESC – Education Service Center
RFA – Request for Application
SD – standard deviation
SSA – Shared Services Agreement
TEA – Texas Education Agency
TAKS – Texas Assessment of Knowledge and Skills
TEC – Texas Education Code
TEKS – Texas Essential Knowledge and Skills
T-STEM – Texas Science, Technology, Engineering, and Mathematics

Executive Summary

Highlights:

- The purpose of the Mathematics Instructional Coaches (MIC) pilot program is to provide eligible grantees with assistance in developing the content knowledge and instructional expertise of math teachers at the middle school, junior high school, or high school level as a way to improve college and workforce readiness of students.
- 62 MIC grantees have received $6.2 million to create math coaching programs. Between 2008 and 2010, 2,018 teachers, coaches, and administrators participated in the program. The average cost per teacher in MIC Cycle 1 program was $6,971, which translates to an average cost of $131 per student served by a MIC teacher in Cycle 1 grantee schools.
- Newer teachers from both MIC Cycle 1 and Cycle 2 grantees, as compared to more veteran teachers, were more likely to report that the program was beneficial for them.
- In both the Cycle 1 middle schools and high schools, MIC participation was associated with increases in student TAKS-Math achievement. Students who were exposed to MIC teachers for longer periods of time experienced greater achievement gains, indicating that the effects of the program may be cumulative.
- In Cycle 2, MIC participation was associated with TAKS-Math achievement gains for middle school students after one year of participation.

This evaluation report presents findings from the first two years of the evaluation of the Mathematics Instructional Coaches (MIC) pilot program, which is one of three grant programs grouped together as the High School Success Pilot Programs (HSSPP) administered by the Texas Education Agency (TEA). The other two programs are the Intensive Summer Programs (ISP) pilot program and the Collaborative Dropout Reduction (CDR) pilot program, for which separate reports have been published simultaneously. Collectively, these three programs were initially authorized by the 80th Texas Legislature in 2007[1] so districts could develop and implement programs to prevent and reduce dropout, increase high school success, and improve college and workforce readiness in public schools (TEA & ICF, 2010).

MIC provides eligible grantees with assistance in developing the content knowledge and instructional expertise of teachers who instruct students in math at the middle school, junior high school, or high school level as a way to improve college and workforce readiness of students that might otherwise have dropped out of these public schools. This is done by offering professional development (PD) and coaching activities for teachers, as well as instructional leadership training for administrators.

[1] All three HSSPP programs were authorized by House Bill 2237 (80th Texas Legislature), as amended by the 81st Texas Legislature. Specifically, MIC was authorized as Texas Education Code §21.4541. All three programs were funded by Rider 53 (General Appropriations Act [GAA], Article III, 80th Texas Legislature); further funded by Rider 51 (GAA, Article III, 81st Texas Legislature). The evaluation is required by Rider 79 (GAA, Article III, 80th Texas Legislature); further required by Rider 69 (GAA, Article III, 81st Texas Legislature). A final report will be due to the Texas Legislature in January 2013, pending further funding.

MIC Goals

The purpose of MIC is to have grantees plan, design, and implement research-based projects to support the improvement of secondary math teachers' content knowledge and instructional expertise. Ultimately, MIC is designed to improve math teachers' abilities to increase academic performance in math for students identified as being at risk of dropping out of school.[2] Specifically, grantees must institute a rigorous and engaging PD program, which includes using models of excellence in coaching math teachers. In addition, the projects must address the improvement of school leaders' knowledge of math instruction.

> *"For me, especially since it's my first year, she may be the sole reason I've survived. I met with her weekly, sometimes more than that if I had a question, I'd meet with her. Before school, after school, during lunch, if I had a question I'd run up and ask her. We met at least once a week after school just to go over lesson plans and different techniques on how to teach things. Little tricks that she knew that she would teach me so I could help the kids with that. She came in my room several times to observe and give me tips and things on how to change things and what I was doing well. She was very helpful and always available."*
>
> – High school teacher talking about her relationship with the math coach

MIC Evaluation

TEA contracted with ICF International to conduct an evaluation of MIC. The comprehensive evaluation approach was designed to address the following objectives:

- To describe and evaluate the implementation of MIC
- To evaluate the impact of MIC on teacher effectiveness
- To evaluate the impact of MIC on student outcomes
- To determine the cost-effectiveness and sustainability of MIC

This evaluation report is designed to provide evaluation findings for MIC Cycle 1 grantees after completing two years in the program, and a detailed accounting of evaluation findings to date of the MIC Cycle 2 grantees who completed their first year in the program in 2009–10. Cost-effectiveness/ sustainability findings for Cycle 1 and Cycle 2 grantees, which include a comparison of budgeted funds to expenditures, are also presented. Cycle 1 grantees completed their grant period in 2009–10, so this report presents the final cost-effectiveness/sustainability findings for these grantees. Although none of the MIC grantees have all outcome data available at the time this report was written, the report provides preliminary evidence of implementation effectiveness, improved math teacher content and instructional knowledge, and progress toward grant program outcomes for Cycle 1 and Cycle 2 grantees. Lastly, using a dataset in which MIC teachers were matched to the students enrolled in their math courses, this report presents the impact of MIC on student math achievement, dropout rates, graduation rates, promotion rates, course completion rates, and college readiness for Cycle 1 grantees. For Cycle 2 grantees, this second report includes student math achievement and college readiness outcomes.

[2] At-risk students are defined by TEA as students who exhibit at least one of 13 risk factors. A complete listing of risk factors can be found online here.

MIC Grantees

Between 2008 and 2010, 62 grantees implemented MIC. Cycle 1 consisted of 29 grantees that implemented a variety of PD and coaching activities for participating teachers and administrators commencing during the 2008–09 school year and ending in the 2009–10 school year. There are 33 MIC Cycle 2 grantees that implemented a variety of PD and coaching activities for participating teacher and administrators during the 2009–10 school year. MIC grants were awarded throughout most of Texas, with Cycle 1 grantees from 14 of the 20 education service center (ESC) regions and Cycle 2 grantees dispersed among 12 of the 20 ESC regions. A total of 241 campuses from the 62 grantees participated in MIC grant activities. MIC Cycle 1 and Cycle 2 grantees are listed in Table ES-1.

> *"Even in our set ways, we see that we can improve on or maybe do something a little differently that will help us become better teachers."*
>
> – High school teacher describing the effects of coaching on beliefs about teaching mathematics

Overview of Methods

In order to evaluate MIC, data were collected from multiple sources. Data provided by TEA included MIC Grant Applications, Academic Excellence Indicator Systems (AEIS) longitudinal Texas school and district data; Public Education Information Management Systems (PEIMS) longitudinal data on teachers, schools, and districts in Texas; Texas Assessment of Knowledge and Skills (TAKS) student achievement data in math (TAKS-Math); and MIC teacher participant grantee uploads that included data on levels of teacher participation in MIC activities. Student roster data from classes taught by MIC teachers were also collected by TEA from participating grantees in order to match teachers and students.[3]

Data collection activities carried out by the evaluation team included site visits to select campuses participating in MIC where stakeholder interviews and focus groups were conducted. All grantees were also asked to submit progress and expenditure reports. Finally, surveys with MIC teacher participants, MIC coaches, and Approved Service Provider (ASP) representatives were conducted.

Using both the extant data and new data collected by the evaluation team, analyses were conducted to assess the relationship between MIC and student performance on TAKS-Math, math course completion, college readiness, promotion, graduation, and dropout. Survey and site visit data were used to investigate teachers' perceptions of their effectiveness after participating in MIC. Similarly, survey and site visit data were used to explore the implementation of MIC and how it may have changed between 2008 and 2010, and across Cycle 1 and Cycle 2. Finally, grantee expenditure data were analyzed to determine the cost-effectiveness of MIC.

[3] ICF received only de-identified student-level data.

Table ES-1
MIC Cycle 1 and Cycle 2 Grantees

Cycle 1 Grantees (N=29)	Cycle 2 Grantees (N=33)
Alice ISD	Abilene ISD
Beeville ISD	America Can!
Clarksville ISD	Athens ISD
Covington ISD	Ben Bolt-Palito Blanco ISD
Diboll ISD	Chapel Hill ISD
El Paso ISD	Corsicana ISD
Evolution Academy Charter School	Cosmos Foundation Inc (Harmony)
Galena Park ISD	Dawson ISD[b]
Galveston ISD	Del Valle ISD
Hidalgo ISD	East Central ISD
Higgs Carter King Gifted & Talented Charter (Youth Empowerment Program)	Elgin ISD
Houston ISD	Everman ISD
Irving ISD	Gladewater ISD
La Feria ISD	Goose Creek CISD
La Joya ISD	Hillsboro ISD
La Vega ISD	IDEA Academy Inc
La Villa ISD	Kingsville ISD
Manor ISD	Laredo ISD
Marlin ISD	Longview ISD[c]
Motley County ISD[a]	Marshall ISD
Pharr-San Juan-Alamo ISD	McAllen ISD
Runge ISD	McGregor ISD
San Antonio ISD	Mercedes ISD
San Felipe-Del Rio CISD	Mt Pleasant ISD
Star ISD	Pasadena ISD
Valley View ISD	Patton Springs ISD[d]
Weslaco ISD	Plainview ISD
West Oso ISD	San Benito CISD
Winfree Academy Charter Schools	School of Excellence in Education
	Snook ISD[e]
	Tyler ISD
	Waco ISD
	West Sabine ISD

Source: MIC Cycle 1 Grant Applications; Implementation Interviews: MIC Cycle 2 Grant Applications and Action Plans
[a] Motley County ISD formed a Shared Services Agreement (SSA) with the following districts for their grant: Floydada ISD, Littlefield ISD, Lorenzo ISD, Morton ISD, O'Donnell ISD, Olton ISD, Paducah ISD, Seagraves ISD, and Roosevelt ISD.
[b] Dawson ISD formed a SSA with Kopperl ISD and Malone ISD for their grant.
[c] Longview ISD did not implement MIC.
[d] Patton Springs ISD formed a SSA with Crosbyton ISD and Ralls ISD for their grant.
[e] Snook ISD formed a SSA with Hearne ISD for their grant.

MIC Implementation Findings: Cycle 1 and Cycle 2

Teachers and coaches participated in PD activities (e.g., training) and coaching activities (e.g., mentoring, classroom observation). Not surprisingly, after the second year of implementation, the program was more fully developed in the Cycle 1 schools than in the Cycle 2 schools after one year of implementation. A larger proportion of Cycle 1 teachers than Cycle 2 teachers rated MIC activities as being fully implemented, while a larger proportion of Cycle 2 teachers than Cycle 1 teachers rated MIC activities as being in development. In both cycles, coaches most frequently supported teachers by providing feedback on instructional materials and techniques. Coaches also provided a high degree of training in data collection and analysis, content area knowledge, and instructional techniques.

When asked about the challenges faced in implementing the program, many teachers expressed that the greatest barrier to MIC implementation was the amount of time required for PD activities, meetings, planning, and coaching. This was similar across both cycles and both years of implementation (Cycle 1). A supportive administrative, coaching, and teaching staff was identified as most helpful in overcoming barriers to MIC program implementation.

Teacher Effectiveness Findings: Cycle 1 and Cycle 2

Cycle 1 teachers indicated that MIC was influential in increasing their feelings of effectiveness, increasing their math content knowledge and teaching knowledge and skills, and in broadening their use of various assessment and instructional strategies. New Cycle 1 teachers, in particular, reported that the program benefited them. New Cycle 1 teachers, as compared to veteran Cycle 1 teachers, indicated the greatest amount of influence of MIC on their feelings of effectiveness. Cycle 1 teachers indicated that they benefited from participation in MIC, particularly in the area of gaining varied instructional strategies. In addition, the math achievement of students who had MIC teachers for two years and whose teachers had participated in MIC for two years improved significantly, indicating that these were effective teachers helping to increase their students' TAKS-Math performance. These results suggest that access to a non-evaluative, mentoring relationship, as well as instructional tips and content clarification, may most benefit new teachers, who are likely still developing their instructional style and building their confidence in the classroom. Indeed, once hours of coaching, PD, and other teacher background characteristics were considered, there was very little relationship between years of teaching experience and student math achievement. In other words, MIC seems to be helping to level the playing field between the Cycle 1 novice and veteran teachers.

Similar to the Cycle 1 teachers, Cycle 2 teachers felt that MIC improved their feelings of effectiveness, math content knowledge, and on their teaching knowledge and skills. New teachers and teachers with bachelor's degrees in particular indicated that the program was beneficial, so the program may be particularly effective in meeting the needs of novice teachers. During the site visits, the teachers expressed that they were optimistic about the impact of MIC on student math achievement, particularly noting improvements in student engagement. Overall, Cycle 2 teachers felt more uniformly positive about the effects of MIC coaching than the Cycle 1 teachers. This may be due to the ASP's making improvements based on their experiences with Cycle 1 grantees.

Findings from the Student Outcomes Analyses: Cycle 1

> *"The coaches are really good coaches, and the teachers are working together as a team. As they work as a team and encourage each other, the belief system is changing. It's the collaborative work."*
>
> – MIC principal

MIC Cycle 1 grantees completed their second and final year of implementation during the 2009–10 school year. In both the Cycle 1 middle schools and high schools MIC participation was associated with increases in student TAKS-Math achievement. For all middle school students with a teacher participating in MIC the TAKS-Math passing rate in 2009–10 was 81%, compared to 74% in 2008–09; this 7 percentage point increase was statistically significant. This increase compared favorably with the changes in passing rates across Texas during the same time period, when there was an increase of 2 percentage points in middle schools students passing TAKS-Math.

At the high school level, for all students with a teacher participating in MIC there was an increase in the percentage of students who met TAKS-Math standards from 65% to 73% between 2008–09 and 2009–10. This 8 percentage point increase was statistically significant. Across all the high school students in Texas, there was a 7 percentage point increase in the rates of passing TAKS-Math over the same one-year period.

Students who were exposed to MIC teachers for two years experienced the largest gains in achievement, particularly if in 2009–10 their teacher also had two years of experience in MIC (i.e., dual-year participants). Cycle 1 middle school students who had two years of experience with dual-year MIC teachers (teacher in 2009-10 had two years experience in MIC) scored .31 of a standard deviation higher on TAKS-Math than students who had never had a MIC teacher. Cycle 1 high school students with similar levels of experience with MIC teachers scored .16 of a standard deviation higher than students who never had a MIC teacher. These findings indicate that the program has a cumulative beneficial effect over time. At the high school level, higher amounts of PD were associated with gains in student math achievement; however, for the most part the results of the analyses indicate that participation of any hourly amount per year in coaching and PD, as long as it is sustained over time, can have an impact on student math achievement.

Similarly, preliminary evidence indicates that MIC may be helpful in reducing dropout rates, improving graduation rates, and improving grade promotion rates. Evidence also indicates that being exposed to MIC teachers for two years can improve students' college readiness.

Findings from the Student Outcomes Analyses: Cycle 2

> *"[The students] told other teachers that for the first time they feel like they're learning something."*
>
> – MIC Cycle 2 Teacher

Cycle 2 MIC grantees completed their first year of implementation during the 2009–10 school year. Results indicate that at the middle school level even after this short amount of time, MIC coaching may be beneficial. Similar findings were not found for high school. There was about a 3 percentage point increase in the passing rate for all MIC Cycle 2 middle school students as a whole (71% in 2008–09 vs. 74% in 2009–10), which is 1 percentage point higher than the 2 percentage point increase that occurred across the state.[4] High amounts of coaching (61 hours and over) were associated with significant increases in student math achievement at the middle school level. The results for the analysis of the impact of MIC on student math achievement and college readiness at the high school level for MIC Cycle 2 grantees are inconclusive after one year of program implementation.

Findings from Cost and Sustainability Analyses

> *"The math lab has been a godsend for some of our students. They're disappointed when they don't have it."*
>
> – MIC Grantee teacher, on the value of the new math labs that have been funded with the MIC grant

Cycle 1 grantees were at the end of their grant cycle during the 2009–10 school year, so a full picture of the cost-effectiveness of MIC could be obtained. Results of the analysis of MIC grant expenditures show Cycle 1 grantees had, on average, spent 87% of their total awarded funds. Of course, some grantees spent the entire amount of their grants. The average cost per teacher in MIC Cycle 1 program was $6,971, which was about $3,000 less than the maximum amount grantees could be awarded per teacher ($10,000). The average cost per teachers translates to an average cost of $131 per student served by a MIC teacher in Cycle 1 grantee schools. In the current reporting period, Cycle 2 grantees have completed their first grant year. The initial Cycle 2 grantee expenditure data provided by grantees shows that grantees have spent 32% of the total budgeted funds after one year. It should be noted that some of the grant funds went to PD and coaching with some of it going into school enhancements such as math labs that will continue to be used after the grant period ends. Overall, the cost analyses indicate that MIC is a cost-effective program after two years with Cycle 1 grantees. In addition, if the program continues to help teachers improve math instruction, then the cost per student will become lower over time. The future cost realized also assumes that student math achievement gains made after two years of participation with current Cycle 1 students remain steady with future students receiving instruction from math teachers participating in MIC.

Conclusions and Next Steps for MIC

This study finds that MIC is a cost-effective program that is benefiting teachers and students in the Cycle 1 schools. There are also early indications that MIC is impacting teachers and students in Cycle 2 schools. Findings indicate that the program may be particularly beneficial for new teachers. There seem to be particular gains in student math achievement when students have exposure to MIC over time.

As more data become available, findings will be refined and expanded accordingly. As additional data on dropout rates become available, the relationships between the program and reducing dropout can be investigated further. In addition, the Cycle 2 schools will complete their grant period during 2010-11 allowing for a complete comparison of results between the Cycle 1 and Cycle 2 schools to see if the effects have been replicated or enhanced over time.

[4] Significance testing could not be conducted due to the nature of the data from the two sources.

1. Introduction

This evaluation report presents findings from the first two years of the evaluation of the Mathematics Instructional Coaches (MIC) Pilot Program, which is one of three grant programs grouped together as the High School Success Pilot Programs (HSSPP) administered by the Texas Education Agency (TEA). The other two programs are the Intensive Summer Programs (ISP) pilot program and the Collaborative Dropout Reduction (CDR) pilot program. Collectively, these three programs were authorized by the 80th Texas Legislature in 2007[5] so districts could develop and implement programs to prevent and reduce dropout, increase high school success, and improve college and work readiness in public schools.

In addition, the Texas Legislature authorized the evaluation of the HSSPP,[6] which is being conducted by ICF International (ICF) under contract with TEA. The four objectives of the evaluation of MIC include the following:

- To describe and evaluate the implementation of MIC
- To evaluate the impact of MIC on teacher effectiveness
- To evaluate the impact of MIC on student outcomes
- To determine the cost-effectiveness and sustainability of MIC

The initial interim results were presented informally to TEA after the first year of implementation of the program in Cycle 1 schools. This document is a comprehensive evaluation report that includes these results, as well as additional results on both Cycle 1 and Cycle 2 MIC grantees.

The Dropout Problem in the United States

> Dropouts cost the public an estimated $24 billion each year in the U.S. in crime, food stamps, housing assistance, and Temporary Assistance for Needy Families (TANF).
>
> Riggs, Carruthers, & Thorstensen, 2002

School dropout in the United States (U.S.) has been called a "crisis" or an "epidemic" by various sources who work closely with this issue nationally (Edley, 2004; Powell, 2008). Regardless of the name given to the situation, there is no doubt that dropping out of school is a widespread and serious problem in the U.S., with consequences for students who drop out. Without a diploma, students who drop out of school face increasingly bleak career prospects tied largely to entry-level employment. They also may remain far behind in a technology-driven age where career adaptability is not simply a plus, but a requirement. According to the U.S. Census Bureau (2006), a high school dropout earns an average of $9,000 less per year than a high school graduate. This difference translates into an earnings loss of $260,000 over a lifetime for more than half a million young people who drop out of high school each

[5] All three HSSPP programs were authorized by House Bill 2237 (80th Texas Legislature), as amended by 81st Texas Legislature. Specifically, MIC is authorized by Texas Education Code §21.4541. All three programs were funded by the General Appropriations Act (GAA), Article III, Rider 53 (80th Legislature) and Rider 51 (81st Legislature).

[6] The HSSPP evaluation was funded by Rider 79, General Appropriations Act (GAA), Article III, 80th Texas Legislature and Rider 69, General Appropriations Act, Article III, 81st Texas Legislature.

year. A more recent finding suggests that the U.S. could regain $45 billion lost in tax revenues, health care expenditures, and social service outlays if the number of high school dropouts was reduced in half (Levin, Belfield, Muenning, & Rouse, 2007).

Many factors contribute to students dropping out of school, including poverty, low literacy and achievement levels, parenting responsibilities, and the need to earn money through employment. According to researchers from the National Center for Education Statistics, only 75% of high school students graduated on time in the 2006-07 school year. Moreover, only 62% of African American students and 64% of Hispanic students in the U.S. graduated from high school in four years, which is lower than rates for White (81%) and Asian/Pacific Islander (91%) students. In addition, graduation rates have been found to be lower for males than for females (Cataldi, Laird, & KewalRamani, 2009).

While national graduation rates may differ by demographic characteristics, dropout is nonetheless a universal problem faced by nearly every school in the nation. Despite an expansion of government resources on K-12 education, national dropout rates have changed little between 1990 and 2008 (Chapman, Laird, & KewalRamani, 2010).

The Dropout Problem in Texas

Statewide, the class of 2009 had a four-year (i.e., longitudinal) dropout rate of 9.4%.[7] Of course, some students in Texas are more at risk of dropping out than others. Table 1.1 provides a list of student risk factors that may be associated with higher dropout rates, the prevalence of these risk factors as a percentage of student enrollment in the state in 2009–10, and four-year dropout rates for the class of 2009. Texas districts enroll a sizable number of students who are limited English proficient (LEP). In 2007–08, approximately 17% of students had LEP or bilingual status, and 29% of LEP students in the class of 2009 cohort dropped out of school. Approximately 10% of students in Texas were receiving special education services in 2007–08 (TEA, 2008a). While special education students in the class of 2008 had lower dropout rates than LEP students in the same cohort, they nonetheless dropped out at a higher rate (15%) than the state average (9%).

In addition, student enrollment data show that more than half of Texas K-12 students are economically disadvantaged. With this high poverty rate comes diverse challenges. Economically disadvantaged students are more likely to drop out of school (11% vs. 9% state average), and addressing the needs of these students is an ongoing concern from the elementary years onward (TEA, 2008a). Students who were at risk of dropping out of school experienced similar dropout rates to economically disadvantaged students (12%).

Differential dropout rates among these risk factors provide a possible glimpse into the future, and help provide an understanding of the challenges facing MIC grantees. For example, LEP students are nearly twice as likely to drop out of school as the average student in the state. Given that the percentage of LEP students in Texas has been growing in recent years (from 14% in 2000-01 to 17% in 2009–10), it stands to reason that this trend will put pressure on dropout rates in the years to come (TEA, 2001; TEA, 2008a).

[7] A dropout is defined as a student who is enrolled in public school, does not return to public school the following fall, is not expelled, and does not graduate, receive a General Educational Development (GED) certificate, continue school outside the public school system, begin college, or die. The longitudinal dropout rate is calculated by dividing the number of dropouts by the sum of on-time graduates, plus continuers, plus GED recipients, plus dropouts.

As a result of these trends and challenges, Texas is implementing four key strategies to reach students at risk of dropping out of school. These strategies, which have been developed by drawing on evidence from previous research,[8] include:

- *Data systems to identify struggling students who need early intervention*: These systems are designed to identify students at risk of dropping out, determine their needs, and ensure that appropriate services are provided. For example, TEA has funded the Texas Ninth Grade Transition and Intervention program, which includes the implementation of an early warning system by each grantee. Encouraging greater usage of data by teachers and administrators to tailor lesson plans for students is a component of MIC.
- *Learning environments that are challenging and personalized for each student*: Within a personalized learning environment, TEA encourages rigorous and relevant instruction to better engage students in learning academic and social skills necessary to become college and career ready. TEA initiatives fostering such learning environments include Early College High Schools, High Schools That Work, the College Readiness Initiative for Middle School Students, and T-STEM Academies.
- *Mentors who are used as role models and advocates for students*: Mentors can help students address academic, social, and emotional needs that are barriers to academic achievement. TEA initiatives with a mentoring component include Amachi Mentoring, Communities In Schools, and Texas GEAR UP.
- *Academic support to students who are behind in school*: Providing targeted academic support can help address skill gaps and enrich the learning environment for students who are off track. TEA sponsors academic support through 21st Century Community Learning Centers, the Investment Capital Fund, the Limited English Proficient Student Success Initiative, and the Optional Extended Year Program, among others. MIC schools were selected in part for the low academic performance of their students, and MIC provides teachers with tools that they can use to engage low performing students, and adapt lessons towards the needs of the students.

Although dropout remains a challenge in Texas – and especially for some groups of students –TEA has funded a number of initiatives (including MIC) that employ evidence-based strategies to support students who are most at risk of dropping out of school.

[8] For additional information on these strategies, please visit TEA's website.

Table 1.1
Texas K-12 Enrollment (2009–10) and Four-Year Dropout Rate (Class of 2009), by Risk Factor

Risk Factor	Enrollment	Four-Year Dropout Rate
Special education	9.6%	14.5%
Economically disadvantaged	59.0%	10.9%
LEP	16.9%	29.1%
At-risk students*	47.2%	12.4%
State Average		**9.4%**

Source: TEA, Division of Performance Reporting, Academic Excellence Indicator System 2007–08 State Performance Report
Note: Due to rounding, percents may not add up to 100
Note: At-risk students are defined by TEA as students who exhibit at least one of 13 risk factors. A complete listing of these risk factors can be found online here.

Previous Research on Dropout Prevention Programs

Research on successful dropout prevention strategies has become more plentiful in recent years, and several efforts have been undertaken to help practitioners identify best practices in dropout prevention, including TEA's commission of the Best Practices in Dropout Prevention Study (TEA, 2008). Table 1.2 presents evidence-based strategies that were identified in at least two of the six sources of "best practices" that were reviewed. Results are organized by level of implementation (i.e., state/district, school, and student) and then by number of sources reporting this practice as evidence-based. Within each level, themes are listed in descending order of number of sources, so that themes common to the most sources are presented first. Keys to source codes are displayed below the table.

Table 1.2

Common Strategies Recommended to Address Dropout Issues

Level	Strategy	Sources	Number of Sources
State/District	Multiple approaches/All dropouts are different	A,B,C	3
	Data-based decision-making	A,B,F	3
	Technical assistance to schools and districts	C,F	2
School	Staff beliefs/school environment for change	A,B,C,D	4
	Make students want to stay in school – do not punish them (including grade retention)	A,B,C,D	4
	Family involvement/outreach	A,C,D,E	4
	Community collaboration/involvement	A,C,E	3
Student	Mentoring/adult advocates	B,C,D,E	4
	Academic support/enrichment/tutoring	A,B,D,E	4
	Behavior/social skills	A,B,E	3
	Personalize the learning environment	B,D	2
	Attendance monitoring	A,E	2

Note: **A**=Hammond, Linton, Smink, & Drew, 2007; **B**=Dynarski, Clarke, Cobb, Finn, Rumberger, & Smink, 2008; **C**=ICF International and the National Dropout Prevention Center/Network, 2008; **D**=Arizona Department of Education, n.d.; **E**=What Works Clearinghouse, 2008; **F**=Bounds, Martez Hill, & Smith, 2007.

TEA has recognized the importance of including multiple strategies to address dropout. MIC is primarily a teacher professional development (PD) and coaching program, but also includes administrator training or inclusion in activities to help create a school environment that is ready for change.

Math Achievement and Risk for Dropping Out

Prior research has found that student absences, grade retention, and low academic achievement are all indicators for dropping out (Battin-Pearson et al., 2000; Barrington & Hendricks, 1989; Garnier, Stein, & Jacobs, 1997; Ensminger & Slusarick, 1992; Jimerson, Anderson, & Whipple, 2002; Alexander, Entwisle, & Horsey, 1997; Finn & Rock, 1997; Morris, Ehren, & Lenz, 1991; Rumberger, 1995; Allensworth & Easton, 2005). Though low academic achievement in math is not the only factor related to dropping out, math is the course that students most often fail (Steen, 2007). Algebra, in particular, may be a stumbling block to successful high school completion in that it is the course that must be successfully completed in order to progress through higher-level math courses (Vogel, 2008). Increasing student math achievement could thus lead to reductions in dropout rates. Improving math teachers' ability to engage students and convey the material could have beneficial effects on student math achievement and in turn lead to reductions in dropout rates.

Teacher Coaching, PD, and Dropout Prevention

MIC focuses on improving teacher effectiveness through professional development and coaching activities to ultimately reduce dropout by improving student math achievement. As indicated by Kilpatrick, Swafford, and Findell (2001), teaching proficiency in math is something that can be learned by math instructors. Also, these authors concluded in their review of the literature that teachers need to be supported in their learning over time and have chances to engage with math specialists in order to increase their math proficiency, stating:

> If teachers are going engage in inquiry, they need repeated opportunities to try out ideas and approaches with their students and continuing opportunities to discuss their experiences with specialists in mathematics, staff developers, and other teachers. These opportunities should not be limited to a period of a few weeks or months; instead, they should be part of the ongoing culture of professional practice […]. (Kilpatrick, et al., 2001, p. 399)

MIC is designed to provide math teachers with these types of activities, by providing funding for math coaches that work with teachers over the course of the two-year grant period.

Research on instructional coaching indicates that coaches (i.e., PD providers who work directly with teachers in their classrooms to help them implement certain teaching methods) need to possess strong pedagogical knowledge, content expertise, and interpersonal skills in order to improve teaching and learning effectively (Kowal & Steiner, 2007). Specifically, this approach to school improvement can help strengthen math teachers' knowledge, skills, and abilities to increase students' academic performance. In a recent study commissioned by the Council of Chief State School Officers, researchers reviewed reports from evaluations of 25 math and science teacher PD programs in 14 states and found that one-third of the projects had "measurable effects of teacher PD" including increasing teacher content knowledge, teacher development focused on improving student outcomes, and instructional practices of teachers (Blank, de las Alas, & Smith, 2008). Teacher PD has been identified as an important component of effective instruction and subsequent student achievement (Cohen & Hill, 2000; Darling-Hammond & McLaughlin, 1995). In their review of the existing evidence on how teacher PD affects student achievement in elementary grades, the Regional Educational Laboratory Southwest found that teachers who receive an average of 49 PD hours during the program period can increase students' academic performance by about 21 percentile points (Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Learning about and then using research-based instructional strategies in the classroom are advocated to increase student achievement (Miller, 2002) and reduce dropout (Bost & Riccomini, 2006).

Math Achievement and College Readiness

One of the goals of preventing students from dropping out is to keep them on the path towards a higher degree and hopefully a better financial future. A college degree has increasingly become necessary for access to jobs that provide a living wage. As described by Day and Neuberger (2002), college graduates with a bachelor's degree will earn an estimated $2.1 million over their lifetimes, compared to $1.2 million for high school graduates. In addition to providing benefits to the individual, preventing dropout can prove beneficial to the communities in which these students live. Some recent research by the Alliance for Excellent Education (2010) using the 2008 high school class cohort finds that if the number of dropouts from that class was reduced by half that change would translate into (1) $4.1 billion in increased earnings, (2) $2.8 billion in increased spending, (3) $1.1 billion in increased investments, (4) $10.5 billion in increased home sales, (5) $340 million in increased auto sales, (6) $536 million in increased tax revenue, and (7) $5.3 billion in economic growth.

In order to gain a bachelor's degree, students must persist through to college graduation. Preparing high school students academically for attending college, or college readiness, is an important step on the way to ensuring college success. As discussed by Perna and Thomas (2006), college readiness is a key transition in a longitudinal process that takes students from high school to successful college completion and then graduate education or job attainment.

Increasingly high school students are not ready for college-level math courses without remediation, making this transition to college particularly hard (Wirt, Choy, Rooney, Provasnik, Sen, & Tobin, 2004). Some possible causes of this are the differences in pedagogy between secondary school and college, and not taking enough math courses in high school (Latterell & Frauenholtz, 2007). Needing remediation at the beginning of postsecondary education is associated with lower rates of postsecondary degree or certificate completion (Wirt et al., 2004). As found by Adelman (1999), if algebra is highest math course completed by students in high school, only 8% will complete college. This number increases to 74% if the highest course completed is precalculus and moves up to 80% if the highest high school math course completed is calculus. There is some indication then that success in high school math is essential to completing college.

Report Overview

This report details the methodology and results of the evaluation of MIC between the years 2008 and 2010. Chapter 2 presents an overview of MIC including the legislative mandate, eligibility criteria, and program goals. Details of the evaluation design and data collection activities that occurred between 2008 and 2010 are included in Chapter 3. Chapter 4 provides results of the implementation study including how the program was implemented across the grantees, along with the facilitators and barriers to implementation that were identified by grantees. The relationships of the program to teacher effectiveness are presented in Chapter 5. Chapters 6 and 7 present student outcomes analyses, and program cost-effectiveness analyses are presented in Chapter 8. Conclusions and study limitations are presented in Chapter 9.

2. Overview of MIC

MIC provides eligible grantees with assistance in developing the content knowledge and instructional expertise of teachers who instruct students in math at the middle school, junior high school, or high school level as a way to improve college and workforce readiness of these public school students that might otherwise have dropped out of school (Texas Education Code, Sec. 21.4541, as amended by H.B. 2237 passed during the 80th Texas Legislature) (TEA & ICF, 2010). This section of the report provides a description of the legislative authority, program goals, project periods, eligible school districts and open-enrollment charter schools, program requirements and approved program activities, approved use of funds, and program measures and desired outcomes for MIC. Most of these program guidelines apply to both Cycle 1 and Cycle 2; however, differences are noted where appropriate.

Legislative Authority

In 2007, the 80th Texas Legislature passed House Bill (H.B.) 2237 through which §21.4541 was added to the Texas Education Code (TEC). This section of the TEC explains that the state of Texas shall appropriate funds to institute the MIC pilot program, "under which participating school districts and campuses receive grants to provide assistance in developing the content knowledge and instructional expertise of teachers who instruct students in mathematics at the middle school, junior high school, or high school level" (TEC, §21.4541). MIC grantees are required to contract with an Approved Service Provider (ASP) from a list that includes Texas Science, Technology, Engineering, and Mathematics (T-STEM) centers; regional education service centers (ESCs); institutions of higher education; and private organizations with significant experience in providing math instruction. MIC grantees must demonstrate effectiveness in improving math instruction and serve a significant number of at-risk students through its program model. This model may include one or more of the following activities: providing training to teachers on effective instruction, providing tutoring/mentoring to teachers on effective instruction, providing incentives to teachers for program participation, or engaging in other activities determined effective by the grantee or commissioner (TEC, §21.4541).

Program Goals

The goals of the projects developed by MIC grantees included planning, designing, and implementing research-based projects to support the improvement of middle and high school math teachers' content knowledge and instructional expertise. The programs were required to include a coaching component (e.g., mentoring, classroom observation) and a PD component (e.g., training), though the individual grantees were allowed flexibility to work with their individual ASPs to tailor a program for their specific needs and to create individual program definitions of coaching and PD. At-risk students[9] were one of the subgroups of students who were specifically targeted by this initiative. Grantees were selected based on their percentage of at-risk students, though individual teachers did

[9] At-risk students are defined by TEA as students who exhibit at least one of 13 risk factors. A complete listing of these risk factors can be found online here.

not have to be teaching a specific number of at-risk students to participate in the program. The program goals were:

(1) To plan, design, and implement pilot programs to support the improvement of secondary math teachers' content knowledge and instructional expertise,
(2) To implement a MIC program that is research-based,
(3) To implement a MIC program that has a strong emphasis on improving math teachers' abilities to increase at-risk student performance in math,
(4) To institute a rigorous and engaging PD program that redesigns structural and collaborative practices for math teachers,
(5) To develop the skills and knowledge of school leaders in the area of math instruction, and
(6) To provide models of excellence in coaching teachers of math to improve their knowledge and expertise (TEA, 2008b).

Project Periods

The project period for the 29 MIC Cycle 1 grant projects was from July 1, 2008 to May 31, 2010 (23 months) and for the 33 Cycle 2 grantees, it is from April 1, 2009 to May 31, 2011 (26 months). Funding for grantees for the Cycle 1 project period was close to $4.5 million, with the maximum Cycle 1 award amount per campus set at $225,000, with a maximum limit of $10,000 per teacher participant. Funding for grantees for the Cycle 2 project period was about $6.5 million, with the maximum Cycle 2 award amount per grantee set at $250,000, with a maximum limit of $10,000 per teacher participant. No matching funds were required for Cycle 1 or Cycle 2 MIC grantees. Projects funded in either cycle of the MIC grant were eligible for continuation for up to two additional years, contingent upon satisfactory progress and available funding.

Table 2.1

Information about the MIC Pilot Program by Grant Cycle

Program Component	MIC Cycle 1	MIC Cycle 2
Targeted Grade Levels	Middle School/Junior High School and/or High School	
Project Period	07/01/08-05/31/10 (23 months)	04/01/09-05/31/11 (26 months)
Number of Grantees	29	33
Total Funding (total Project Period)	$4,487,220	$6,550,723
Key Grantee Partners	Approved Service Providers (ASPs): Regional Education Service Centers (ESCs) and Institutions of Higher Education (IHEs)	
Maximum Award Amount per Grant (total Project Period)	$225,000 ($10K maximum award amount to the grantee per planned teacher participant)	$250,000 ($10K maximum award amount to the grantee per planned teacher participant)
Matching Funds Required (total Project Period)	None	

Source: MIC Grant Requests for Application

Eligible Districts and Charter Schools

Eligible school districts or open enrollment charter schools included those that exhibited characteristics that strongly correlated with high dropout rates during each of the three preceding school years as measured by having one of the following conditions:

- 65% (Cycle 1) or 55% (Cycle 2) or more of students who were enrolled in the district identified as being economically disadvantaged,
- 60% or fewer students across all grade levels who met the state standard on the mathematics portion of the Texas Assessment of Knowledge and Skills (TAKS-Math) during the preceding three school years (Cycle 1 and 2), or
- In top 10% of the district's size category for high dropout rates for each of the preceding three school years (Cycle 2 only).

In addition, eligible school districts or open enrollment charter schools must have served students in the preceding three school years and be financially stable.

Program Requirements and Approved Program Activities

Under the MIC pilot program, grantees were allowed to provide intensive instructional coaching strategies to engage teachers, including: (a) pre-teaching conferences, (b) in-class demonstrations, (c) conferences with teachers after observed classroom lessons, (d) modeling, (e) team-teaching, and (f) assistance to teachers in how to assess student work. In addition, grantees were able to work with their ASPs to provide PD on topics like: (a) math concepts, (b) instructional strategies, and (c) lesson planning.

In addition to the statutory requirements, TEA required that each MIC grantee: (a) conduct a thorough needs assessment of its secondary math program to identify the severity of the math instructional need for targeted campuses, (b) identify the type of coaching services needed to address the needs analysis performed by the district, (c) contract with an ASP, and (d) develop an action plan that addresses how the project will support the improvement of secondary math teachers' content knowledge and instructional expertise. In addition, the grant required that recipients provide an explanation of the research on which the action plan was based, ways in which the project has a strong emphasis on improving math teachers' abilities to increase at-risk student performance in math, how the grantee and ASP will institute a rigorous and engaging PD program that emphasizes collaborative practices for math teachers, and how the project will develop the skills and knowledge of school leaders in the area of math. Lastly, grantees were required to describe the procedures for students, administrators, and math faculty that would be implemented to ensure feedback and improvement for the efficiency of the project.

Approved Use of Funds

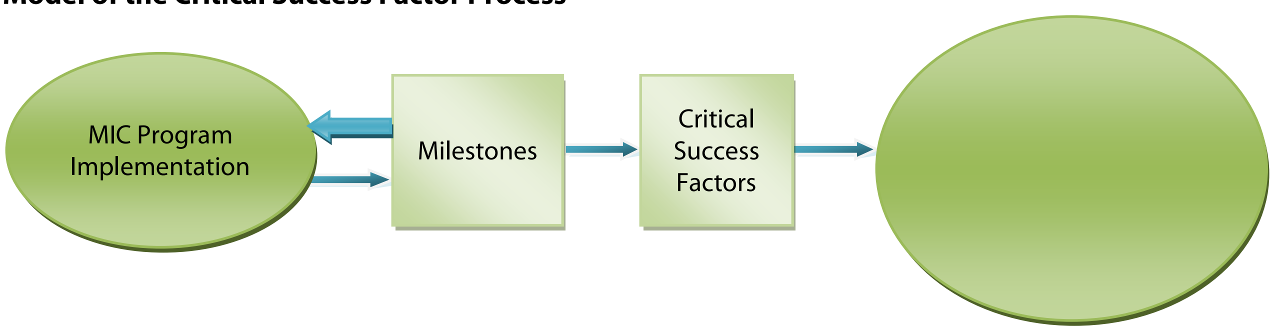
MIC grantees were required to submit an estimated budget to outline funds needed to implement their projects. MIC grantees were able to use their funds to provide stipends for teacher participants, but needed to describe the criteria to be established for selection and the process by which stipends would be given to teachers. TEA required that funds for the pilot program be used to increase the level of services and not replace funds from federal, state, and local sources designated to support similar activities. Any program required by state law, State Board of Education rules, or local board policy could not be paid with funds through the MIC pilot program. In addition, state or local funds could not be decreased or diverted for other use simply because of the availability of these funds. However, grantees were allowed to use up to 5% of the grant award for direct administrative expenses.

Performance Measures and Desired Outcomes

MIC was designed to improve the content knowledge and instructional expertise of middle, junior, and senior high school math teachers in Texas. Improving teachers' knowledge and skills would conceivably improve student math test scores, improve students' college readiness, and reduce dropout rates. These long-term, primary goals were established for MIC. As a step towards achieving those overarching goals, the TEA Division of College and Career Readiness Initiatives identified five critical success factors. MIC grantees needed to achieve the critical success factors in the short term, with milestones that could be measured to assess if the grantees were on the path to achieving the critical long-term success factors. If the grantees did not successfully meet some of the milestones, the program was adjusted. Figure 2.1 presents a model of this process:

Figure 2.1

Model of the Critical Success Factor Process



Critical Success Factors and Milestones

The following five critical success factors and associated milestones were identified:

1. Principal and teacher use of assessment data in order to revise/re-evaluate instructional practices, with milestones defined as follows:
    - Provide means of collecting assessment data
    - Provide useable and actionable data
    - Provide training on disaggregation of assessment data provided to schools or teachers in the aggregate
    - Provide follow up for actions based on data analysis

2. Teacher implementation of MIC strategies learned through training, with milestones defined as follows:
    - Identify areas of teacher and student weakness and strength
    - Schedule PD sessions
    - Schedule opportunities for implementation
    - Conduct observations
    - Provide feedback/coaching to participants
3. Increased teacher math content knowledge, with milestones defined as follows:
    - Identify areas of teacher weakness and strength
    - Schedule PD sessions
    - Schedule opportunities for implementation
    - Conduct observations
    - Provide feedback/coaching to participants
4. Students demonstrating successful learning of math concepts targeted by the district's action plan during a reasonable period of time, with milestones defined as follows:
    - Review district's action plan
    - Identify specific math concepts to be targeted
    - Schedule PD sessions
    - Schedule opportunities for model teaching and coaching
    - Schedule observations of lessons taught by teachers
    - Debrief observations
5. Increased meaningful involvement in the pilot program on the part of campus administrators, with milestones defined as follows:
    - Conduct needs survey of campus administrators
    - Provide training for campus administrators that increases their knowledge of best practices in math classrooms
    - Provide training on conducting math classroom observations
    - Conduct math classroom observations
    - Provide feedback/coaching to participating administrators

The milestones listed here for all the critical success factors became outcomes assessed as part of the implementation study through various data collection efforts (see Evaluation Approach, Chapter 3). In other words, the critical success factors helped guide the development of data collection instruments. Critical success factors 1 and 5, relating to the use of assessment data by teachers and administrators and the meaningful involvement of campus administrators in the program, were evaluated as part of the implementation study. Critical success factors 2, 3, and 4 were assessed as part of the impact analyses, since they overlapped with the long-term goals of the program and addressed outcomes that resulted from the program implementation.

Outcome Measures for Impact Analyses

Each grantee was required to monitor the progress of teachers and students on the critical success factors described earlier. The outcome measures for this evaluation assess both these crictical success factors , as well as longer-term outcomes. The longer-term outcomes overlap with the critical success factors, but also expand on them to include math course completion rates, college readiness, and student retention:

(a) Teacher perceptions of increased effectiveness

(b) Increased teacher knowledge of a variety of instructional techniques

(c) Teacher implementation of MIC strategies learned through training

(d) Increased teacher math content knowledge

(e) Improved performance in math for middle and high school students

(f) Improved performance in math for at-risk students

(g) Increased student math course completion rates

(h) Increased student readiness for college

(i) Increased student retention

3. Evaluation Approach

This chapter provides a description of the evaluation design, evaluation questions, data sources and instrumentation, data collection activities, and data analysis approach. The four objectives of the evaluation of MIC are:

- To describe and evaluate the implementation of MIC strategies
- To evaluate the impact of MIC on teacher mathematical knowledge and instructional expertise
- To evaluate the impact of MIC on student outcomes (e.g., math achievement, college readiness, and dropout)
- To determine the cost-effectiveness and sustainability of MIC

This chapter presents the details of the the MIC evaluation methodology. In the first section, an overview of the phases of the evaluation and evaluation design is presented. The second section provides a summary of all the evaluation questions considered as part of this evaluation, along with associated data and analyses by evaluation phase. The third section provides a detailed account of all the data sources and data collection methods employed over the two years of this evalution. The final section presents specifics of the analyses conducted for each phase of the evaluation.

Evaluation Design

The evaluation of MIC consisted of a multi-tiered, mixed-methods approach that incorporated three distinct phases. Phase 1 consisted of the program theory/process evaluation that evaluated the implementation of the program, Phase 2 consisted of the impact evaluation that determined the impact the program had on student outcomes and other relevant outcomes (e.g., teacher instructional practices), and Phase 3 consisted of the cost analysis/sustainability study of the program. Results from Phase 1 informed the further development of the evaluation plan for Phases 2 and 3.

The evaluation questions developed for each phase—and the data sources identified to answer these questions—as well as the data analyses conducted are described later in this chapter. In this section the evaluation activities that occurred during Years 1 (2008–09) and 2 (2009–10) of MIC evaluation are described. The data collection activities differed slightly between Year 1 and 2, and descriptions of both years are presented.

Program Theory/Process Evaluation (Phase 1)

Year 1 (2008–09) included the initial steps of the program theory/process evaluation which involved reviewing the MIC Request for Application (RFA) (TEA, 2008b; TEA, 2008c), the grantee applications, and the grantee action plans. This allowed for the exploration and greater understanding of the program theory and to "unpack" the components of MIC.

Joint interviews with the grant coordinator and the ASP representative from each of the 29 MIC Cycle 1 grantees were conducted by telephone between December 11, 2008 and January 14, 2009 to understand firsthand how the implementation process was progressing for each grantee. Characteristics of the districts/campuses, students, and others participating in the MIC pilot program were gathered from the grantee applications, PEIMS data, and the 29 telephone interviews.

The implementation analyses from the Year 1 data yielded quantitative information on the types of teachers participating in MIC, the kinds of schools that received MIC grants, and the level of teacher participation in each activity type (PD and coaching). Content analyses were conducted on raw qualitative data, such as grant applications and open-ended survey responses, to describe the level of implementation and the types of activities being implemented by MIC grantees, as well as the key drivers of success, the program planning process, and the relationships between grantee districts and ASPs. Further, a typology of MIC programs (referred to in this report as MIC program types) was created based on information provided in the MIC grant applications, action plans, and implementation interviews. An initial review of the Cycle 2 grant applications was also conducted during Year 1 of the evaluation.

Year 2 (2009–10) of this evaluation encompassed the second (final) year of implementation for Cycle 1 grantees and the first year of implementation for Cycle 2 grantees. The program theory/process evaluation component in Year 2 involved reviewing the grantee applications and grantee action plans for Cycle 2 grantees in order to gain a better understanding of how the Cycle 2 grantees were planning to implement their programs. MIC program types were determined from the team's review of Cycle 2 grant applications (e.g., ASP-to-District Expert Coaches Model, District-to-Teachers Expert Coaches Model, Peer-to-Peer Teacher Coaches Model, Other MIC Model) during June and July 2009. In January and early February 2010, both Cycle 1 and Cycle 2 grantees were administered a progress report to assess their progress in implementing the program. Site visits were conducted with Cycle 2 grantees selected from across regions and program types. Finally, two Cycle 1 grantees from the seven visited in Year 1 of the evaluation were visited again in Year 2. The two Cycle 1 schools were selected during Year 2 of the evaluation for revisits based on the potential for learning some "best practices" for implementing MIC. This potential was determined through a review of the case study results from Cycle 1 and a discussion with the evaluation team members who visited the sites about their experiences.

Impact Evaluation (Phase 2)

As indicated earlier, the goals of MIC were to increase the content and instructional knowledge of the participating teachers, which would in turn affect student math achievement. As such, in order to examine the effects of MIC, this study evaluated the impact of MIC on teacher effectiveness and student outcomes.[10]

Measures of teacher effectiveness included teacher beliefs about math pedagogy, teacher self-efficacy,[11] and teacher beliefs about their content knowledge.[12] Student outcomes included student

---

[10] See Rossi, Lipsey, and Freeman (2004) for a greater discussion on evaluating program effects.

[11] Self-efficacy is the belief that one has the capabilities to perform certain tasks successfully, to achieve one's goals, and affect one's environment. Teachers with greater self-efficacy may be more likely to handle stressful situations successfully and more likely to incorporate new techniques into their classroom practices.

math achievement, promotion rates, course completion rates, and college readiness. Matched teacher and student data were used to assess the effect of the program on student outcomes on Cycle 1 and Cycle 2 schools. Teacher level of exposure, student exposure to MIC teachers, and MIC program type were taken into consideration in these analyses.

Cost Analysis/Sustainability Study (Phase 3)

Using extant data (AEIS, MIC grant applications, and grantee uploads), implementation interviews, grantee expenditure reporting forms, and MIC stakeholder interviews, the ICF evaluation team was able to analyze the cost breakouts across MIC Cycle 1 and Cycle 2 grantees and explored how these expenditures compared to allocations for MIC grants. Additional analyses examined the relationship between program costs and the number of teacher participants to provide both a cost per teacher and a cost per student outcome. Finally, qualitative survey responses were examined and the sustainability efforts of each MIC Cycle 1 and Cycle 2 grantee were assessed. Key traits of programs were identified that grantees indicated could be sustained beyond the grant funding period.

Evaluation Questions

The evaluation questions for the MIC evaluation are listed in Table 3.1, organized by the four overarching objectives of the evaluation. The table also lists data sources and types of analyses conducted by question, which are described in more detail in sections following the table.

Table 3.1

MIC Evaluation: Research Questions, Associated Data Sources, and Analyses

Research Questions	Data Sources	Analyses
1. To describe and evaluate the implementation of MIC strategies		
What were the characteristics of schools served through MIC?	▪ PEIMS School-Level data ▪ Cycle 1 and Cycle 2 Progress Reports ▪ Cycle 2 Grantee Applications	▪ Content Analyses ▪ Descriptive Statistics
What were the demographic and professional characteristics of teachers served through MIC?	▪ PEIMS Data ▪ 2009 & 2010 Teacher Surveys ▪ 2008–09 District Uploads ▪ 2009–10 District Uploads	▪ Descriptive Statistics
What were the demographic characteristics of students served through MIC?	▪ Student Roster Uploads ▪ PEIMS Student Demographic Data	▪ Descriptive Statistics
How did schools/campuses implement MIC? What was the structure of MIC at the schools? What types of activities were implemented (e.g., teacher training classes, teacher tutoring or mentoring, teacher incentives)? What service providers were used?	▪ 2009 Administrator Surveys ▪ 2009 Implementation Interviews ▪ 2009 & 2010 Approved Service Provider (ASP) Survey ▪ 2009 & 2010 Coach Surveys ▪ Cycle 1 Grantee Applications ▪ Cycle 2 Grantee Applications ▪ 2009 & 2010 Progress Reports ▪ 2009 & 2010 Teacher Survey	▪ Content Analyses ▪ Descriptive Statistics
What types of content were part of the teacher trainings? What types of activities were part of the teacher trainings?	▪ 2009 Implementation Interviews ▪ 2009 & 2010 ASP Survey ▪ 2009 & 2010 Case Studies ▪ 2009 & 2010 Coach Survey ▪ 2009 & 2010 Progress Reports ▪ 2009 & 2010 Teacher Survey	▪ Qualitative Data Analysis ▪ Descriptive Statistics

(CONTINUED)

[12] Direct assessment data of teacher content knowledge were not available for this report.

Table 3.1(CONTINUED)

MIC Evaluation: Research Questions, Associated Data Sources, and Analyses

Research Questions	Data Sources	Analyses
What are the barriers and facilitators to implementation of MIC?	▪ 2009 Implementation Interviews ▪ 2009 & 2010 ASP Survey ▪ 2010 Case Studies ▪ 2009 & 2010 Coach Survey ▪ 2009 & 2010 Progress Reports ▪ 2009 & 2010 Teacher Survey	▪ Qualitative Data Analysis ▪ Descriptive Statistics
Were there differences in implementation between Cycles 1 and 2? How did the implementation of MIC change between years 1 and 2?	▪ 2009 Implementation Interviews ▪ 2009 & 2010 ASP Survey ▪ 2009 & 2010 Case Studies ▪ 2009 & 2010 Coach Survey ▪ 2009 & 2010 Progress Reports ▪ 2009 & 2010 Teacher Survey	▪ Qualitative Data Analysis ▪ Descriptive Statistics
What were some of the "best practices" of successful MIC implementers?	▪ 2010 – Case studies, return visits to 3 successful implementers from Cycle 1	▪ Qualitative Data Analysis
2. To evaluate the impact of MIC on teacher mathematical knowledge and instructional expertise		
What were teachers' perceived effects of MIC on their overall effectiveness, content knowledge, and instructional strategies? Did their perceptions change as the program progresses?	▪ 2009 & 2010 Teacher Survey ▪ Subsample of Cycle 1 teachers who answered the survey in both years 1 and 2	▪ Content Analyses ▪ Descriptive statistics
How was teachers' participation in MIC PD and coaching activities related to their years of teaching experience, and highest degree received?	▪ 2008–09 District Uploads ▪ 2009–10 District Uploads ▪ 2009 & 2010 Teacher Survey	▪ Descriptive Statistics ▪ Correlational Analyses
How was teachers' participation in MIC PD and coaching activities related to their beliefs about their teaching effectiveness, content knowledge, and instructional strategies?	▪ 2008–09 District Uploads ▪ 2009–10 District Uploads ▪ 2010 Teacher Survey	▪ Descriptive Statistics ▪ Correlational Analyses
3. To evaluate the impact of MIC on student outcomes (e.g., math achievement, college readiness, and dropout)		
How was teacher PD related to student math achievement, dropout rates, graduation rates, promotion rates, course completion rates, and college readiness?	▪ 2008–09 District Uploads ▪ 2009–10 District Uploads ▪ 2008–09 Leaver Data ▪ 2008–09 & 2009–10 Matched Student/Teacher Data ▪ PEIMS data ▪ TAKS-Math data	▪ Descriptive Statistics ▪ HLM Analyses ▪ Logistic Regression
How was teacher coaching related to student math achievement, dropout rates, graduation rates, promotion rates, course completion rates, and college readiness?	▪ 2008–09 District Uploads ▪ 2009–10 District Uploads ▪ 2008–09 Leaver Data ▪ 2008–09 & 2009–10 Matched Student/Teacher Data ▪ PEIMS data ▪ TAKS-Math data	▪ Descriptive Statistics ▪ HLM Analyses ▪ Logistic Regression
4. To determine the cost-effectiveness and sustainability of MIC		
How were the grant funds allocated?	▪ 2008–09 & 2009–10 Grantee Expenditure Form ▪ ISAS Data	▪ Descriptive Statistics
What was MIC's "cost per student" and how did the actual expenditures compare to the expected expenditures?	▪ 2008–09 & 2009–10 Grantee Expenditure Form ▪ ISAS Data	▪ Descriptive Statistics
What were the factors contributing to and prohibiting the ongoing sustainability of MIC?	▪ 2010 Progress Reports ▪ 2009 and 2010 Case Study Data	▪ Descriptive Statistics ▪ Content Analysis
Did the sustainability plans of the Cycle 1 and Cycle 2 grantees differ substantively?	▪ 2010 Progress Reports	▪ Content Analysis

Note: The Public Education Information Management System (PEIMS) contains information collected by TEA on public education, including student demographics, academic performance, school personnel, school financial information, and district organizational information. Texas Assessment of Knowledge and Skills (TAKS) is used to measure student achievement in Grades 3-11 in the areas of reading, writing, math, science, and social studies. The Integrated Statewide Administrative System (ISAS) is a public sector accounting system adapted to meet many of the Texas state agencies' requirements for processing financial transactions.

Data Sources, Instruments, and Data Collection Activities

Data sources, instruments, and data collection activities for the evaluation include:

Academic Excellence Indicator System (AEIS) data. AEIS covers longitudinal information on every public school and school district in Texas. Campus-level information from AEIS was used to describe participating MIC schools along with other campus-level variables (i.e., percentage of students eligible for free/reduced lunch, percentage of students at risk of dropping out of school, total enrollment in the school, and locality). AEIS data were provided by TEA.

Case Studies. Site visits were conducted to facilitate interviews and evaluate implementation (e.g., were there any barriers or facilitators to implementation), as well as to coordinate focus groups designed to collect perceptions of the MIC pilot program effectiveness (i.e., the degree to which the program influences student math achievement). MIC grant coordinators, ASP representatives, and campus principals/school administrators were all interviewed individually. Focus groups were held for teachers and coaches. Initial site visits were conducted during the spring of 2009 with seven Cycle 1 schools, and again a year later in the spring of 2010 with four Cycle 2 schools. Second site visits to two Cycle 1 schools that were visited in 2009 were also conducted in spring 2010. Data were collected from participants using semi-structured interview and focus group protocols. The full case study reports and all data collection instruments were compiled into the report, *Evaluation of the Mathematical Instructional Coaches Pilot Program, a High School Success Pilot Program: February 2011 Case Study Report*.

MIC Program Types. Grantees were permitted discretion to work with their ASP to create individualized coaching programs; however, there were commonalities between the programs implemented by the districts. Using data from the Cycle 1 grantees, the following typology of four program types was created during Year 1 (2008–09) of the evaluation and used to classify the coaching models used by the grantees:

- **Approved Service Provider (ASP)-to-District MIC Program Type:** The ASP provides coaches to the district, and these coaches visit the campus(es), meet with the teachers, observe the teachers, and model effective teaching strategies.
- **District-to-Teachers MIC Program Type:** Involves district personnel who already serve as coaches or were hired as math instructional coaches. These coaches are trained by the ASP on coaching methods, and then the coaches work with the teachers.
- **Peer-to-Peer MIC Program Type:** A peer-to-peer coaching approach in which veteran teachers are selected to coach struggling or novice teachers. The peer teacher coaches are trained in coaching practices through professional development from the ASP.
- **Other MIC Program Type:** Approaches that may be combinations of the specific models or completely unique approaches.

Grantee Applications and Action Plans. A content analysis of information was conducted from grant applications and revised action plans. Information about the campuses, target populations, assessment of needs, project plan and activities, partnerships with ASPs, management plans, and activity timelines were extracted from the grant applications. In addition, budgetary information about planned use of funds was collected, which included allocated payroll costs, professional and contracted services, supplies and materials, and other operating costs. In addition, available action plans and Memorandums of Understanding (MOUs) between MIC Cycle 1 and Cycle 2 grantees and their selected ASPs were reviewed.

Integrated Statewide Administrative System (ISAS) Expenditure Data/Expenditure Reporting Form. To collect actual expenditure information from grantees, the evaluation team used two data sources to determine (1) reported expenditures and (2) actual expenditures. First, expenditure reporting forms were created (Appendix A) for MIC Cycle 1 and Cycle 2 grantees to report on their expenditures. For MIC Cycle 1 grantees, the form was used twice to collect information on expenditure. The first data collection covered the period from July 1, 2008 to April 30, 2009 (10 out of 23 months of the grant performance period). The second expenditure data collection covered the period between May 1, 2009 and April 30, 2010. Expenditures included payroll costs, professional and contracted services (i.e., rental/lease equipment), supplies and materials (e.g., textbooks) and other operating costs. For MIC Cycle 2 grantees, the form collected information on grant funds spent between April 1, 2009 and April 30, 2010, which represents the first 13 of the 26 months of the Cycle 2 grant project period (Year 1).

Second, the actual dollars drawn down by MIC Cycle 1 and Cycle 2 grantees were assessed. The amounts that the grantees had drawn down at the time of data collection were reported through ISAS (using the same major cost categories) and analyzed as part of the cost-effectiveness analysis. These figures represent the total funds spent by all MIC Cycle 1 grantees and Year 1 expenditures for Cycle 2 grantees.

Implementation Interviews (2009, Cycle 1 Only) The MIC Implementation Interview Protocol was developed to gather information about MIC grantees' experiences regarding implementation of the MIC pilot program in their districts/charter schools. Joint interviews with the grant coordinator and the ASP representative from each of the 29 MIC Cycle 1 grantees were conducted by telephone between December 11, 2008 and January 14, 2009. The MIC Implementation Interview Protocol is presented in Appendix B.

MIC Student Roster Uploads. TEA requested rosters of students enrolled in each math course taught by teachers participating in MIC. These rosters were collected retrospectively back to the start of the program in the 2008–09 school year, allowing for a match between the MIC teachers and their students. These data were only collected for MIC teachers and their students, rather than also for teachers from the same schools who did not participate in MIC (and their students). Applying this MIC Roster data to a list of all students from MIC schools, a student-level database was then created. Students from MIC schools were flagged as either having a MIC teacher or having a non-MIC teacher (i.e., were not identified in a MIC roster). These data were merged with PEIMS, TAKS-Math, and the teacher survey data to create a teacher database from which to conduct our analyses.

MIC Participant Grantee Uploads. TEA requested the following data on MIC participants from Cycle 1 grantees during the spring of 2009: demographic characteristics (e.g., race, gender), professional characteristics (e.g., years of teaching experience, certification area), and levels of participation in MIC activities (i.e., PD hours and math coaching hours for 2008–09). Similarly, upload data were collected from both Cycle 1 and Cycle 2 grantees at two points during the 2009–10 school year, once in

December 2009 and once in June 2010. During the 2009–10 demographic information was not collected and an additional variable capturing the participants' role in MIC was added. Grantees could indicate whether the participant was a teacher (receiving coaching), a coach (providing coaching), or was a teacher and a coach (both).

Online Surveys. Five surveys, described here, were used in 2009 (included in Appendix C, Appendix D, Appendix E, and Appendix F). Three of these surveys (included in Appendix G, Appendix H, and Appendix I) were repeated in 2010, with some modifications, to gather information as part of the evaluation. These online surveys, which were also available as paper-and-pencil surveys for those who requested it, consisted of a combination of open-ended questions and selected response questions (i.e., questions with a list of choices or rating scales). For the teacher and coach surveys, since some participants were both providing and receiving coaching, participants were provided with the links to both the coach and teacher surveys and allowed to choose which they felt was most appropriate. The following surveys were developed to capture information about topics relevant to the current evaluation from the perspectives of different stakeholders:

- **ASP Representative Survey (2009 & 2010, Cycles 1 and 2).** Questions on this survey addressed the types of activities that occurred during the program period, the types of services provided, how the program funds were allocated, and measured the critical success factors mentioned in Chapter 2. Additional questions addressed barriers and facilitators to implementation, perceptions of the quality and effectiveness of the MIC pilot program, and perceptions about sustainability of the program after the grant period ended. For Cycle 1 in 2008–09 , 16 of 19 ASP representatives (90%) completed the survey. In 2009–10, ASPs completed a survey and did not indicate which grant cycle they were associated with, so findings are presented in the aggregate. There were 62 responses to the ASP survey, one for each grantee (100%).
- **Coach Survey (2009 & 2010, Cycles 1 and 2).** The survey asked about perceptions of the quality and effectiveness of the MIC pilot projects, based upon the types of activities and content in the project; perceptions of the project activities; and perceived improvement of teacher effectiveness and student outcomes. The survey also covered the topic of sustainability of the MIC pilot program. In 2009, 105 of the 150 Cycle 1 coaches (70%) responded to the survey. In 2010, 87 participants were identified as providing only coaching; however, 561 participants were identified as both receiving and providing coaching. In 2010, 145 participants responded to the coach survey; about 55% of those identified as providing only coaching and 17% of those identified as both providing and receiving coaching responded to the survey.
- **Grant Coordinator Survey (2009, Cycle 1 Only).** Questions were written to assess the types of activities that occurred during the program period, the types of services provided, and how the program funds were allocated. Additional questions addressed barriers and facilitators to implementation, perceptions of the quality and effectiveness of MIC, and perceptions about the sustainability of the program after the grant period ended. In 2009, all 29 Cycle 1 grant coordinators (100%) responded to the survey. In 2010, the grant coordinator survey was replaced by a Progress Report for both Cycle 1 and Cycle 2 grantees.
- **Principal/School Administrator Survey (2009, Cycle 1 Only).** Questions were written to assess perceptions of barriers and facilitators to implementation and perceptions of the

quality and effectiveness of MIC. In addition, questions addressed the perceived effects of MIC on teachers and students, as well as plans for continuing the program after the grant ends. Overall, in 2009, 43 of the 108 Cycle 1 principals/school administrators (39%), representing 23 of the 29 grantees (79%), responded to the survey. In 2010, the Principal/School Administrator survey was replaced by a Progress Report (described later) for both Cycle 1 and Cycle 2 grantees.

- **Teacher Survey (2009 & 2010, Cycles 1 and 2).** This survey assessed the professional characteristics of the math teachers, including beliefs about math pedagogy and self-efficacy. The teacher survey also evaluated the types of activities implemented under the grant (e.g., coaching and PD), as well as perceptions of the effects the pilot program had on teachers and students, including teacher content knowledge and practices. Teachers were also asked about their perceptions of barriers and facilitators to program implementation and about the sustainability of the MIC pilot program. In 2009, 253 of the 541 teacher participants (47%) responded to the survey. In 2010, 1256 participants were identified as only receiving coaching; however, 561 participants were identified as both receiving and providing coaching. In 2010, 681 participants in total responded to the teacher survey. About 44% of those identified as receiving coaching only and 22% of those identified as both providing and receiving coaching responded to the teacher survey.

Progress Reports. In 2009–10, MIC progress reports from the grantees (included in Appendix J) replaced the interviews and the grant coordinator and administrator surveys that were conducted in Year 1. Progress reports from all MIC grantees provided data on changes made during the course of the year, and provided additional information about the implementation of MIC by the grantees. Questions also addressed the critical success factors presented in Chapter 2 of this report. All Cycle 1 and Cycle 2 grantees completed the progress reports (100%).

Public Education Information Management System (PEIMS) and Texas Assessment of Knowledge and Skills (TAKS). PEIMS contains information collected by TEA on public education. It provides data on student demographics, academic performance, school personnel, school financial information, and district organizational information. Information on student graduation, dropout, and leaving are also recorded in PEIMS (leaver data). TAKS is used to measure student achievement in Grades 3-11 in the areas of reading, writing, math, science, and social studies. PEIMS and TAKS-Math data from the 2007–08 school year were used to describe the baseline characteristics of the MIC Cycle 1 grantee districts/charter schools, as well as their individual schools participating in MIC grant activities, prior to program implementation. Likewise, PEIMS and TAKS-Math data from the 2008–09 school year was extracted to describe the baseline characteristics of the MIC Cycle 2 grantee districts/charter schools, as well as their individual schools participating in MIC grant activities.

In addition to baseline data, PEIMS and TAKS-Math data from the 2009–10 school year were used to analyze the impact of program participation on student outcomes. TEA provided de-identified, student-level 2009–10 TAKS-Math data. TAKS-Math data was available for all Grade 6 through 12 students in MIC schools, both those who had a MIC teacher and those who did not. Certification and demographic information were available through PEIMS for all MIC teachers.

In addition to being a measure of student achievement, meeting (or exceeding) the commended status standard or not on TAKS-Math (i.e., a score of 2400 or above) was used as a marker of college readiness for all grades. PEIMS data on math course completion rates for the 2008–09 school years were analyzed to assess whether MIC had an effect on the completion rates of key high school math courses, such as Algebra I. At the time this report was written, leaver data were only available through the 2008–09 school year.

Data Analysis

Each phase of the MIC evaluation required a separate data analysis plan. What follows is a general description of each of these plans for each phase of the evaluation. Additional details can be found in the chapters referenced in each of the following sections and in the Appendices. It is important to note that the evaluation questions were designed to be addressed over the course of a three-year evaluation of the pilot program. At the time this report was written, two years of the evaluation have been completed, so a few of the measures needed to address some of the questions were not available in time for this report, and were not included in the analyses described in the following sections. For example, 2009–10 PEIMS leaver data was not available in time for this report so dropout could only be assessed for the 2008–09 school year.

Phase 1 Program Theory/Process Evaluation Data Analysis

Content analyses and descriptive statistics were used to analyze data from grantee applications, implementation interviews, program spreadsheets, and PEIMS. The results served to describe the activities of the MIC pilot program, determine key drivers of success, describe program planning, describe relationships between grantees and ASPs, and assess the alignment of the program with the critical success factors. Changes in implementation between Year 1 and Year 2 of Cycle 1 schools were also assessed, along with differences between Cycles 1 and 2. The following research questions related to program implementation are addressed in Chapter 4:

1. What were the characteristics of schools served through MIC?
2. What were the demographic and professional characteristics of teachers served through MIC?
3. How did schools/campuses implement MIC?
   a. What service provider was used?
   b. What types of activities were implemented (e.g., teacher training classes, teacher tutoring or mentoring, teacher incentives)?
4. What types of content were part of the teacher trainings? What types of activities were part of the teacher trainings?
5. What were the barriers to, and facilitators of, implementation of MIC?
6. Are there differences in the implementation of MIC between Cycle 1 and Cycle 2 grantees?
7. What were some “best practices” of successful implementers?

Phase 2 Impact Evaluation Data Analysis

There were two main components of the impact evaluation: 1) an analysis of teacher outcomes, and 2) an analysis of student outcomes. These components were further broken down into Cycle 1 and

Cycle 2 grantees. Again, Cycle 1 grantees were those that started their programs in the 2008–09 school year, so as of the writing of this report they had completed their two year grant period. Cycle 2 schools were those that started their two-year grant programs in the 2009–10 school year.

Analyses of teacher and student outcomes in Cycle 1 schools took into consideration the length of exposure to the program of both students and teachers. Teachers in Cycle 1 schools could have been in the program for one year or two years. Students in Cycle 1 schools could have been exposed to MIC teachers for one or two years. This does not necessarily mean that the students had the same teachers for two years, but that the students were in classrooms taught by teachers who participated in MIC. Students also could have been exposed to teachers with one or two years of participation. In order to best understand the relationship between teacher participation in MIC and student outcomes, the following combined levels of teacher and student experience were considered in the analyses:

A. Student no experience 2008-2010: Non-MIC teacher no experience 2008-2010
B. Student one year experience in 2008–09: MIC teacher one year experience in 2008–09/ Non-MIC teacher 2009–10
C. Student one year of experience in 2009–10: Non-MIC teacher in 2008–09/ MIC Teacher one year of experience in 2009–10
D. Student one year experience in 2009–10: Non-MIC teacher in 2008–09/ MIC teacher two years of experience in 2009–10
E. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher one year of experience in 2009–10
F. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher two years of experience in 2009–10

Teacher Practices and Content Knowledge

A set of analyses using the MIC Teacher survey examined how teachers perceive the overall effects of MIC training on teachers (improved teacher effectiveness, teachers beliefs about teaching math, teacher practices, and their math content knowledge) and to what extent MIC teachers perceived that their training affected their students on several outcomes. The latter outcomes included overall student achievement and math achievement. The survey also included questions about teachers' perceptions of the program's impact on dropout rates, graduation rates, math course completion rates, SAT/ACT scores, and class attendance. Besides basic descriptive analyses of all survey responses, correlational analyses were conducted to test the relationships between teachers' perceptions of the impact of the program and their educational background, years of math teaching experience, and hours in coaching and PD. For Cycle 1 teachers, comparisons were made between teachers with one year of experience in MIC and two years of experience in MIC. A percentage of Cycle 1 teachers with two years of experience answered the survey in both 2009 and 2010 and comparisons of their responses over the two years are presented in Appendix M. The results of these analyses are presented in Chapter 5 and address the following research questions:

1. What were teachers' perceptions of MIC? What impact did teachers report MIC had on their overall effectiveness, content knowledge, and instructional strategies? Do their perceptions change as the program progresses?
2. How was teachers' participation in MIC PD and coaching activities related to their years of teaching experience and highest degree received?
3. How was teachers' participation in MIC PD and coaching activities related to their beliefs about their teaching effectiveness, math content knowledge, and instructional strategies?

In Chapter 5, differences in perceptions of the effects of the program between teachers with one year of participation in the program and two years of participation are explored. Again, this analysis is only appropriate for teachers in Cycle 1 schools.

Student Math Achievement and College Readiness

To assess the relationship of the program to student math achievement and college readiness, the evaluation team conducted Hierarchical Linear Modeling (HLM) analyses in order to take into consideration the nested nature of the data (i.e., students in classes in schools), the level of exposure to teachers participating in MIC, and MIC program type.[13] Analyses were conducted separately for high school and middle school students. Students in MIC schools who *never* had a MIC teacher were used as the comparison group. Statistical equating was done to ensure that the groups were equivalent on a number of student characteristics, including pretest TAKS-Math scores. Additional details about the HLM analyses are presented in Appendix N. Results of these analyses are presented in Chapters 6 and 7.

Student Course Completion Rates

To assess the impact of MIC on math course completion rates, logistic regression analyses were conducted of the likelihood of high school students successfully completing Algebra 1[14], Algebra 2, and Geometry. Data on course completion rates were only available for high school students in 2008–09 at the time this report was written, so only Cycle 1 grantees were included in these analyses. PEIMS data were provided by TEA detailing the courses taken by the students and whether or not the students received credit for each semester of the course. Since there were variations in the patterns of course completion among students (i.e., not all students took and received credit for both semesters of a year-long course in the same year), three groups of students were created: 1) Students who clearly completed the course by receiving credit across consecutive semesters, 2) Students who clearly failed to complete the course by repeatedly not receiving credit, and 3) Students who received credit in one semester and failed another, and thus, it was unclear whether they were considered to have completed the course. Results of this analysis are presented in Chapter 6.

[13] Hierarchical linear modeling (Raudenbush and Bryk, 2002), commonly known as HLM, is a multi-level model, which allowed researchers to isolate both student-level and school-level influences on TAKS performance. This approach takes the nested structure of the data into consideration, addressing the statistical problem of correlated errors, and thus allowing for conservative estimates of standard errors.

[14] Some students may have completed Algebra I in middle school, but that cannot be assessed in this analysis as TEA does not collect data on middle school course completion (only on high school course completion).

Dropout and Graduation Rates

Data on these outcomes were only available for the 2008–09 school year at the time this report was written, so Cycle 2 schools were not included in these analyses. For dropout and graduation, the rates for MIC Cycle 1 students were calculated and compared to those of similar students in Cycle 1 schools who did not have a MIC teacher. The results of these analyses are presented in Chapter 6.

Phase 3 Cost Effectiveness/Sustainability Data Analysis

The final measure of the success of the program is cost effectiveness, which is measured in this report as "cost per student." Additionally, whether or not the program is sustainable has an effect on the long term success of the program. In this report, the average allocated costs and average expenditures (through April 30, 2010), as well as ISAS expenditure data, were compared to determine the cost per student for Cycle 1 grantees and to see if Cycle 2 grantees were on track with their spending. The sustainability plans of the grantees and whether there were differences between the Cycle 1 and Cycle 2 schools are presented. The results of these analyses are presented in Chapter 8 and address the following research questions:

1. How were the grant funds allocated?
2. What was MIC's "cost per student" and how did the actual expenditures compare to the expected expenditures?
3. What were the factors contributing to and prohibiting the ongoing sustainability of MIC?
4. Were there differences in the sustainability plans of the Cycle 1 and Cycle 2 Grantees?

4. Implementation of MIC in Cycle 1 and Cycle 2 Schools

The project period for MIC Cycle 1 grants was from July 1, 2008 to May 31, 2010, and for MIC Cycle 2 grants it is from April 1, 2009 to May 31, 2011. The implementation of MIC grant projects is examined in this chapter using information from MIC grant applications, MIC stakeholder surveys, and grantee progress reports. This chapter also draws on PEIMS and AEIS data to provide information on characteristics of MIC grantees and participating campuses and educators. The findings used to answer the research questions related to the implementation of MIC projects (Evaluation Objective 1) are presented and discussed. Specifically, this chapter addresses the following research questions for MIC Cycle 1 and Cycle 2 grantees since the inception of MIC:

1. What were the characteristics of schools served through MIC?
2. What were the demographic and professional characteristics of teachers served through MIC?
3. How did schools/campuses implement MIC?
   a. What ASP was used?
   b. What types of activities were implemented (e.g., teacher training classes, teacher tutoring or mentoring, teacher incentives)?
4. What types of content were part of the teacher trainings? What types of activities were part of the teacher trainings?
5. What were the barriers to, and facilitators of, implementation of MIC?
6. Were there differences between the implementation of MIC in Cycle 1 and Cycle 2 grantees?
7. What were some "best practices" of successful implementers?

Characteristics of MIC Cycle 1 and Cycle 2 Grantee LEAs, Schools, and Participants

Characteristics of MIC Cycle 1 and Cycle 2 Grantee LEAs

The MIC pilot program includes 29 Cycle 1 grantees from 14 of the 20 ESC regions in Texas and 33 Cycle 2 grantees dispersed among 12 of the 20 ESC regions throughout Texas. A table in Appendix K lists the names of the 62 districts/charter schools (i.e., local education agencies, or LEAs) awarded a grant and tallies of the 241 campuses served by these grantees by campus type. As shown in Table 4.1, about half of the MIC grantee LEAs (53%) are rural, about one-third of the MIC grantee LEAs (31%) are suburban, 5% grantee LEAs are urban, and 11% grantee LEAs are charter schools.[15]

[15] All of the TEA community type categories were consolidated into three categories (urban, suburban, and rural). The rural category includes independent town, other central city, and non-metropolitan and rural areas; 2) the suburban category includes major metropolitan suburban and other central city suburban; 3) the urban category includes major urban, and 4) charter schools are treated separately because of their inherent differences, which follow standard practice by TEA for all charter schools regardless of their urbanicity.

Table 4.1

Community Type of MIC Cycle 1 and Cycle 2 Grantee LEAs

Community Type	Percentage of Cycle 1 Grantee LEAs (n=29)	Percentage of Cycle 2 Grantee LEAs (n=33)	Percentage of All Grantee LEAs (n=62)
Rural	52%	55%	53%
Suburban	28%	33%	31%
Urban	10%	0%	5%
Charters	10%	12%	11%

Source: PEIMS, 2007–08 and 2008–09

In order to facilitate a better understanding of the baseline characteristics of MIC grantee LEAs, statistics from the LEA-level AEIS data for MIC Cycle 1 and Cycle 2 grantees, as well as the corresponding baseline state averages, are listed in Table 4.2.[16] This information provides context for evaluation findings by contrasting the characteristics of the LEAs selected by TEA to implement MIC projects with all LEAs in Texas.

Some characteristics of the student populations of grantee LEAs varied from the characteristics of student populations in all LEAs in Texas. MIC grantee LEAs have a higher percentage of economically disadvantaged students (75% for Cycle 1 in 2007–08 and 71% for Cycle 2 in 2008–09) compared to state averages (55% for Cycle 1 in 2007–08 and 57% for Cycle 2 in 2008–09). Keep in mind that one of the eligibility criteria was for MIC grantee LEAs to have a high population of economically disadvantaged students (65% for Cycle 1 and 55% for Cycle 2). In addition, grantee LEAs were primarily composed of Hispanic students, with, on average, two-thirds of the student population (67%) in Cycle 1 grantee LEAs and 53% of students in Cycle 2 grantee LEAs identifying as Hispanic. These percentages of Hispanic students in MIC grantee LEAs are higher than the state averages (47% for Cycle 1 in 2007–08 and 48% for Cycle 2 in 2008–09). Cycle 1 grantee LEAs had slightly more students (20%) than Cycle 2 grantee LEAs (16%) enrolled in Limited English Proficiency (LEP) coursework, which is close to the state average for both Cycles. Furthermore, the average percentage of students enrolled in technology and vocational education per grantee LEA was 13% of the total population in Cycle 1 grantee LEAs and 21% in Cycle 2 grantee LEAs.

The dropout and graduation rates for MIC grantees in both Cycles were similar to the state averages. The average grantee LEA-level graduation rate was 73% and 78% for Cycle 1 and Cycle 2 grantee LEAs, compared to the state averages of 78% and 79%, respectively. This means that, in Cycle 1 grantee LEAs, 27% of the class of 2008 did not graduate during the 2007–08 academic year, while 22% of the class of 2009 in Cycle 2 grantee LEAs did not graduate during the 2008–09 school year. Lastly, the average grantee LEA-level annual dropout rate during the baseline academic year for students in Grades 9-12 in Cycle 1 and Cycle 2 were 4% and 3%, respectively (compared to the state average of 3% for each Cycle).

[16] 2007–08 and 2008–09 snapshot district level data. Retrieved online from here and here.

Table 4.2
Baseline Characteristics of MIC Grantee LEAs, 2007–08 (Cycle 1) and 2008–09 (Cycle 2)

LEA Characteristics	Cycle 1 Average Baseline Percentage (2007–08)	State Average (2007–08)	Cycle 2 Average Baseline Percentage (2008–09)	State Average (2008–09)
Economically Disadvantaged	75%	55%	71%	57%
White	18%	35%	29%	34%
African American	14%	14%	17%	14%
Hispanic	67%	47%	53%	48%
Enrolled in Limited English Proficiency	20%	17%	16%	17%
Enrolled in Career & Technology Education	13%	21%	21%	21%
Dropout Rate (Grades 7-8)	<1%	<1%	<1%	<1%
Dropout Rate (Grades 9-12)	4%	3%	3%	3%
Graduation Rate	73%	78%	78%	79%

Source: AEIS Data (Cycle 1: 2007–08; Cycle 2: 2008–09)

Characteristics of Schools Served by MIC Cycle 1 and Cycle 2 Grantees

Tables with baseline school-level characteristics, similar to those included for the LEA-level characteristics, are included in Appendix L for MIC Cycle 1 and Cycle 2 grantees. This section includes the accountability ratings of MIC Cycle 1 and Cycle 2 schools at baseline to illustrate the characteristics of the schools prior to the implementation of MIC. This information provides context for the evaluation findings because it tells more about the selection of participating campuses by the MIC grantees.

MIC Cycle 1 grantees selected a higher percentage of "Academically Acceptable" and "Academically Unacceptable" schools to participate in their MIC grant projects, and a lower percentage of schools receiving the "Other" accountability rating. There were 119 Cycle 1 grantee schools participating in MIC. The 2007–08 AEIS records, listed in Table 4.3, indicate that 85% of the participating MIC schools were rated "Academically Acceptable," while 6% had an "Academically Unacceptable" accountability rating.[17] Percentages were similar across grade level categories, but when comparing all Cycle 1 schools to the state average in each rating category, a larger percentage of MIC Cycle 1 schools were "Academically Unacceptable" and a smaller percentage were "Academically Acceptable." This is because a much larger percentage of schools statewide are in the "Other" accountability rating category, which includes Exemplary and other ratings (i.e., Exemplary, Recognized, or Not Rated).

[17] The state accountability system has ratings for every campus and district in the Texas public education system each year. In most cases the system assigns one of four rating labels—ranging from lowest to highest—Academically Unacceptable, Academically Acceptable, Recognized, and Exemplary. To determine the rating label, the system evaluates indicators of performance, including assessment results on the state standardized assessment instruments as well as longitudinal completion rates and annual dropout rates. Generally, campuses and districts earn ratings by having performance that meets absolute standards or by demonstrating sufficient improvement toward the standard. The state accountability system can be found online here.

Table 4.3

Accountability Rating of MIC Cycle 1 Grantee Participating Schools by School Level, 2007–08

Accountability Rating	Percentage of Middle Schools (n=44)	Percentage of High Schools (n=64)	Percentage of Multi-Grade Schools (n=9)	Total Percentage of All Schools (n=117)	State Average
Academically Unacceptable	4%	8%	0%	6%	3%
Academically Acceptable	80%	89%	89%	85%	67%
Other	16%	3%	11%	9%	30%

Source: Academic Excellence Indicator Systems (AEIS), 2007–08
Note: TEA divides campuses into levels according to the range of grades offered. More details can be found online here.
Note: Data for academic acceptability were not available for two Cycle 1 schools.

Similar to MIC Cycle 1 grantees, MIC Cycle 2 grantees also selected a higher percentage of "Academically Acceptable" and "Academically Unacceptable" schools, and a lower percentage of schools receiving the "Other" accountability rating to participate in their MIC grant projects. As of April 2010, there were 122 Cycle 2 grantee schools participating in MIC. The 2008–09 AEIS records, listed in Table 4.4, indicated that 69% of the participating MIC schools were rated "Academically Acceptable" and 11% had an "Academically Unacceptable" accountability rating. Percentages were similar across middle schools and high schools, whereas multi-grade-level schools were more likely to have an "Other" rating (i.e., Exemplary, Recognized, or Not Rated). When comparing all Cycle 2 schools to the state average in each rating category, a larger percentage of MIC Cycle 2 schools were "Academically Unacceptable." A larger percentage of Cycle 2 schools were Academically Acceptable than the state average because a much larger percentage of schools statewide are in the "Other" accountability rating category, which includes Exemplary and other high ratings Exemplary, Recognized, or Not Rated).

Table 4.4

Accountability Rating of MIC Cycle 2 Grantee Participating Schools by School Level,[a] 2008–09

Accountability Rating	Percentage of Middle Schools (n=53)	Percentage of High Schools (n=51)	Percentage of Multi-Grade Schools (n=16)	Total Percentage of All Schools (n=120)[b]	State Average
Academically Unacceptable	15%	10%	0%	11%	6%
Academically Acceptable	76%	74%	31%	69%	46%
Other	9%	16%	69%	20%	48%

Source: Academic Excellence Indicator Systems (AEIS), 2008–09
[a]TEA divides campuses into levels according to the range of grades offered. More details can be found online here.
[b]Data for academic acceptability were not available for two Cycle 2 schools.

Characteristics of MIC Participants

Data were available for MIC participants across Cycle 1 and Cycle 2. MIC participants had three roles in the MIC activities, which included receiving coaching, providing coaching, and both receiving and providing coaching. Furthermore, Cycle 1 participants were divided into three groups for analysis based on grant cycle and their length of participation in the program. One group is those participants who were involved in MIC for two years (dual-year participants), while the other two groups were those participants who were involved for only one year (single-year participants)—one group in 2008–09 and one group in 2009–10. Since data are only available for one year for MIC Cycle 2 participants, there is only one group of Cycle 2 participants—single-year participants who participated in 2009–10. When reporting demographic characteristics of these participants, Cycle 1 dual-year participants and Cycle 2 single-year participants are included in Table 4.5 using 2009–10 data, and Cycle 1 single-year participants are included in Table 4.6 using 2008–09 data and 2009–10 data. There were a total of 1,281 participants included in these two tables in MIC Cycle 1, and 737 participants in MIC Cycle 2 (2,018 participants collectively across both Cycles).

Cycle 1 Dual-Year and Cycle 2 Single-Year Participants, 2009–10

In 2009–10, grantees indicated the role of participants in MIC by saying whether participants were receiving coaching, providing coaching, or both receiving and providing coaching. Within MIC Cycle 1 grantees, 534 participants first engaged in MIC during the 2008–09 school year and continued their participation during the 2009–10 school year. These are the Cycle 1 dual-year participants. In addition, there were 737 Cycle 2 participants who engaged in MIC during the 2009–10 school year. These are the Cycle 2 single-year participants.

Participants who received coaching, but did not provide coaching (typically teachers, though some administrators and other school staff participated in MIC program activities) represent the largest group of participants, and were mostly female (65% and 63% for Cycle 1 and Cycle 2, respectively). The largest percentage of participants receiving coaching were White (52% for Cycle 1, 61% for Cycle 2), followed by Hispanic (34% for Cycle 1, 20% for Cycle 2), with smaller percentages of African American (6% in Cycle 1, 10% in Cycle 2) and Asian (6% in Cycle 1, 2% in Cycle 2) participants. The majority of the participants receiving coaching had bachelor's degrees (80% in Cycle 1, 82% in Cycle 2). A smaller proportion had master's degrees (19% in Cycle 1, 17% in Cycle 2), and even fewer had a doctorate degree (1% in both Cycles 1 and 2). The majority of participants were certified in math (80% in Cycle 1, 74% in Cycle 2), while about one-fourth had a general elementary certification.

MIC participants who both provided and received coaching (Table 4.5), were the second largest group of participants. In 2009–10 in both Cycles 1 and 2, there was a slightly larger percentage of participants who took on the dual role of coach and "teacher" rather than acting solely as a coach. Participants who provided coaching or both provided and received coaching generally had more advanced degrees than those who only received coaching. The majority identified as White or Hispanic, with smaller percentages identifying as African American or Asian. Moreover, the majority of these participants had bachelor's degrees (73% and 72%, respectively for Cycle 1 and Cycle 2 grantees). A smaller proportion had master's degrees (23% and 26%, respectively), and even fewer had doctorate degrees (3% and 1%, respectively). The majority of these participants were certified in math (82% and 62%, respectively, the largest difference between the two cycles), while fewer held a general elementary certification (22% and 27%, respectively).

MIC participants who exclusively provided coaching were the smallest group among all the participants. Among the Cycle 1, dual year participants, only 26 (5%) provided coaching, but did not receive coaching (Table 4.5). Only 16 (2%) of the Cycle 2 participants exclusively provided coaching. As with the participants who both provided and received coaching, those participants who exclusively provided coaching primarily identified as White or Hispanic. The Cycle 1 dual-year participants who exclusively provided coaching had similar levels of education to Cycle 1 participants who both received and provided coaching. The majority of these participants had bachelor's degrees (73%) with a smaller proportion having master's degrees (23%), and doctorate degrees (4%). The Cycle 2 participants who exclusively provided coaching were the most highly educated of all the groups. Half of these Cycle 2 participants had bachelor's degrees (50%), and about a third had master's degrees (30%). This group of participants had the highest percentage with doctorate degrees (10%), though again since Cycle 2 participants who exclusively provided coaching were a small percentage of all MIC participants, these statistics should be interpreted with caution.

Table 4.5

Demographic Characteristics of MIC Participants: Cycle 1 Dual-Year Participants and Cycle 2 Single-Year Participants, 2009–10

Demographic Characteristic	Percentage of Cycle 1 Dual-Year Participants Receiving Coaching (N = 436)	Percentage of Cycle 1 Dual-Year Participants Providing Coaching (N = 26)	Percentage of Cycle 1 Dual-Year Participants Receiving and Providing Coaching (N = 72)	Percentage of Cycle 2 Single-Year Participants Receiving Coaching (N = 631)	Percentage of Cycle 2 Single-Year Participants Providing Coaching (N= 16)	Percentage of Cycle 2 Single-Year Participants Receiving and Providing Coaching (N= 90)
Female	65%	65%	55%	63%	100%	71%
Male	35%	35%	45%	38%	0%	29%
White	52%	19%	37%	61%	70%	54%
African American	6%	12%	13%	10%	0%	8%
Hispanic	34%	62%	28%	20%	30%	37%
Asian	6%	8%	10%	2%	0%	0%
No Bachelors	<1%	0%	1%	1%	10%	0%
Bachelors	80%	73%	73%	82%	50%	72%
Masters	19%	23%	23%	17%	30%	26%
Doctorate	1%	4%	3%	1%	10%	1%
Math Certification	80%	100%	82%	74%	-- [a]	62%
General Elementary Certification	30%	0%	22%	24%	--	27%

Source: PEIMS, 2009–10; Grantee Participant Uploads, 2008–09 (Cycle 1) 2009–10 (both Cycles)
Note: The denominator used to calculate percentages represents the number of cases with valid data in a particular subgroup, and, as such, exclude cases with missing data for that variable.
Note: Percentages in columns within each demographic characteristic category (e.g., gender) may not add to 100% due to rounding.
[a] The dash (--) is used when certification data were not available for subgroups.

Cycle 1 Single-Year Participants, 2008–09

Though a percentage of Cycle 1 participants began participating in MIC in 2008–09 and continued through 2009–10 (Table 4.5), another group began and ended their participation in 2008–09 (152 participants), and another group began in 2009–10 (595 participants) (Table 4.6). These Cycle 1 single-year MIC participants were similar to the other cohorts of participants (Cycle 1 dual-year and Cycle 2 single-year participants) described earlier. When compared to the appropriate referent groups (based on their role in MIC) of Cycle 1 dual-year and Cycle 2 single-year participants, the Cycle 1 single-year MIC participants had similar levels of education. However, a smaller percentage of the Cycle 1 single-year participants receiving coaching were certified in math compared to the Cycle 1 dual-year participants and Cycle 2 single-year participants.

The largest percentage of Cycle 1, single-year MIC participants receiving coaching only were White (49% for 2008–09, 37% for 2009–10) or Hispanic (30% for 2008–09, 44% for 2009–10), with smaller percentages of African American (11% in 2008–09, 10% in 2009–10) and Asian (5% in 2008–09, 6% in 2009–10) participants. The majority of the participants receiving coaching only had bachelor's degrees (85% in 2008–09, 75% in 2009–10). A smaller proportion had master's degrees (15% in 2008–09, 22% in 2009–10), and even fewer had doctorate degrees (0% in 2008–09 and <1% in 2009–10). The majority of participants were certified in math (60% in 2008–09, 74% in 2009–10), while approximately 30% held a general elementary certification.

Other participants exclusively provided coaching while others both provided and received coaching. A slightly larger proportion of Cycle 1 single-year participants in 2009–10 (i.e., Cycle 1 teachers who began their participation in the last year of the grant) solely provided coaching rather than both received and provided coaching. The majority of participants who exclusively provided coaching or both provided and received coaching identified as White (63% of exclusively coaches, 47% of participants receiving and providing coaching), followed by Hispanic (38% of only coaches, 29% of participants receiving and providing coaching), with smaller percentages identifying as African American or Asian. Approximately two-thirds of participants who only coached or both received and provided coaching had bachelor's degrees (63% of exclusively coaches, 65% of participants receiving and providing coaching), and approximately one-third had master's degrees (38% of exclusively coaches, 33% of participants receiving and providing coaching). The majority of participants receiving and providing coaching were certified in math (67%), while fewer held a general elementary certification (22%). Certification data were not available for the participants who exclusively provided coaching.

Table 4.6

Demographic Characteristics of MIC Participants: Cycle 1, Single-Year Participants, 2008–09 and 2009–10 (respectively)

Demographic Characteristic	Percentage of Cycle 1 Single-Year Participants Receiving Coaching in 2008–09 Only (N = 152)	Percentage of Cycle 1 Single-Year Participants Receiving Coaching in 2009–10 Only (N = 547)	Percentage of Cycle 1 Single-Year Participants Providing Coaching in 2009–10 Only (N = 30)	Percentage of Cycle 1 Single-Year Participants Receiving and Providing Coaching in 2009–10 Only (N = 18)
Female	56%	59%	63%	53%
Male	44%	41%	38%	47%
White	49%	37%	63%	47%
African American	11%	10%	0%	18%
Hispanic	30%	44%	38%	29%
Asian	5%	6%	0%	6%
No Bachelors	<1%	1%	0%	0%
Bachelors	85%	75%	63%	65%
Masters	15%	22%	38%	33%
Doctorate	0%	<1%	0%	0%
Math Certification	60%	74%	-- [a]	67%
General Elementary Certification	27%	33%	--	22%

Source: Public Education Information Management Systems (PEIMS), 2008–09 & 2009–10; MIC Grantee Participant Uploads
Note: In 2008–09, data were requested only for participants who received coaching, and therefore demographic information is not available for participants who served in the role of coach.
Note: Percentages in columns within each demographic characteristic category (e.g., gender) may not add to 100% due to rounding.
[a] Certification data were not available for this subgroup.

Implementation of MIC Grantee Projects

MIC Cycle 1 and Cycle 2 Grantee Partnerships with ASPs

Each grantee selected an ASP from a list compiled by TEA to provide PD and coaching services to their targeted math teachers. Each of the 62 MIC grantees worked with at least one of 19 ASPs.[18] In most cases, grantees partnered with an ESC as their ASP, but some grantees selected a university as their ASP. Table 4.7 lists the percentages of grantees working with each ASP, based on data collected from grantee applications and progress reports. None of the Cycle 1 grantees switched ASPs during the two-year grant project period.

[18] One Cycle 1 grantee had two ASPs, one for the high school and one for the middle school. In this case, Milby HS worked with the Rice University Mathematics Department, and Excellence Academy MS used ESC 4.

Table 4.7

Percentages of MIC Grantees Working with Approved Service Providers

Approved Service Provider	Percentage of Cycle 1 Grantees (N=29)	Percentage of Cycle 2 Grantees (N=32)	Percentage of All Grantees (N=61)
ESC 1	21%	13%	16%
ESC 12	14%	16%	15%
ESC 4	3%	19%	11%
ESC 20	14%	3%	8%
ESC 7	3%	13%	8%
ESC 2	7%	6%	7%
Rice University Mathematics Department	10%	3%	7%
ESC 13	3%	6%	5%
Texas A&M University - College Station	3%	6%	5%
ESC 17	3%	3%	3%
Texas State University	3%	3%	3%
East Texas STEM Center (University of Texas at Tyler)	0%	3%	2%
ESC 15	3%	0%	2%
ESC 3	3%	0%	2%
ESC 5	3%	0%	2%
ESC 8	0%	3%	2%
Lubbock Christian University	0%	3%	2%
Texas A&M University – Corpus Christi	3%	0%	2%

Source: MIC Grantee Applications; MIC Cycle 1 and Cycle 2 Progress Reports, 2010
NOTE: Percentages in each column do not necessarily add up to 100% due to rounding. N is the number of grantees for whom data was received. One Cycle 2 grantee, Longview ISD, did not implement MIC.

Teachers' Level of Participation in MIC Activities

Since MIC programs included the provision of PD activities (e.g., training) and coaching activities (e.g., mentoring, classroom observation), teacher participation levels in these activities were tracked separately. PD activities included training on math concepts, instructional strategies, and lesson planning, while coaching activities were described as pre-teaching conferences, in-class demonstrations, conferences with teachers after observed classroom lessons, modeling, team-teaching, and assisting teachers in assessing student work (TEA, 2008c). It should be noted that it may have been unclear or difficult for all grantees to clearly separate these activities, so these results should be interpreted with some caution. MIC grantees reported the total number of hours participating teachers spent in PD activities and coaching activities as part of their program during the fall and spring semesters of the 2008–09 school year for Cycle 1 grantees and during the fall and spring semesters of the 2009–10 school year for Cycle 1 and Cycle 2 grantees. Again, these data are presented by the various cohorts of MIC participants, including dual-year participants and single-year participants.

In the following section, Tables 4.8 through 4.10 present descriptive data for each of the three cohorts of teachers. Descriptively, common across all three cohorts is that teachers spent more time in PD activities than they did in coaching activities through MIC.

Cycle 1 Dual-Year Participants, 2009–10

Cycle 1 grantees began MIC program implementation in 2008–09, and then continued for a second year in 2009–10. A total of 534 Cycle 1 participants who were present in 2008–09 also participated in 2009–10. Program participants either participated in MIC by receiving coaching, providing coaching, or both receiving and providing coaching. Table 4.8 provides an overview of the total number of hours Cycle 1 dual year participants spent in PD activities and coaching activities as part of MIC during the fall and spring semesters of the 2009–10 school year.

Over one half of Cycle 1 dual-year participants who only received coaching (55%) attended 51 or more hours of PD activities during the 2009–10 school year, while 21% of them spent 20 hours or fewer in PD activities. In terms of the number of hours teachers who received coaching spent in MIC coaching activities, 42% of teachers spent between 1 and 10 hours in MIC coaching. Few teachers (16%) participated in MIC coaching activities for more than 30 hours during the 2009–10 school year.

Participants who provided coaching only spent a considerable amount of time in both PD activities and MIC coaching activities. Over three-quarters of participants who solely provided coaching spent 51 hours or more in both PD activities and MIC coaching activities (77%). No coaches spent 20 hours or fewer in PD activities, and only 8% spent 20 hours or fewer in MIC coaching activities.

Participants who both received and provided coaching spent a considerable amount of time in PD activities. A smaller percentage of them spent 51 or more hours in coaching (24%) as compared to those participants that just provided coaching (77%). Approximately three-quarters of participants who both received and provided coaching spent 51 hours or more in PD activities (74%), while a smaller percentage (24%) spent 51 hours or more in MIC coaching activities. Over two-thirds of these participants spent 21 hours or more in MIC coaching activities (68%).

Table 4.8

Number of Hours Participants Spent in PD and MIC Coaching Activities, Cycle 1, Dual-Year Participants, 2009–10

Hours	Participants Receiving Coaching (N = 436)				Participants Providing Coaching (N = 26)				Participants Receiving and Providing Coaching (N = 72)			
	PD		Coaching		PD		Coaching		PD		Coaching	
	n	%	n	%	n	%	n	%	n	%	n	%
0 hours	8	2%	10	2%	0	0%	0	0%	0	0%	0	0%
1-10 hours	20	5%	181	42%	0	0%	0	0%	1	1%	13	18%
11-20 hours	60	14%	31	7%	0	0%	2	8%	2	3%	10	14%
21-30 hours	34	8%	146	34%	1	4%	4	15%	3	4%	16	22%
31-40 hours	39	9%	12	3%	5	19%	0	0%	6	8%	8	11%
41-50 hours	34	8%	21	5%	0	0%	0	0%	7	10%	8	11%
51+ hours	241	55%	35	8%	20	77%	20	77%	53	74%	17	24%
Total	436	100%	436	100%	26	100%	26	100%	72	100%	72	100%

Source: Teacher Participant Data from Grantee Uploads, Cycle 1, Fall 2009/Spring 2010
Note: Percentages in each column may not sum to 100% due to rounding.

Cycle 1 Single-Year Participants, 2008–09 and 2009–10

There were 152 Cycle 1 teachers who participated in MIC Cycle 1 grant activities during the 2008–09 school year, but who did not continue their participation into the second year of the grant (2009–10). Data were not available on reasons why these participants did not continue with the grant. Data were not requested for participants providing coaching in 2008–09, so Table 4.9 displays hours of participation only for those who received coaching. Single-year participants receiving coaching tended to participate in more hours of PD activities than they did in MIC coaching activities. Approximately one-quarter of participants spent 51 hours or more in PD activities (26%), while only 7% of participants spent 51 hours or more in MIC coaching activities. These percentages are very small compared to other cohorts of participants, which may help explain why participants did not continue in the program—it is likely that they participated in one-time activities (e.g., a three-hour workshop) offered through the MIC grant. Participants most frequently spent 1 to 10 hours in MIC coaching (43%).

Table 4.9

Number of Hours Participants Spent in PD and MIC Coaching Activities, Cycle 1, Single-Year Participants, 2008–09

Hours	Participants Receiving Coaching (N = 152)			
	PD		Coaching	
	n	%	n	%
0 hours	10	7%	9	6%
1-10 hours	10	7%	65	43%
11-20 hours	23	15%	41	27%
21-30 hours	36	24%	22	15%
31-40 hours	13	9%	4	3%
41-50 hours	21	14%	0	0%
51+ hours	39	26%	11	7%
Total	152	100%	152	100%

Source: Teacher Participant Data from Grantee Uploads, Cycle 1, Fall 2008/Spring 2009
Note: Percentages in each column may not sum to 100% due to rounding.

A second cohort of Cycle 1 teachers and coaches (N=595) began their participation in MIC during the 2009–10 school year. Table 4.10 provides an overview of the total number of hours Cycle 1 single-year participants spent in PD activities and coaching activities as part of MIC during the fall and spring semesters of the 2009–10 school year. Approximately one third of those receiving coaching only (32%) attended 51 or more hours of PD activities during the 2009–10 school year, while 4% of them did not spend any time in PD activities at all. In terms of the number of hours teachers who received coaching spent in MIC coaching activities, 30% of teachers spent between 1 and 10 hours in MIC coaching, while 36% participated in MIC coaching activities for more than 30 hours during the 2009–10 school year.

Participants who solely provided coaching spent a considerable amount of time in MIC coaching activities, with 100% of participants spending 51 hours or more in MIC coaching. A smaller percentage spent 51 hours or more in PD activities (13%). The largest percentage of coaches spent 21–30 hours in PD activities (87%).

Participants who both received and provided coaching spent more time in PD activities and less time in MIC coaching activities than did participants who solely provided coaching. Approximately two-thirds of participants who both received and provided coaching spent 51 hours or more in PD activities (67%), while one-third (33%) spent 51 hours or more in MIC coaching activities.

Table 4.10

Number of Hours Participants Spent in PD and MIC Coaching Activities, Cycle 1, Single-Year Participants, 2009–10

Hours	Participants Receiving Coaching (N = 631)				Participants Providing Coaching (N= 16)				Participants Receiving and Providing Coaching (N= 90)			
	PD		Coaching		PD		Coaching		PD		Coaching	
	n	%	n	%	n	%	n	%	n	%	n	%
0 hours	24	4%	13	2%	0	0%	0	0%	0	0%	1	6%
1-10 hours	49	9%	163	30%	0	0%	0	0%	1	6%	2	11%
11-20 hours	88	16%	66	12%	0	0%	0	0%	1	6%	2	11%
21-30 hours	109	20%	106	19%	26	87%	0	0%	2	11%	1	6%
31-40 hours	49	9%	79	14%	0	0%	0	0%	1	6%	3	17%
41-50 hours	54	10%	27	5%	0	0%	0	0%	1	6%	3	17%
51+ hours	174	32%	93	17%	4	13%	30	100%	12	67%	6	33%
Total	547	100%	547	100%	30	100%	30	100%	18	100%	18	100%

Source: Teacher Participant Data from Grantee Uploads, Cycle 1, Fall 2009/Spring 2010
Note: Percentages in each column may not sum to 100% due to rounding.

Cycle 2 Participants, 2009–10

Cycle 2 participants began their first year of MIC program implementation during the 2009–10 school year. Table 4.11 provides an overview of the total number of hours Cycle 2 participants spent in PD activities and coaching activities as part of MIC during the 2009–10 school year. Approximately one-quarter of those receiving coaching only (28%) attended 51 or more hours of PD activities during the 2009–10 school year, while 7% of them did not spend any time in PD activities at all. In terms of the number of hours teachers spent in MIC coaching activities, 39% of teachers receiving coaching spent between 1 and 10 hours in MIC coaching, while 22% participated in MIC coaching activities for more than 30 hours during the 2009–10 school year. Cycle 2 participants receiving coaching appear to be participating in more PD and coaching activities compared to Cycle 1 single-year participants receiving coaching.

Participants who provided coaching only spent a considerable amount of time in PD, with over two-thirds of participants who solely provided coaching spending 51 hours or more in PD activities (69%). The largest percentage of coaches spent 51 hours or more in MIC coaching activities (44%), followed by 21–30 hours (25%). Cycle 2 coaches (44% spending 51+ hours) spent less time in MIC coaching activities than did Cycle 1 coaches in their second year of implementation (77% spending 51+ hours). A possible explanation is that MIC coaches spend more time in the first year of implementation establishing and perfecting the program structure and content, and are better able in the second year to dedicate time to instructional coaching hours.

Participants who both received and provided coaching differed from participants who solely provided coaching in the amounts of time they spent in PD activities and MIC coaching activities. Approximately one half of participants who both received and provided coaching spent 51 hours or more in PD activities (48%), while a smaller percentage (28%) spent 51 hours or more in MIC coaching activities. Approximately one-third of these participants spent 1–10 hours in MIC coaching during the 2009–10 school year (34%).

Table 4.11

Number of Hours Participants Spent in PD and MIC Coaching Activities, Cycle 2 Participants, 2009–10

Hours	Participants Receiving Coaching (N = 631)				Participants Providing Coaching (N= 16)				Participants Receiving and Providing Coaching (N= 90)			
	PD		Coaching		PD		Coaching		PD		Coaching	
	n	%	n	%	n	%	n	%	n	%	n	%
0 hours	42	7%	72	11%	0	0%	2	13%	2	2%	7	8%
1-10 hours	116	18%	143	39%	1	6%	1	6%	8	9%	31	34%
11-20 hours	68	11%	105	17%	2	13%	1	6%	7	8%	7	8%
21-30 hours	71	11%	77	12%	0	0%	4	25%	22	24%	5	6%
31-40 hours	82	13%	23	4%	1	6%	1	6%	2	2%	8	9%
41-50 hours	73	12%	50	8%	1	6%	0	0%	6	7%	7	8%
51+ hours	179	28%	61	10%	11	69%	7	44%	43	48%	25	28%
Total	631	100%	631	100%	16	100%	16	100%	90	100%	90	100%

Source: Teacher Participant Data from Grantee Uploads, Cycle 2, Fall 2009/Spring 2010
Note: Percentages in each column may not sum to 100% due to rounding.

MIC Program Types

The evaluation team developed a typology of programs[19] in order to develop a "program type" variable that could be used in analyzing outcome data. The grantees developed specific program structures and roles for MIC participants, which generally take the form of one of the four program models listed in Figure 4.1.

[19] This MIC program typology was developed by evaluators using data from the MIC Cycle 1 grant applications and implementation interviews with MIC Cycle 1 grant coordinators and ASP representatives. Program types were organized based on which entity provided coaches to the district. This classification was created by evaluators as a way to organize MIC projects into meaningful groups, so grantees were not aware of these program types when developing their programs. Grantees were allowed to propose any type of program they wanted as long as it met the program guidelines.

Figure 4.1

MIC Program Typology

1. **ASP-to-District MIC Program Type.** The ASP provides coaches to the district, and these coaches visit each campus, meet with the teachers, observe the teachers, and model effective teaching strategies.
2. **District-to-Teachers MIC Program Type.** District personnel who already serve as coaches or were hired as mathematics instructional coaches are trained by the ASP on coaching methods, and then the coaches work with the teachers.
3. **Peer-to-Peer MIC Program Type.** Some grantees use a peer-to-peer coaching approach where veteran teachers are selected to coach struggling or novice teachers. The peer teacher coaches are trained in coaching practices through professional development from the ASP. One peer coaching model designates pairs to coach each other where both teachers coach another teacher and are coached by that teacher.
4. **Other MIC Program Type.** These grantees implemented programs that were hybrids of the first three program types or developed completely new approaches.

Source: Based on authors' analysis of grantee applications, grantee action plans, progress report data, and implementation interviews.

A breakdown of program types by grantee cycle is presented in Table 4.12. Cycle 1 had higher percentages of the first three program types than Cycle 2, while Cycle 2 had a higher percentage of programs that were classified as "Other" than Cycle 1. One of the most common program types, used by 23 of the grantees (37%), was the ASP-to-District program type where the ASP provides coaches to the district and then the coaches meet with the teachers. About one-third of the grantees (21 grantees, or 34%) implemented MIC programs that were either hybrids of the three program types or completely unique programs. Other program types included those where district personnel were trained by the ASP to provide coaching to the teachers (10 grantees, or 16%), or where veteran teachers were selected and trained by the ASP to provide coaching to struggling or novice teachers (8 grantees, or 13%).

Table 4.12

Percentages of MIC Grantees by Program Type, Cycle 1 and Cycle 2

Program Type	MIC Cycle 1 Grantees		MIC Cycle 2 Grantees		All MIC Grantees	
	N	Percentage	N	Percentage	N	Percentage
ASP-to-District MIC Program Type	11	38%	12	36%	23	37%
District-to-Teachers MIC Program Type	5	17%	5	15%	10	16%
Peer-to-Peer MIC Program Type	4	14%	4	12%	8	13%
Other MIC Program Type	9	31%	12	36%	21	34%

Source: Authors' Analysis of MIC Cycle 1 and Cycle 2 Grant Applications
Note: Percentages in each column may not sum to 100% due to rounding.

MIC Program Activities

Though the MIC grantees had some leeway in how their programs were delivered, there were certain topic areas and program activities that were considered essential to the programs. As indicated in Chapter 2, the MIC grantees were required to institute professional development (PD) and coaching activities for teachers. Specifically, they were also expected to implement the following activities related to the identified critical success factors:

- Identify areas of teacher and student weakness and strength
- Schedule PD sessions
- Schedule opportunities for implementation
- Conduct observations
- Provide feedback/coaching to participants
- Provide means of collecting assessment data (separate from TAKS)
- Provide useable and actionable data
- Provide training on disaggregation of data
- Provide follow up for actions based on data analysis

This section presents the survey results detailing the extent to which stakeholders perceived these activities to have been implemented in their programs. Responses from both Cycle 1 and Cycle 2 stakeholders are presented side by side for comparison purposes.

Table 4.13 displays teachers' reports of the level of implementation/development of key MIC program activities at their schools. Teachers across both Cycles 1 and 2 in 2009–10 reported a fairly high level of implementation, with each of the key program activities rated as partially or fully implemented by over 70% of combined Cycle 1 and Cycle 2 teachers. This was similar to feedback received from Cycle 1 participants after the first year of grant implementation in 2008–09. At least 90% of Cycle 1 and Cycle 2 teachers rated any given program component as at least in development. This suggests that even for schools that have not yet reached full implementation of certain key activities, they have likely invested time and developed plans to eventually reach full implementation. The provision of a means for collecting student assessment and/or coursework data was the MIC activity most often rated as fully implemented (49% of all participants responding to the survey), suggesting that student assessment and data collection are prioritized at participating schools. Cycle 1 teachers were more likely than Cycle 2 teachers to rate an activity as fully implemented, while Cycle 2 teachers were more likely that Cycle 1 teachers to rate an activity as in development. For example, 44% of the Cycle 1 participants who responded to the survey indicated that the creation of math intervention plans was fully implemented compared to 30% of the Cycle 2 respondents. Conversely, 24% of the Cycle 2 respondents indicated that the creation of math intervention plans was in development compared to 16% of Cycle 1 respondents. Respondents answered in similar ways for when asked about the level of implementation of: a provision of means for collecting student assessment and/ or coursework data, a provision of training on analyzing student coursework and/or assessment data, and the strengthening of core instructional programs (Table 4.13). This is not surprising, as Cycle 1 schools were in their second year of MIC program implementation, and therefore had more time to develop and more experience in implementing these program components than did Cycle 2 schools.

Table 4.13

Teacher Report of the Level of Implementation/Development of Key MIC Program Activities, 2009–10

Item	Cycle	Not Planned	In Development	Partially Implemented	Fully Implemented	Total
Provision of a means for collecting student assessment and/or coursework data	Cycle 1	19 (6%)	45 (15%)	78 (25%)	166 (54%)	**308 (100%)**
	Cycle 2	28 (10%)	55 (19%)	80 (28%)	122 (43%)	**285 (100%)**
	Combined	47 (8%)	100 (17%)	158 (27%)	288 (49%)	**593 (100%)**
Creation of math intervention plans	Cycle 1	18 (6%)	50 (16%)	106 (34%)	136 (44%)	**310 (100%)**
	Cycle 2	26 (9%)	67 (24%)	102 (37%)	84 (30%)	**279 (100%)**
	Combined	44 (8%)	117 (20%)	208 (35%)	220 (37%)	**589 (100%)**
Provision of training on analyzing student coursework and/or assessment data	Cycle 1	27 (9%)	52 (17%)	105 (34%)	126 (41%)	**310 (100%)**
	Cycle 2	26 (9%)	64 (23%)	100 (35%)	94 (33%)	**284 (100%)**
	Combined	53 (9%)	116 (20%)	205 (35%)	220 (37%)	**594 (100%)**
Strengthening of core instructional programs	Cycle 1	21 (7%)	50 (16%)	106 (35%)	129 (42%)	**306 (100%)**
	Cycle 2	15 (5%)	61 (22%)	114 (41%)	90 (32%)	**280 (100%)**
	Combined	36 (6%)	111 (19%)	220 (38%)	219 (37%)	**586 (100%)**

Source: MIC Pilot Program, 2009–10 Teacher Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Table 4.14 displays teacher ratings of the degree to which they received key MIC activities from coaches, specifically observations of them teaching a classroom lesson and receipt of feedback on their strengths and weaknesses. Overall, 69% of respondents indicated that they received observations from coaches "some", "quite a bit," or "a great deal", while 73% of respondents indicated that they received "some", "quite a bit" or "a great deal" of feedback from coaches. Percentages across response categories are very similar for teacher reports of receiving observations and receiving feedback. These two activities are likely directly linked, as coaches who conducted observations were also able to provide feedback to teachers regarding their strengths and weaknesses. Cycle 1 and Cycle 2 teachers had similar patterns across response categories.

Table 4.14

Teacher Ratings of the Degree to Which They Received Key MIC Activities from Coaches, 2009–10

Item	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
As part of MIC, to what extent were you observed by a coach while you were teaching a lesson	Cycle 1	48 (18%)	43 (16%)	76 (28%)	71 (26%)	35 (13%)
	Cycle 2	40 (15%)	36 (13%)	91 (34%)	66 (24%)	37 (14%)
	Combined	88 (16%)	79 (15%)	167 (31%)	137 (25%)	72 (13%)
As part of MIC, to what extent did you receive feedback from a coach on your strengths and weaknesses	Cycle 1	45 (17%)	31 (12%)	79 (29%)	72 (27%)	42 (16%)
	Cycle 2	38 (14%)	28 (10%)	89 (33%)	74 (27%)	41 (15%)
	Combined	83 (15%)	59 (11%)	168 (31%)	146 (27%)	83 (15%)

Source: MIC Pilot Program 2009–10 Teacher Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Table 4.15 displays the math coaching strategies coaches report using with teachers as part of MIC. The highest percentage of coaches report advising on curriculum and/or classroom procedures (73%), observing classroom lessons (70%), and conferencing with teachers after observed lessons (66%). Coach reports of conducting classroom observations and providing feedback align with the teacher reports of receiving these types of supports, as over two thirds of both coaches and teachers report engaging in these activities. The lowest percentage of coaches (46%) report using pre-teaching conferences, in-class demonstrations, team-teaching/co-teaching, and assisting teachers in how to assess student work. These reports suggest that coaches more often assumed an expert consultant role (i.e., providing feedback on instructional materials and technique) than an in-class support role (i.e., in-class demonstrations and team-teaching). Descriptively, Cycle 2 coaches were more likely to conduct in-class demonstrations, engage in team-teaching, and advise teachers on curriculum and/or classroom procedures than were Cycle 1 coaches. This may be due to increased teacher independence in the second year of implementation in Cycle 1 schools.

Table 4.15

Coach Report of Coaching Strategies Used as part of MIC, 2009–10

Item	Cycle 1		Cycle 2		Combined	
	N	Percentage	N	Percentage	N	Percentage
Advising on curriculum and/or classroom procedures	64	69%	42	81%	106	73%
Observations of classroom lessons	65	70%	37	71%	102	70%
Conferences with teachers after observed classroom lessons	61	66%	35	67%	96	66%
Collaborative group work	53	57%	36	69%	89	61%
Identifying areas of teacher weaknesses and strengths	55	59%	33	64%	88	61%
Modeling	54	58%	35	67%	89	61%
Pre-teaching conferences	41	44%	25	48%	66	46%
In-class demonstrations	35	38%	32	62%	67	46%
Team-teaching/Co-teaching	35	38%	31	60%	66	46%
Assisting teachers in how to assess student work	41	44%	25	48%	66	46%

Source: MIC Pilot Program 2009–10 Coach Survey
Note: Coaches could select all strategies that apply.

MIC Program Content

Teachers (i.e., participants receiving coaching) were asked on the teacher survey to indicate the extent to which they received training in key content areas as part of MIC. Table 4.16 displays teachers' ratings of the degree to which they received training on collecting, analyzing, and using student assessment data. Teachers reported receiving a similarly high degree of training across data assessment areas. Approximately three-quarters of teachers reported that they received training on collecting, analyzing, and using student assessment data some, quite a bit, or a great deal. Cycle 1 teachers were more likely than Cycle 2 teachers to report receiving this type of training in the highest dosage categories (i.e., quite a bit or a great deal). This may be because this program component was more likely to be at the full implementation stage of development at Cycle 1 schools than at Cycle 2 schools (see Table 4.13). As this program component is further developed at Cycle 2 schools, teacher reports of training in this area may also increase.

Table 4.16

Teacher Report of the Receipt of Training on Collecting, Analyzing, and Using Student Assessment Data, 2009–10

Item	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Extent to which teachers received training on the collection of assessment data	Cycle 1	22 (8%)	34 (12%)	94 (34%)	78 (29%)	46 (17%)
	Cycle 2	35 (13%)	51 (19%)	93 (34%)	65 (24%)	30 (11%)
	Combined	57 (10%)	85 (16%)	187 (34%)	143 (26%)	76 (14%)
Extent to which teachers received training on analyzing student data	Cycle 1	24 (9%)	29 (11%)	96 (35%)	78 (29%)	47 (17%)
	Cycle 2	29 (11%)	44 (16%)	111 (41%)	58 (21%)	32 (12%)
	Combined	53 (10%)	73 (13%)	207 (38%)	136 (25%)	79 (14%)
Extent to which teachers received training on the use of data to revise instructional practices	Cycle 1	22 (8%)	35 (13%)	97 (35%)	79 (29%)	42 (15%)
	Cycle 2	31 (11%)	44 (16%)	93 (34%)	72 (27%)	31 (11%)
	Combined	53 (10%)	79 (15%)	190 (35%)	151 (28%)	73 (13%)
Extent to which teachers received training on identifying areas of student strength and weakness	Cycle 1	19 (7%)	28 (10%)	87 (32%)	88 (32%)	51 (19%)
	Cycle 2	28 (10%)	38 (14%)	102 (38%)	71 (26%)	30 (11%)
	Combined	47 (9%)	66 (12%)	189 (35%)	159 (29%)	81 (15%)

Source: MIC Program 2009–10 Teacher Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Teachers also reported a high degree of training from a coach in content area knowledge and instructional techniques, with over two-thirds of teachers reporting receiving some, quite a bit, or a great deal of training in these areas (see Table 4.17). Compared to reports of training in data assessment areas, a slightly higher percentage of teachers reported receiving no training in content area knowledge (19%) and instructional techniques (14%) from a coach. It is possible that content and instructional areas were more greatly emphasized during professional development events and less a focus of MIC coaching activities. Differences across Cycles were minimal.

Table 4.17

Teacher Report of Degree of Training in Content Area Knowledge and Instructional Techniques from a Coach, 2009–10

Item	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Extent to which teachers received content area training from a coach	Cycle 1	52 (20%)	42 (16%)	77 (29%)	60 (23%)	36 (14%)
	Cycle 2	47 (18%)	40 (15%)	76 (28%)	74 (28%)	31 (12%)
	Combined	99 (19%)	82 (15%)	153 (29%)	134 (25%)	67 (13%)
Extent to which teachers received training in instructional techniques from a coach	Cycle 1	40 (15%)	42 (16%)	83 (31%)	72 (27%)	32 (12%)
	Cycle 2	38 (14%)	30 (11%)	94 (35%)	75 (28%)	34 (13%)
	Combined	78 (14%)	72 (13%)	177 (33%)	147 (27%)	66 (12%)

Source: MIC Pilot Program 2009–10 Teacher Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Similar questions were asked of participating coaches on the 2009–10 MIC Coach Survey. Coaches were asked to rate the extent to which their coaching addressed a series of topics, such as math Texas Essential Knowledge and Skills (TEKS), classroom assessment and data analysis, and national and local content standards. Very few respondents indicated addressing these topics “not at all,” the lowest response category. Variation in responses was found instead in the highest response categories, where coaches indicated if they spent some, quite a bit, or a great deal of time addressing particular topics. The topics most heavily emphasized related to TEKS alignment and data collection and assessment. These topics possibly reflected district-level priorities related to improved performance on state assessments and increased accountability and data-based decision-making. Survey responses are further detailed in Table 4.18 through Table 4.22.

Table 4.18 shows that coaches were covering topics related to math TEKS. Overall, 90% of coaches reported addressing this topic some, quite a bit, or a great deal. In the highest response category, 37% of coaches reported addressing alignment of classroom curriculum to the math TEKS a great deal, and 35% percent of coaches reported addressing understanding the math TEKS a great deal. Aligning classroom assessment to the TEKS was also a focus, with 26% of coaches reporting having addressed this topic a great deal. Responses were similar for Cycle 1 and Cycle 2 coaches.

Table 4.18

Coach Report of the Extent to Which Their Coaching Addressed the Math TEKS, 2009–10

Item	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Extent to which the coaching you provided addressed understanding the Math TEKS	Cycle 1	1 (1%)	5 (7%)	18 (23%)	26 (34%)	27 (35%)
	Cycle 2	1 (2%)	5 (11%)	6 (13%)	19 (40%)	16 (34%)
	Combined	2 (2%)	10 (8%)	24 (19%)	45 (36%)	43 (35%)
Extent to which the coaching you provided addressed aligning classroom instruction to the Math TEKS	Cycle 1	1 (1%)	6 (8%)	12 (16%)	27 (35%)	31 (40%)
	Cycle 2	1 (2%)	3 (6%)	7 (15%)	21 (45%)	15 (32%)
	Combined	2 (2%)	9 (7%)	19 (15%)	48 (39%)	46 (37%)
Extent to which the coaching you provided addressed aligning classroom assessments to the Math TEKS	Cycle 1	1 (1%)	8 (10%)	14 (18%)	32 (42%)	22 (29%)
	Cycle 2	1 (2%)	4 (9%)	8 (17%)	24 (51%)	10 (21%)
	Combined	2 (2%)	12 (10%)	22 (18%)	56 (45%)	32 (26%)

Source: MIC Pilot Program 2009–10 Coach Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Collecting, analyzing, and using student data were also topics of focus during coaching. As shown in Table 4.19, 88% or more of coaches report addressing these topics some, quite a bit, or a great deal (i.e., 89% for the topic of collecting classroom assessment data, 88% for the topic of collecting usable and actionable data on student progress, 88% for the topic of analyzing student data, and 91% for using student data to evaluate instructional plans). While data-related topics were a focus for both Cycle 1 and Cycle 2 coaches, a larger percentage of Cycle 1 coaches reported addressing these topics a great deal, the highest response category, than did Cycle 2 coaches. This may be because classroom assessment and data analysis were more likely to be at the full implementation stage of development at Cycle 1 schools than at Cycle 2 schools. As this program component is further developed at Cycle 2 schools, coaching in this area may also increase.

Table 4.19

Coach Report of the Extent to Which Their Coaching Addressed the Student Data, 2009–10

Item	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Extent to which the coaching you provided addressed collecting classroom assessment data	Cycle 1	1 (1%)	6 (8%)	17 (22%)	27 (35%)	26 (34%)
	Cycle 2	1 (2%)	6 (13%)	13 (29%)	16 (36%)	9 (20%)
	Combined	2 (2%)	12 (10%)	30 (25%)	43 (35%)	35 (29%)
Extent to which the coaching you provided addressed collecting useable and actionable data on student progress	Cycle 1	1 (1%)	7 (9%)	16 (21%)	27 (36%)	25 (33%)
	Cycle 2	1 (2%)	6 (13%)	14 (31%)	14 (31%)	10 (22%)
	Combined	2 (2%)	13 (11%)	30 (25%)	41 (34%)	35 (29%)
Extent to which the coaching you provided addressed analyzing student coursework and assessment data	Cycle 1	1 (1%)	7 (9%)	18 (24%)	27 (36%)	23 (30%)
	Cycle 2	1 (2%)	6 (13%)	19 (41%)	14 (30%)	6 (13%)
	Combined	2 (2%)	13 (11%)	37 (30%)	41 (34%)	29 (24%)
Extent to which the coaching you provided addressed using student data to evaluate instructional plans	Cycle 1	1 (1%)	4 (5%)	17 (22%)	30 (39%)	25 (33%)
	Cycle 2	1 (2%)	5 (11%)	17 (37%)	12 (26%)	11 (24%)
	Combined	2 (2%)	9 (7%)	34 (28%)	42 (34%)	36 (29%)

Source: MIC Pilot Program 2009–10 Coach Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Coaches similarly addressed preparing students for TAKS. As shown in Table 4.20, 89% of coaches report addressing this topic some, quite a bit, or a great deal. A larger percentage of Cycle 1 coaches (34%) than Cycle 2 coaches (20%) reported addressing this topic a great deal.

Table 4.20

Coach Report of the Extent to which Their Coaching Addressed Preparing Students for TAKS, 2009–10

Item	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Extent to which the coaching you provided addressed preparing students for TAKS	Cycle 1	1 (1%)	6 (8%)	17 (22%)	27 (35%)	26 (34%)
	Cycle 2	1 (2%)	6 (13%)	13 (29%)	16 (36%)	9 (20%)
	Combined	2 (2%)	12 (10%)	30 (25%)	43 (35%)	35 (29%)

Source: MIC Pilot Program 2009–10 Coach Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Coaches also reported on the extent to which they addressed how to present math content in engaging and meaningful ways to students (see Table 4.21). Overall, 85% of coaches report addressing this topic some, quite a bit, or a great deal. Responses were similar for Cycle 1 and Cycle 2 coaches.

Table 4.21

Coach Report of the Extent to which Their Coaching Addressed Presenting Content in Engaging, Meaningful Ways, 2009–10

	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
To what extent did the coaching you provide address presenting the specific content addressed by MIC in engaging, meaningful ways to students	Cycle 1	1 (1%)	11 (14%)	26 (34%)	28 (36%)	11 (14%)
	Cycle 2	3 (6%)	3 (6%)	19 (40%)	13 (28%)	9 (19%)
	Combined	4 (3%)	14 (11%)	45 (36%)	41 (33%)	20 (16%)

Source: MIC Pilot Program 2009–10 Coach Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

As displayed in Table 4.22, a smaller percentage of coaches reported that they addressed understanding national standards for math, with 11% of coaches reporting that they did not address this topic at all. The pattern was amplified for Cycle 2 coaches, 19% of whom reported that they did not address this topic. A larger percentage of coaches said they addressed campus-specific content, with 81% of coaches reporting that they addressed campus-specific content some, quite a bit, or a great deal compared to the 61% that indicated that they addressed national standards some, quite a bit, or a great deal.

Table 4.22

Coach Report of the Extent to which Their Coaching Addressed National Standards for Math and Campus-Specific Content, 2009–10

	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
To what extent did the coaching you provide address understanding national standards for math	Cycle 1	5 (7%)	20 (26%)	28 (37%)	18 (24%)	5 (7%)
	Cycle 2	9 (19%)	13 (28%)	24 (51%)	1 (2%)	0 (0%)
	Combined	14 (11%)	33 (27%)	52 (42%)	19 (15%)	5 (4%)
To what extent did the coaching you provide address understanding the specific content addressed by MIC at my school	Cycle 1	1 (1%)	16 (21%)	27 (35%)	26 (34%)	6 (8%)
	Cycle 2	2 (4%)	5 (11%)	22 (47%)	14 (30%)	4 (9%)
	Combined	3 (2%)	21 (17%)	49 (40%)	40 (33%)	10 (8%)

Source: MIC Pilot Program 2009–10 Coach Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Administrators' Level of Participation in MIC Activities

Perception of Administrator Support

Often a critical factor to a school program's success is garnering administrator support for the program's goals and implementation. ASPs and teachers rated the effectiveness of the support they received from campus administrators for MIC program activities; the results are displayed in Tables 4.23 and 4.24. Overall, ASPs and teachers rated campus administrators as supportive of MIC in general, as well as effective in supporting teacher participation in MIC activities. Specifically, all ASP responders indicated at least some degree of support, with 67% of responders rating campus principals as very supportive of MIC. Teachers also reported that administrators were effective at supporting their participation in MIC activities, with approximately four out of five teachers (79%) rating their administrators as moderately effective, very effective, or extremely effective. Ratings were similar across Cycle 1 and Cycle 2 teachers.

Table 4.23

ASP Ratings of MIC Program Support from Campus Administrators, 2009–10

To what extent do you feel there is sufficient support for the MIC program in your district from campus principals?	N	Percentage
Not Supportive	0	0%
Somewhat Supportive	10	16%
Neutral Supportive	5	8%
Very Supportive	40	67%
No Basis for Judgment	5	8%
Total	60	100%

Source: MIC Program 2009–10 ASP Representative Survey
Note: Percentages may not sum exactly to 100% due to rounding.

Table 4.24

Teacher Ratings of the Extent to which School Administrators were Effective in Supporting Teachers' Participation in the MIC Activities, 2009–10

Rating	Percentage of Cycle 1 Administrators (N=270)	Percentage of Cycle 2 Administrators (N=271)	Percentage of All Administrators (N=562)
Not At All Effective	8%	6%	7%
Slightly Effective	11%	16%	14%
Moderately Effective	30%	30%	30%
Very Effective	30%	31%	31%
Extremely Effective	21%	16%	18%

Source: MIC Pilot Program 2009–10 Teacher Survey
Note: Percentages may not sum exactly to 100% due to rounding.

Administrator Involvement in MIC Program Activities

One of the stated goals of MIC was "to develop the skills and knowledge of school leaders in the area of mathematics instruction" (TEA, 2008b; TEA, 2008c). Thus, an essential component of the program was the involvement of campus administrators. The key activities identified by TEA in the RFA and in the critical success factors framework related to increasing campus administrator involvement included:

- Conducting needs survey of campus administrators
- Providing training for campus administrators that increases their knowledge of best practices in math classrooms
- Providing training on conducting math classroom observations
- Conducting math classroom observations
- Providing feedback/coaching to participating administrators

In 2009–10, ASPs completed a survey and did not indicate with which grant cycle they were associated, so findings are presented in the aggregate. In addition, the ASPs were able to skip items in the survey, so the total number of responses varies across items. ASPs rated the degree of administrator involvement in MIC program activities and training. As shown in Table 4.25, 87% of ASP responders indicated that campus administrators participated in MIC program activities. ASP responders also rated the degree of implementation of specific program activities directed toward campus administrators, as displayed in Table 4.26. Approximately half of respondents (51%) indicated full implementation of the provision of coaching and feedback to participating administrators. Conducting a needs assessment was the activity that the fewest respondents (27%) rated as being fully implemented. Still, over half of all ASP respondents indicated partial or full implementation of each of the MIC activities for campus administrators.

Table 4.25

ASP Report of Campus Administrator Participation in MIC Program Activities, 2009–10

	No	Yes	Total
Do any district or campus administrators participate in any of MIC activities?	8 (13%)	53 (87%)	61 (100%)

Source: MIC Program 2009–10 ASP Representative Survey

Table 4.26

ASP Ratings of the Level of Implementation of MIC Activities for Campus Administrators, 2009–10

	Not Planned	In Development	Partially Implemented	Fully Implemented	Total
Needs survey of campus administrators	7 (21%)	7 (21%)	10 (30%)	9 (27%)	33 (100%)
Training of administrators in effective math classroom practices	7 (17%)	5 (12%)	13 (32%)	16 (39%)	41 (100%)
Training administrators on conducting math classroom observations	6 (14%)	8 (19%)	12 (28%)	17 (40%)	43 (100%)
Provision of coaching and feedback to participating administrators	4 (10%)	3 (7%)	13 (32%)	21) (51%)	41 (100%)

Source: MIC Program 2009–10ASP Representative Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Coaches were also asked to indicate the types of activities they provided to campus administrators (see Table 4.27). Only 16% of coaches across both Cycles 1 and 2 reported having provided coaching to campus administrators as a part of MIC. On a descriptive basis, Cycle 2 coaches were more likely to provide coaching to administrators than were Cycle 1 coaches (22% and 12%, respectively). It is possible that program development was more fully established at Cycle 1 campuses, and therefore garnered less administrator attention.

Table 4.27

Coach Indications of Whether they Coached School Administrators as Part of MIC, 2009–10

Have you coached any school administrators as part of MIC?	Cycle 1		Cycle 2		Total	
	N	Percentage	N	Percentage	N	Percentage
No	67	88%	38	78%	105	84%
Yes	9	12%	11	22%	20	16%

Source: MIC Pilot Program 2009–10 Coach Survey

While most coaches indicated that they did not provide coaching to administrators, they do report engaging in other training activities with administrators (Table 4.28). Coaches could select all strategies that apply. Approximately one-third of coaches indicated that they provided administrators with training in best practices in math classrooms, (32%) identifying areas of teacher weaknesses and strengths (30%), and using assessment data to evaluate instructional practices (35%). When disaggregated by cycle, data show that Cycle 2 teachers were more likely to work with campus administrators in identifying areas of teacher strengths and weaknesses during their first year of program implementation than were Cycle 1 teachers in the second year of implementation (42% and 24%, respectively).

Table 4.28

Coach Report of Math Strategies Implemented while Working with School Administrators as Part of MIC, 2009–10

Item	Cycle 1		Cycle 2		Combined	
	N	Percentage	N	Percentage	N	Percentage
Training in knowledge of best practices in math classrooms	28	30%	19	37%	47	32%
Training on conducting math classroom observations	14	15%	11	21%	25	17%
Held conferences providing feedback to participating administrators	20	22%	14	27%	34	23%
Identifying areas of teacher weaknesses and strengths	22	24%	22	42%	44	30%
Using assessment data to evaluate instructional practices	30	32%	20	39%	50	35%

Source: MIC Pilot Program 2009–10 Coach Survey
Note: Coaches could select all strategies that apply.

Findings related to teacher ratings of the degree and type of support received in MIC program activities by campus administrators are displayed in Table 4.29. Teachers were more likely to receive evaluative support (i.e., observations of a lesson and feedback on strengths and weaknesses) than instructional support (i.e., content area instruction and training in instructional techniques) from their campus administrators. This is true for both Cycle 1 and Cycle 2 teachers. Teachers (38%) reported being observed teaching a lesson quite a bit or a great deal, and 43% of teachers reported that they received feedback on their strengths and weaknesses quite a bit or a great deal. In contrast, 24% of teachers reported receiving content area instruction quite a bit or a great deal, and 26% of teachers reported receiving training on instructional techniques quite a bit or a great deal.

Table 4.29

Teacher Report of Administrator Support in MIC Program Activities, 2009–10

Item	Cycle	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Extent to which you were observed teaching a lesson by a campus administrator as part of MIC	Cycle 1	38 (14%)	39 (14%)	94 (35%)	64 (24%)	37 (14%)
	Cycle 2	51 (19%)	35 (13%)	81 (30%)	69 (26%)	35 (13%)
	Combined	89 (16%)	74 (14%)	175 (32%)	133 (25%)	72 (13%)
Extent to which you received feedback from an administrator on your strengths and weaknesses as part of MIC	Cycle 1	31 (11%)	36 (13%)	88 (32%)	79 (29%)	39 (14%)
	Cycle 2	37 (14%)	36 (13%)	86 (32%)	76 (28%)	35 (13%)
	Combined	68 (13%)	72 (13%)	174 (32%)	155 (29%)	74 (14%)
Extent to which you received content area instruction from a campus administrator as part of MIC	Cycle 1	92 (35%)	46 (17%)	66 (25%)	43 (16%)	20 (8%)
	Cycle 2	95 (36%)	36 (14%)	74 (28%)	40 (15%)	21 (9%)
	Combined	187 (35%)	82 (15%)	140 (26%)	83 (16%)	41 (8%)
Extent to which you received training in instructional techniques from a campus administrator as part of MIC	Cycle 1	62 (23%)	60 (22%)	74 (27%)	54 (20%)	21 (8%)
	Cycle 2	68 (25%)	51 (19%)	84 (31%)	44 (16%)	21 (8%)
	Combined	130 (24%)	111 (21%)	158 (29%)	98 (18%)	42 (8%)

Source: MIC Pilot Program 2009–10 Teacher Survey
Note: Percentages across each row may not sum exactly to 100% due to rounding.

Barriers to MIC Program Implementation

2008–09 Reported Implementation Barriers

Campus administrators, teachers, and coaches identified barriers in their 2008–09 online surveys that impacted the implementation of MIC on their campuses. The main barrier cited by all MIC Cycle 1 grantees was time, while other barriers included setbacks, location, buy-in, staffing, and communication.

- **Time:** Teachers found it difficult to accomplish the MIC activities within the timeframe allotted, which varied across grantee project. An example of this barrier is finding time to have a coach come into the classroom to observe a lesson, then process through the feedback provided by the coach. Additionally, many districts found it hard to find time during the school year to provide coaching and PD activities. Some teachers were expected to attend monthly Saturday and/or summer trainings. Often, substitutes were provided to cover teachers' classes while they attended MIC activities, but teachers felt conflicted about this because they believed that time out of the class meant that students were not necessarily receiving the instruction they needed. However, teachers reported that as they came to understand MIC, they realized that they were indeed receiving information and skills that they could bring back into the classroom to help the students.

- **Setbacks:** Three of the MIC grant coordinators stated that due to factors beyond their control (e.g., funding delays, Hurricane Ike, the H1N1 flu outbreak) they experienced setbacks during the implementation process. Working with the ASP and being flexible with rescheduling helped grantees to overcome these delays and move forward with the program.
- **Location:** Geographical distance between the ASP and the grantee was difficult for two grantees. They solved this by subcontracting with a service provider located in closer proximity to the district.
- **Buy-In:** Lack of administrator and teacher buy-in was another barrier to MIC program implementation that was identified by Cycle 1 grantees. To increase administrator buy-in, one grantee conducted PD sessions specifically for administrators. Two grantees reported that initially they struggled with improving teacher buy-in to the program and have not found ways to engage the teachers as fully as anticipated. Themes found in the data indicated that, as the year progressed, the teachers had become more interactive with each other and more engaged in MIC activities
- **Staffing:** Seven MIC grant coordinators indicated that they had difficulty finding and hiring an instructional coach for their MIC programs, which caused delays and programmatic changes in implementing the program.
- **Communication:** Another barrier cited among teachers, coaches, and administrators was communication, suggesting that adequate information about what the program was or what was expected of them was not received. Others explained that the roles of the coaches were not clearly articulated at the beginning of the program so it took time for teacher participants who were receiving the coaching to engage with the coaches in the MIC pilot program activities.

Improving those factors that are within the control of the grant program managers would improve the overall implementation of MIC. TEA could provide more technical assistance to grantees on time management (both at the teacher level and district level), dealing with program setbacks, establishing teacher buy-in, staffing, and communication.

2009–10 Reported Implementation Barriers

In the second year of the evaluation, teachers who completed the online surveys were asked questions about the implementation of their MIC program, including barriers and facilitators to implementing the program in their schools during the 2009–10 school year. Responses to open-ended questions were coded by members of the evaluation team and then tabulated. Only one code was assigned to each response. Table 4.30 displays frequency counts and percentages for the barriers to implementation cited by the 338 teachers who responded to this item.

Table 4.30

Barriers to Implementation of MIC Cited by MIC Teacher Participants, 2009–10

Barrier	Specific Barrier	N	Percentage
No Barriers	**Total**	**44**	**13%**
Time	Time to Meet with Coaches and/or Teachers	25	7%
	Attending Workshops, PD, Planning	17	5%
	Coaches Overextended	10	3%
	Not Enough Time for Instructional Strategies/Content	6	2%
	General	33	10%
	Total (at least one "Time" barrier identified)	**91**	**27%**
New Program	Poor Communication/No Input from Teachers	20	6%
	Unsure of the Goals/Purpose of MIC	19	6%
	Resistant to Change/Program/Coaches	16	5%
	Poor Implementation	10	3%
	New Program	10	3%
	Too Many Simultaneous Programs	6	2%
	Poor Match	4	1%
	Total (at least one "New Program" barrier identified)	**85**	**25%**
Student Concerns	**Total**	**40**	**12%**
Financial/Technological	Technology	14	4%
	Adequate Financial Support/Materials	9	3%
	Total (at least one "Financial/Technological" barrier identified)	**23**	**7%**
Other	**Total (e.g., availability of substitutes, staff turnover, Hurricane Ike)**	**55**	**16%**
TOTAL		**338**	**100%**

Source: MIC Program 2009–10 Teacher Survey

Some teachers (13%) indicated that they did not experience barriers in the implementation of MIC. However, among those who listed at least one barrier (87%), the most frequently cited barrier to implementation was time (27%). Teachers expressed that they lacked sufficient time to meet with coaches (7%) and to hold discussions related to MIC content and instructional strategies with fellow teachers (2%). Teachers also expressed that the coaches were over-extended (3%) and did not have enough time to meet with teachers or that scheduling difficulties prevented regular meetings with coaches. The amount of time required to attend workshops, meetings, and trainings and to plan classroom lessons was also noted as a barrier to MIC implementation (5%). Teachers also listed lack of time to implement specific instructional strategies (e.g., hands-on activities) in the classroom and to cover the full curriculum content (2%). None of the subcategories represented more than 10% of the total reported responses.

Other frequently cited barriers to implementation related to the introduction and implementation of a new program (25%). Specifically, teachers noted poor communication regarding the purpose, goals, and planning related to MIC, and that they were not given the opportunity to provide input regarding how the program would be implemented. They felt either inadequately informed about the program or that the program was not being fully implemented at their school. Others noted that some teachers were resistant to change and did not buy in to the newly introduced program.

Student concerns were indicated as a barrier by 12% of the teachers. Teachers noted that poor school discipline practices and low student achievement made it difficult to implement the MIC content and strategies appropriately. Teachers described, for example, that classes with high absenteeism made it difficult to implement group work or activities that spanned multiple days.

A few teachers (7%) expressed barriers related to having adequate financial and technological support. Teachers expressed that they did not have access to the technology or materials necessary to fully implement MIC or that they did not have a complete understanding of how to use the resources available.

Additional barriers that were listed by 16% of the teachers were placed in an “other” category. For example, some teachers noted difficulty in obtaining substitute teachers to cover their classrooms during training sessions. Others noted that high staff turnover made it difficult to retain teachers who had already received training in MIC. Also, external challenges, such as overcrowded schools as a result of Hurricane Ike, were noted. The full list of barriers classified as "other" is provided in Appendix L.

Facilitators to MIC Program Implementation

2008–09 Facilitators

Despite the barriers cited during the first year of MIC implementation, there were also facilitators for implementing MIC mentioned in the 2008–09 online surveys with campus administrators, teachers, and coaches. Survey participants from these three groups identified facilitators that impacted the implementation of MIC on their campuses. The main facilitator cited by most Cycle 1 grantees in Year 1 was the partnership between the ASP and the grantee, while other reported facilitators included buy-in, support, and collaboration.

- **Partnership:** Grant coordinators and ASP representatives stated that having a partnership between the ASP and the grantee district in which both parties are equally committed to the project allowed for a smooth implementation process.
- **Buy-In:** Achieving successful teacher buy-in through information dissemination and data gathering was an instrumental facilitator for successful program implementation as cited by seven of the grantees.
- **Support from District Leaders:** In addition, support from district leaders was viewed by both the grant coordinators and ASP representatives as a facilitating factor for successful MIC implementation. Campus administrators, teachers, and coaches also cited administrator and district support as a facilitating factor. For example, district staff assisted with creating a schedule so that everyone who needed to participate in MIC program activities was able to, with little complication or disruption. Other grantees provided food and electronics such as new calculators to teachers to encourage participation.
- **Collaboration:** Coaches and teachers also cited collaboration among MIC participants during PD and coaching sessions where they could share ideas with each other as a key to program success.

2009–10 Facilitators

Some of the respondents to the 2009–10 Teacher Survey (285 of 590, or 48% of teacher respondents) also provided feedback regarding what best facilitated the implementation of MIC as well as how they were able to overcome or work around barriers to implementation (see Table 4.31). Responses to open-ended questions were coded by members of the evaluation team and then tabulated. Only one code was assigned to each response. The most frequently cited facilitator to MIC implementation was support from the administrative, coaching, and teaching staff (38%). Teachers felt most able to implement the program to its fullest when they were part of a collaborative environment where all staff were invested in the program and in improving student academic outcomes (24%). Teachers were also positive about the ongoing targeted PD trainings, as well as the instructional strategies learned through trainings and coaching activities (12%). Moreover, teachers noted that they were provided with collaborative planning times and participated in professional learning communities that facilitated collaborative curriculum planning, strategy sharing, and problem-solving (11%). Teachers also noted that the use of technology helped to track student data, identify student strengths and weaknesses, and create more efficient school record keeping (5%). Discomfort with the unfamiliar software was alleviated by reading the manual and seeking assistance from colleagues who were more knowledgeable about the programs. So, while some teachers felt they either had inadequate technology or lacked training on how to use technology (barriers), other teachers mentioned technology as a facilitator.

Table 4.31

Most Commonly Cited Facilitators to Implementation by Teachers, 2009–10

Facilitator	N	Percentage
Support	107	38%
Collaborative Environment	67	24%
Trainings/Strategies Learned	34	12%
Meetings and Professional Learning Communities	32	11%
Technology and Additional Resources	15	5%
Other (e.g., use of data, clearly defined expectations, extra staff to help implement interventions, etc.)	30	11%
TOTAL	**285**	**100%**

Source: MIC Program 2009–10 Teacher Survey
Note: Percentages may not sum exactly to 100% due to rounding.

Teachers also named specific strategies used to make available the time necessary to implement the key components of MIC. Given the strict time constraints available during the school day, many teachers attended workshops and other training meetings on Saturdays or on weekdays after school. Teachers also noted administrator support in allowing for time to schedule meetings, providing substitute teachers to cover classes, and offering common planning times during which teachers could collaborate. They also emphasized that the meeting time that was available to them was used efficiently, for example, by creating and sticking to an agenda. Teachers were able to work around the limited time available to meet with coaches by remaining in contact via email when face-to-face meetings were not feasible and by having coaches focus their time on teachers who needed the most assistance.

Teachers were able to enhance student engagement and motivation by using creative instructional strategies (e.g., games, hands-on-activities), drawing connections between real life experiences and the math content being taught, and by offering incentives (e.g., candy, free homework passes) to students. They also used peer tutoring to help to differentiate instruction for learners at varying achievement levels.

Lessons Learned from Two Cycle 1 Grantees

Follow-up site visits to two Cycle 1 grantee districts (District A and District D, which are the letters given to the grantees in the full case study report) were conducted in May 2010, providing insights into changes in implementation from the first year to the second year of the MIC grant project period. These two grantees were specifically chosen because, based on anecdotal evidence, they exhibited early signs of success with implementing MIC. Therefore, these changes may not reflect the experiences of all Cycle 1 grantees.

The site visit team conducted individual interviews with the MIC grant coordinator, a representative of the ASP, and administrators from the high schools and middle schools. They also conducted separate focus group sessions with high school MIC coaches and teachers from participating middle schools and high schools. Participants provided information related to implementation and perceived effects of MIC at their campuses. Participants were also able to provide insights related to developments and changes in the program from the first year of implementation to the second year of implementation. From this data, the evaluators gleaned information to indicate some successful factors and model features of a MIC grant project.

Changes in Implementation from Year 1 to Year 2

Middle school teachers, high school teachers, school administrators, and the ASP representative in District A and District D were asked to provide feedback about the activities implemented in Year 1 and to indicate how the program had changed from Year 1 to Year 2.

In District A, findings included:

- The structure and participation of PD activities changed. In Year 1 of the MIC grant, the ASP's role involved planning and delivering the PD sessions to the MIC coaches from the district. In Year 2, the ASP played a greater role in the math coaching component of the program by coming to campus and providing math coaching demonstrations for MIC coaches.
- The direct participation of teachers in the PD sessions changed. In Year 1, only the MIC coaches attended the PD sessions sponsored by the ASP. MIC coaches then used information from the PD sessions to work with teachers in locally held PD sessions and math coaching activities. In Year 2, the MIC grant coordinator and MIC coaches felt that teachers would derive greater benefit from direct participation in the content-specific PD activities. Examples of the PD sessions included working with special needs students, math journaling, incorporating writing into math, using graphic organizers, conducting formal and informal assessment, and incorporating the use of manipulatives in the classroom.
- The content of PD activities changed. In response to teacher feedback, the focus of PD activities shifted from content knowledge in Year 1 to focusing on special needs students in Year 2, which included a greater emphasis on instructional strategies and classroom activities. Similarly, in Year 2, math coaching more heavily focused on direct modeling of MIC instructional strategies. Most coaching involved classroom observation, one-on-one consultations with the teachers, and either modeling instructional strategies in the classroom or participating in a team teaching approach. The MIC coach also provided recommendations as needed on classroom organization and management, as well as on instructional strategies.
- A different MIC coach was assigned to the high school in the second year. The new MIC coach had formerly been a math department head, whereas the previous MIC coach was an assistant principal. Program administrators made the change because they felt that MIC coaches could devote more time to the math coaching component of the program if they did

not also have administrative duties. In addition, administrators felt that a MIC coach without teacher evaluation responsibilities would be more effective.

- Administrators participated occasionally in the PD sessions. The principals were supportive of the MIC activities on campus, were aware of the schedules for PD and math coaching, and were given feedback from teachers and the MIC coaches on the MIC grant's progress.

Findings from District D included:

- Additional literature on leadership and cross-grade-level communication was added to the knowledge base by the grant coordinator and ASP in response to teacher feedback.
- The middle school teachers felt that the Year 2 activities were more suited to their PD needs.
- High school teachers noted that the PD activities in Year 2 included more instructional strategies for teachers than in Year 1.
- According to the ASP representative, more building administrators visited the PD activities in Year 1 of MIC. Teachers described administrators' participation in Year 2 program activities as just "dropping by to say, 'Hi.'" Middle school and high school principals confirmed in interviews that their participation in the program activities was minimal. They described their role as monitoring teachers' participation, receiving feedback from teachers and MIC coaches following the activities, and making recommendations to the MIC grant coordinator for modification to the activities as needed.
- In Year 2 of the grant program period, vertical teaming, which involves grouping teachers from different grade levels to work together to develop a curriculum that facilitates transition from grade to grade, was introduced at the urging of the ASP representative and the MIC grant coordinator.
  - Although teachers were resistant to the concept at the beginning of Year 2, program administrators developed PD activities to accomplish their objective.
  - Teachers soon adjusted to the teaming arrangements and administrators observed positive results. One example of a positive result was that teachers from middle schools and high schools shared information and instructional materials.

Overall, District A and District D made slight changes to their MIC projects that seemed to enhance the MIC activities and to be responsive to feedback from program participants.

Best Practices of Successful Implementers

Each of the successful sites provided unique details about the implementation of MIC at their campuses. Still, common threads were observed between the two sites.

- At the end of the first year of implementation, participants at each site (coaches and teachers) were encouraged to provide feedback regarding their experiences to the grant coordinator and ASP.
  - Participants at both sites indicated that their feedback was acknowledged and integrated into the program's implementation in the second year. This helped to tailor PD and

coaching to the specific needs of the teachers, and also helped to maintain teacher support for the program, as teachers felt that they were valued and active participants.

- While respondents were positive about both content area development and instructional strategies, respondents from both sites spoke most enthusiastically about the engaging and creative instructional strategies introduced as part of MIC.
  - Teachers had the opportunity to see these strategies modeled and also to try them in the classroom.
  - Teachers were able to see the success of these strategies firsthand, which fostered a sense of enthusiasm, confidence, and empowerment in addition to direct skill building.
- Both sites described positive and collaborative relationships among the ASP, coaches, administrators, and teachers.
  - These relationships seemed critical to successful implementation at each site. These relationships allowed for a sense of community, sharing, and communication.

Based on this anecdotal evidence, MIC grantees should be encouraged to listen closely to the needs of program participants and build feedback loops into communication frameworks so that this information can be shared between participants and program coordinators.

Summary

This chapter addressed the following questions related to the implementation of MIC:

1. What were the characteristics of schools served through MIC?
2. What were the demographic and professional characteristics of teachers served through MIC?
3. How did schools/campuses implement MIC?
   a. What ASP was used?
   b. What types of activities were implemented (e.g., teacher training classes, teacher tutoring or mentoring, teacher incentives)?
4. What types of content were part of the teacher trainings? What types of activities were part of the teacher trainings?
5. What were the barriers to, and facilitators of, implementation of MIC?
6. Are there differences between the implementation of MIC in Cycle 1 and Cycle 2 grantees?
7. What were some "best practices" of successful implementers?

The MIC pilot program includes 29 Cycle 1 grantees from 14 of the 20 ESC regions in Texas and 33 Cycle 2 grantees dispersed among 12 of the 20 ESC regions throughout Texas, with a total of 241 campuses served by these grantees. Participating campuses primarily served students who were White or Hispanic and who were classified as economically disadvantaged or at-risk. Teachers and coaches who participated in MIC were a diverse and well-educated group. The majority of these participants were White or Hispanic, held a bachelor's degree, and had teaching certification in math. In most cases, grantees partnered with an ESC to provide PD and coaching services to their targeted math teachers.

Teachers and coaches participated in PD activities (e.g., training) and coaching activities (e.g., mentoring, classroom observation). Cycle 1 teachers and coaches who participated in MIC for two years spent more time in coaching and PD activities during the 2009–10 school year than did teachers and coaches in their first year of participation. One possible explanation is that the first year of MIC implementation requires recruiting, planning, and scheduling in addition to PD and coaching activities. By the second year of implementation, logistics are better determined, and participants are able to access PD activities and coaching support earlier in the year and/or with greater frequency.

Surveys of teachers, coaches, and ASPs detailed the extent to which stakeholders perceived key MIC activities to have been implemented in their programs. Survey responses indicated a high level of program implementation. Cycle 1 teachers were more likely than Cycle 2 teachers to rate an activity as fully implemented, while Cycle 2 teachers were more likely that Cycle 1 teachers to rate an activity as in development. This is unsurprising, as Cycle 1 schools were in their second year of MIC program implementation, and therefore had more time to develop and more experience in implementing these program components than did Cycle 2 schools.

Coaches most frequently supported teachers by providing feedback on instructional materials and techniques. They also provided a high degree of training in data collection and analysis, content area knowledge, and instructional techniques. Administrators were rated as supportive of MIC, and were more likely to provide evaluative support rather than instructional support to teachers. Administrators were judged to be less involved in MIC program implementation by the second year, with their primary role as helping to launch the program and then taking a more ancillary role later.

Many teachers expressed that the greatest barrier to MIC program implementation was the amount of time required for PD activities, meetings, planning, and coaching. A supportive administrative, coaching, and teaching staff was identified as most helpful in overcoming barriers to MIC program implementation. Site visit reports and survey responses both indicated that teachers felt most able to implement the program to its fullest when they were part of a collaborative environment where all staff were invested in the program and in improving student academic outcomes. These results underscore the importance of administrator and staff buy-in and feedback for the successful launching and maintenance of a new program.

These implementation results indicate that the grantees are meeting many of their coaching milestones, particularly:

- Identify areas of teacher weakness and strength
- Schedule PD sessions
- Schedule opportunities for implementation
- Conduct observations
- Provide feedback/coaching to participants

The grantees also seem to be increasing the meaningful involvement in the pilot program on the part of administrators; though their involvement may decrease between Year 1 and Year 2 of program implementation.

5. MIC Cycle 1 and Cycle 2 Grants and Teacher Effectiveness

Online surveys were used to gather opinions and perceptions from MIC Cycle 1 and Cycle 2 participants receiving coaching during the 2009–10 school year about the impact the MIC pilot program had on teacher effectiveness.[20] Cycle 1 dual-year, Cycle 1 single-year, and Cycle 2 single-year participants receiving coaching (as well as some participants receiving and providing coaching) responded to the 2010 MIC Teacher Survey (provided in Appendix I). Throughout the rest of Chapter 5, these survey respondents are referred to generally as teachers. Overall, 681 teachers responded to this survey, which represents 44% of the participants receiving coaching and 22% of the participants providing and receiving coaching. More details about how the response rates were calculated are presented in Appendix M. For the purposes of the teacher effectiveness analyses, all responses to the 2010 MIC Teacher Survey from participants receiving coaching and participants both providing and receiving coaching are combined. Results are presented separately for Cycle 1 and Cycle 2 respondents.

> *"It depends on how long you have been teaching math, how much you have mastered, and what level you are on. For me, I have a master's degree and have been teaching for a long time. I have the content down. Others may not. For me, it is just how I get that across to the students."*
>
> – Cycle 1 Math Teacher

Cycle 1 dual-year teacher participants had significantly more math teaching experience, 8.3 years, compared to the 6.5 years of math teaching experience for Cycle 1 single-year teacher participants.[21] Cycle 2 single-year teacher participants had 8.1 years of math teaching experience on average, so they were not novice teachers overall.

Questions on the online survey related to the teachers' perceptions of the impact of MIC program participation on their overall effectiveness, use of instructional strategies, and math content knowledge. The responses to these questions were used to assess the relative feelings and perceptions among the teachers (i.e., which groups of teachers felt more positively or negatively about the program relative to other groups of teachers) about the effects of MIC, but could not be used to assess causality.

This chapter addresses the following research questions for both Cycle 1 and Cycle 2 teachers:

1. What were teachers' perceptions of MIC? What impact did teachers report MIC had on their overall effectiveness, content knowledge, and instructional strategies? Did their perceptions change as the program progressed?
2. How was teachers' participation in MIC PD and coaching activities related to their years of teaching experience and highest degree received?
3. How was teachers' participation in MIC PD and coaching activities related to their beliefs about their teaching effectiveness, content knowledge, and instructional strategies?

---

[20] The 2009 MIC Teacher Survey was administered to Cycle 1 participants receiving coaching during the 2008-09 school year. Results from this survey are included in Appendix M but are not discussed.

[21] $t = -2.21$, $p < 0.05$

Is Teacher Participation in MIC Associated with Changes in Their Perceptions of Their Effectiveness as Teachers?

Teachers were asked to rate the extent to which their participation in MIC program activities had an effect on their implementation of various assessment activities, instructional strategies, and their math content knowledge. Teachers responded to a series of items within each of these topic areas. Item response options included: Not At All (1), Very Little (2), To Some Extent (3), Quite a Bit (4), A Great Deal (5), and Not Raised in Training (recoded as 1 for mean calculations). The responses were then averaged across items within each of the three topic categories (i.e., assessment activities, instructional strategies, and math content knowledge) to create an overall mean as well as means for subgroups of interest based on Cycle membership, years of teaching experience, level of educational attainment, and number of years of participation in MIC. The overall and subgroup means calculated for each topic area, as well as the average number of hours spent in PD and in MIC coaching, are displayed in Tables 5.1 and 5.2. A discussion of scale composition and reliability is presented in Appendix M.

Table 5.1

Reported Average Perceived Effects Ratings and Average Hours of MIC Activities by Teachers' Years of Teaching Experience, 2009–10

Factor or MIC Activity	All MIC Cycle 1 Teachers	All MIC Cycle 2 Teachers	MIC Cycle 1 New Teachers	MIC Cycle 1 Mid-Career Teachers	MIC Cycle 1 Veteran Teachers	MIC Cycle 2 New Teachers	MIC Cycle 2 Mid-Career Teachers	MIC Cycle 2 Veteran Teachers
Effects on Assessment Activities	2.67	2.58	3.04	2.60	2.60	2.98	2.59	2.21
Effects on Instructional Strategies	3.29	3.15	3.68	3.23	3.17	3.44	3.16	2.90
Effects on Math Content Knowledge	3.50	3.29	3.92	3.42	3.43	3.53	3.31	3.05
Number of Hours in PD	48.94	38.84	50.71	51.18	42.48	40.46	38.26	38.91
Number of Hours in MIC Coaching	21.35	22.07	19.51	22.25	20.45	25.25	20.75	22.69

Source: MIC 2010 Teacher Participant Survey; PEIMS 2009–10; Grantee Participant Uploads 2009–10

NOTE: New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

NOTE: 1=Not At All, 2=Very Little, 3=To Some Extent, 4=Quite a Bit, 5=A Great Deal, and NR=Not Raised in Training (recoded as 1 for mean calculations)

Table 5.2

Reported Average Perceived Effects and Average Hours of MIC Activities by Teachers' Degree Level and Years of MIC Participation, 2009–10

Factor or Activity	All MIC Cycle 1 Teachers	All MIC Cycle 2 Teachers	MIC Cycle 1 Teachers with a Bachelor's or Below	MIC Cycle 1 Teachers with a Master's or Higher	MIC Cycle 2 Teachers with a Bachelor's or Below	MIC Cycle 2 Teachers with a Master's or Higher	MIC Cycle 1 Single-Year Teachers	MIC Cycle 1 Dual-Year Teachers
Effects on Assessment Activities	2.67	2.58	2.61	2.85	2.64	2.20	2.86	2.55
Effects on Instructional Strategies	3.29	3.15	3.29	3.31	3.23	2.72	3.45	3.19
Effects on Mathematics Content Knowledge	3.50	3.29	3.50	3.50	3.37	2.82	3.64	3.42
Number of Hours in PD	48.94	38.84	48.40	51.23	38.61	39.61	42.90	54.28
Number of Hours in MIC Coaching	21.35	22.07	21.12	21.50	22.30	21.21	23.42	19.58

Source: MIC 2010 Teacher Participant Survey; PEIMS 2009–10; Grantee Participant Uploads 2009–10
NOTE: 1=Not At All, 2=Very Little, 3=To Some Extent, 4=Quite a Bit, 5=A Great Deal, and NR=Not Raised in Training (recoded as 1 for mean calculations)

Teacher Participation in MIC and Their Usage of Assessment Activities

On average, both Cycle 1 and Cycle 2 respondents indicated that participation in MIC influenced their use of assessment activities (e.g., authentic assessments, group projects, progress monitoring) very little/to some extent. Statistically significant differences in teacher reports of their assessment use were found based on years of teaching experience and number of years of participation in MIC. Among both Cycle 1 and Cycle 2 teachers, new teachers (those with one year or less of math teaching experience) rated MIC as having the strongest influence on their assessment practices. Veteran teachers (those with 13 years or more of math teaching experience) in Cycle 2 rated MIC as having the smallest degree of influence on their assessment practices. Cycle 1 teachers who participated in MIC for one year rated MIC as having a stronger influence on their assessment practices than did teachers who participated for two years, which may be due to the teachers with two years of participation having more years of teaching experience. No statistically significant differences were found among teachers based on educational level.

Both Cycle 1 and Cycle 2 teachers who participated in the focus groups during the site visits indicated that while they were highly involved with examining test data closely and using the data to improve instruction, these efforts were viewed as part of the school district's emphasis on using data-driven instruction and not necessarily the result of participation in MIC. Teachers were able to describe specific circumstances in which alternative assessments and assessment data have been beneficial to instruction, but most teachers attributed their assessment practices to district-based initiatives rather than MIC programming. Focus group participants commented that MIC PD activities included topics related to assessment and the use of assessment data to guide instruction. These activities provided teachers with opportunities that included receiving feedback on teacher-developed tests, developing alternatives to multiple-choice tests, and learning about formative and summative evaluations. One Cycle 2 teacher described the positive impact of using data to show students their progress. Another Cycle 2 teacher noted that assessment data have been helpful in directing classroom instruction. He said, "Looking at the data from all the tests and all the benchmarks and all the data, I'm better able to see what I need to key in on." Thus, the MIC PD and math coaching activities continued and reinforced the district's commitment to using data for diagnostic and prescriptive purposes. Based on these results, the grantees are accomplishing the first critical success factor: *Principal and teacher use of assessment data in order to revise/re-evaluate instructional practices.* However, this may be due as much to other LEA-based initiatives for helping teachers implement various assessment activities as it is to the influence of MIC.

Teacher Participation in MIC and Their Usage of MIC Instructional Strategies

On average, both Cycle 1 and Cycle 2 respondents indicated that participation in MIC influenced their use of specific instructional strategies (e.g., making real world connections, considering alternative methods for solutions, allowing students to work at their own pace) to some extent/quite a bit. Statistically significant differences in average usage were found among teachers based on number of years of teaching experience and level of education. New teachers (those with one year or less of math teaching experience) in Cycle 1 and Cycle 2 rated MIC as having a stronger influence on their instructional practices than did mid-career and veteran teachers. Among Cycle 2 teachers, those with bachelor's degrees, compared to teachers with master's degrees/doctorates, rated MIC as having a stronger influence on their usage of various instructional strategies. It is possible that teachers with more years of experience and more years of formal educational training may have already had the opportunity to learn and practice these instructional strategies whereas their less experienced colleagues had not. This statistically significant difference was not found for Cycle 1 teachers. Cycle 1 teachers who participated in MIC for one year rated MIC as having a slightly stronger influence on their use of various instructional strategies than did participants who participated for two years, but this difference did not reach statistical significance.

Cycle 1 and Cycle 2 teachers who participated in the focus groups during the site visits were positive about the impact of math coaching activities on their instructional strategies. Responses among Cycle 1 teachers indicated that participants used some of the materials provided in the trainings, including books on teaching Geometry and Algebra to English language learners and books on communication. One ASP representative noted that teachers benefited from using program materials on motivation that included a section on questioning strategies. One Cycle 1 teacher shared, "It's helped me with questioning. I used to spoon feed answers to my kids. Now I know how to guide them. I used to get frustrated and just want to give them the answer." One teacher indicated that the focus of PD activities during Year 2 shifted from content area knowledge to the use of instructional strategies. She says, "I have gotten a lot more out of [MIC] in Year 2. [There are] more strategies I can take to the classroom." Other Cycle 1 teachers noted that MIC program participation increased collaboration among teachers, as observed in the increased communication among teachers in department meetings and willingness to share instructional strategies and information. With the increased teamwork, there was an increased opportunity to share ideas and instructional strategies.

Some Cycle 2 teachers who participated in focus groups during one of the site visits emphasized the utility of the strategies and resources shared through the math lab that was implemented as a result of MIC at one of the grantee schools. They shared that the math coaching sessions and PD activities reinforced effective instructional strategies and provided new ideas to use in situations where students need more engaging activities. One teacher said, "I try to take what I learn… and say, 'How can I approach the lesson using what I learned last night?'" Teachers shared that they apply some of the math lab activities in their classrooms. An example cited was the use of paper plates to demonstrate angles and percentages. Another teacher described how the resources provided by the MIC coach in the math lab, such as Internet links with recommended strategies, have been useful in the classroom. Teachers also spoke positively about using hands-on activities, group work, and activities to increase student engagement and learning. Teachers further noted that they are more confident and more willing to take risks with new instructional strategies even if they are not always successful. One high school teacher commented, "I'm much more willing to jump in and try something new. I was a little apprehensive, but seeing the kids working on the Smart Board™ has been tremendous. They seem to be paying much more attention." One experienced high school teacher acknowledged that the math coaching activities have provided a few more "tools" to use in the classroom, but that these tools would probably be most useful for less experienced teachers. Based on these results the grantees are accomplishing the second critical success factor: *Teacher implementation of MIC strategies learned through training.*

Teacher Participation in MIC and Changes in Their Math Content Knowledge

On average, both Cycle 1 and Cycle 2 respondents indicated that participation in MIC influenced their math content knowledge (e.g., understanding national standards for math, aligning classroom instruction to the TEKS, using data to evaluate instructional plans) to some extent/quite a bit. New teachers in Cycle 1 and Cycle 2 rated MIC as having a significantly stronger influence on increasing their math content knowledge. Cycle 2 veteran teachers and Cycle 2 teachers with master's degrees or higher indicated less of an influence. For Cycle 1 teachers, no differences were found based on educational level. Cycle 1 teachers who participated in MIC for one year rated MIC as having a slightly stronger influence on their math content knowledge than did participants who participated for two years, but this difference did not reach statistical significance.

Responses from the site visit focus groups showed that teachers in both Cycle 1 and Cycle 2 improved their math content knowledge in varied ways. Teachers from both cycles described improved collaboration across grade levels and subject areas. One teacher commented, "I'm better able to point my kids [in the right direction] to say, 'Here is what you need to emphasize now because this is what you're going to see again and again and again.'" A Cycle 1 high school teacher stated that the PD activities refreshed content knowledge learned many years ago but seldom used. Cycle 2 teachers who participated in math lab activities gained a better understanding of the content because of the math lab activities, which call for a variety of strategies to reach a diverse group of students. Teachers must view the subject matter in terms of how best to apply it in order to develop the strategies required. One teacher shared, "The first thing that most kids say is, 'Where will I ever use this again?' By doing the lab thing, I'm better able to answer this question." A Cycle 1 middle school teacher explained that the PD activities provided a greater knowledge of the Math TEKS, the curriculum standards that teachers in Texas must teach. Further, a Cycle 2 middle school teacher credits the MIC coaches for helping struggling teachers build content knowledge in areas where they are weak. Math coaching has helped teachers be open about their content needs so that they can get the help they need before imparting information to the students. Based on these results the grantees are accomplishing the third critical success factor: *Increased teacher math content knowledge.*

Hours Spent in MIC PD Activities by MIC Teachers

Tables 5.1 and 5.2 also compare the average number of hours Cycle 1 and Cycle 2 teachers spent in PD activities during the 2009–10 school year based on their years of math teaching experience, level of educational attainment, and years of participation in MIC. Cycle 1 teachers reported spending approximately 10 more hours in PD activities than did Cycle 2 teachers. These results may be skewed by Cycle 1 second-year MIC participants, who spent the greatest number of hours in PD activities (54 hours). Second-year MIC participants may have had more opportunities to attend PD events, possibly even during the summer months. Cycle 1 veteran teachers reported fewer numbers of hours spent in PD activities than did less experienced Cycle 1 teachers. One possible explanation is that veteran teachers are less likely to register for voluntary PD events because they may feel that they already have been exposed to or mastered the topics covered in many PD activities.

Hours Spent in MIC Coaching Activities by MIC Teachers

Finally, Tables 5.1 and 5.2 display the average number of hours teachers spent in MIC coaching activities during the 2009–10 school year. Cycle 1 and Cycle 2 teachers spent approximately the same number of hours in MIC coaching. The number of hours spent in coaching was also approximately the same across years of teaching experience and level of educational attainment. First year MIC Cycle 1 participants reported spending slightly more hours participating in MIC coaching activities than did Cycle 1 second year MIC participants. It is possible that by the second year of participation, dual year teacher participants felt more confident in their ability to implement new assessment and instructional strategies independently, and therefore spent fewer hours in MIC coaching.

Teachers' Participation in MIC PD and Coaching, and Their Math Content Knowledge, Assessment Activities and Usage of MIC Instructional Strategies

The relationship between the hours Cycle 1 and Cycle 2 MIC teachers spent in PD and coaching, and their perceptions of the effectiveness of the program was investigated. Scales were created by averaging across survey items within each of the three topic categories (i.e., math content knowledge, assessment activities, and usage of MIC instructional strategies). The relationships between hours spent in PD and coaching and teacher perceptions of the effectiveness of the program are presented in Table 5.3. For each relationship, two values are shown: 1) r, which depicts the strength of the linear relationship between two variables and 2) r^2, which depicts the amount of shared variance between two variables and estimates how well one variable predicts the other.

Table 5.3
Relationships between Hours Teachers Spent in PD and Coaching and Perceived Program Effectiveness on Three Scales for Cycle 1 and Cycle 2 Teachers, 2009–10

	Cycle 1, Total PD Hours	Cycle 1, Total Coaching Hours	Cycle 2, Total PD Hours	Cycle 2, Total Coaching Hours
Perceived Content Knowledge Scale	$r = -.15^*$; $r^2 = .02$ (n=243)	$r = .12$, $r^2 = .01$ (n=248)	$r = .08$, $r^2 = .01$ (n=239)	$r = .19^*$, $r^2 = .04$ (n=234)
Perceived Assessment Activities Scale	$r = -.07$, $r^2 = .00$ (n=241)	$r = .09$, $r^2 = .01$ (n=246)	$r = .14$, $r^2 = .02$ (n=233)	$r = .18^*$, $r^2 = .03$ (n=229)
Perceived Instructional Strategy Scale	$r = -.22^*$, $r^2 = .05$ (n=240)	$r = .10$, $r^2 = .01$ (n=245)	$r = .09$, $r^2 = .01$ (n=232)	$r = .24^*$, $r^2 = .06$ (n=228)

Source: MIC 2010 Teacher Participant Survey; PEIMS 2009–10, MIC Grantee Participant Uploads 2009–10
$^*p < .05$, indicating statistical significance.
r = Pearson's correlation coefficient; r^2 = amount of shared variance. Values for r range from -1 to 1. Values for r^2 range from 0 to 1.

For Cycle 1 teachers, a statistically significant negative relationship was found between the number of hours spent in PD and their perceived content knowledge and use of instructional strategies. That is, Cycle 1 teachers who spent more hours in PD reported less of an effect of the program on their content knowledge and instructional strategies. For Cycle 1 teachers, no statistically significant relationship was found between the numbers of hours spent in coaching and the perceived effects of MIC on teachers' content knowledge, assessment activities, and instructional strategies. Conversely, for Cycle 2 teachers, there was a statistically significant positive relationship between the number of hours spent in MIC coaching and perceived effects of MIC on teachers' content knowledge, assessment activities, and instructional strategies. That is, the more hours Cycle 2 teachers spent in coaching, the more they reported that they perceived an effect of the program on their content knowledge, usage of assessment activities, and instructional strategies. No such relationship was found for the number of hours spent in PD activities.

However, despite the aforementioned statistically significant relationships, r^2 values are low for all variables. So, while the observed relationships were unlikely to have occurred by chance (i.e., they are statistically significant), the amount of variance in teacher's perception of program effectiveness that can be explained by the number of hours spent in PD or coaching is small. For example, the strongest relationship found was between Cycle 2 teachers use of instructional strategies and number of hours they spent in coaching ($r = 0.24$). In this case, only 6% of the variance ($r^2 = .06$) in the Instructional Strategies scale can be explained by the total number of hours spent in coaching. This indicates that there are other variables or better measures, above and beyond hours spent in PD and coaching, that better predict differences in teacher reports of program effectiveness.

Table 5.4

Relationships between Hours Teachers Spent in PD and Coaching and Math Teaching Experience, 2009–10

	Cycle 1, Total PD Hours	Cycle 1, Total Coaching Hours	Cycle 2, Total PD Hours	Cycle 2, Total Coaching Hours
Years of Math Teaching Experience	r = -.13; r^2=.02 (n=345)	r = .02, r^2=.00 (n=356)	r =.01, r^2=.00 (n=315)	r =-.02, r^2=.00 (n=303)

Source: MIC 2010 Teacher Participant Survey; PEIMS 2009–10, MIC Grantee Participant Uploads 2009–10
r = Pearson's correlation coefficient; r^2 = amount of shared variance. Values for r range from -1 to 1. Values for r^2 range from 0 to 1.

Additionally, the relationship between the hours Cycle 1 and Cycle 2 teachers spent in PD and coaching and their years of math teaching experience was examined. Table 5.4 displays estimates of these relationships using both r and r^2 values. For Cycle 1 and Cycle 2 teachers, there is little to no relationship between the number of years of math teaching experience a teacher has and the number of hours he/she spent in PD and coaching activities during the 2009–10 school year.

Summary

This chapter addressed the following research questions for both Cycle 1 and Cycle 2 teachers:

1. *What were teachers' perceptions of MIC? What impact did teachers feel MIC had on their overall effectiveness, content knowledge, and instructional strategies? Do their perceptions change as the program progresses?*

Overall, Cycle 1 teachers felt that MIC had a beneficial impact on their teaching skills and math content knowledge. Cycle 1 teachers provided ratings of their perceptions of the impact of participating in MIC on their teaching self-efficacy, their general teaching beliefs, and teaching practices. At least two-thirds of Cycle 1 teachers indicated some influence or greater (i.e., "some", "quite a bit", or "a great deal" of MIC on their feelings of effectiveness. Teachers also rated MIC as influential in increasing their math content knowledge and teaching knowledge and skills, and in broadening their use of various assessment and instructional strategies. Newer teachers, in particular, as compared to veteran teachers, indicated the greatest amount of influence of MIC on their feelings of effectiveness. Teacher survey results were supported by information obtained in focus groups conducted during the site visits. Teachers indicated that they benefited from participation in MIC, particularly in the area of gaining varied instructional strategies. These results suggest that access to a non-evaluative, mentoring relationship, as well as instructional tips and content clarification, may be perceived as most beneficial by new teachers who are likely still developing their instructional style and building their confidence in the classroom. Again, veteran teachers, on the other hand, may have already problem-solved common classroom challenges and solidified their teaching style earlier in their career. Participants who were interviewed during site visits indicated that they felt that they most benefited from learning and practicing creative or innovative instructional strategies that helped them to break from their routines.

Cycle 2 teachers provided self-ratings of the impact of participating in MIC on their teaching self-efficacy, their general teaching beliefs, and student academic outcomes. Cycle 2 teachers expressed opinions of the program that were similar to those expressed by Cycle 1 teachers. At least two-thirds of Cycle 2 teachers indicated some influence or greater of MIC on their feelings of effectiveness. Teachers also rated MIC as influential in increasing their math content knowledge and teaching knowledge and skills, and in broadening their use of various assessment and instructional strategies.

In the Cycle 2 schools, new teachers, as compared to veteran teachers, and teachers with a bachelor's degree, as compared to a master's degree or higher, indicated the greatest amount of influence of MIC on their feelings of effectiveness. These ratings suggest that MIC may be best meeting the needs of new teachers and teachers who have not earned advanced degrees. Newer teachers may perceive a greater benefit from the mentor relationship and targeted PD sessions as these teachers are likely still developing their instructional styles and classroom routines, as well as building confidence in their effectiveness as educators. Conversely, veteran teachers may more negatively perceive these sessions as subtracting from instructional time without greatly increasing their knowledge base.

Cycle 2 teacher survey results were supported by information obtained in focus groups. Teachers indicated that they benefited from participation in MIC, particularly in learning creative instructional strategies and gaining confidence to take risks with new instructional strategies. They also were optimistic about the impact of MIC on student math achievement, particularly noting improvements in student engagement.

2. *How was teachers' participation in MIC PD and coaching activities related to their years of teaching experience and highest degree received?*

Examinations of mean differences and correlations indicate that there are few differences in participation in MIC PD activities and coaching as related to teachers' years of teaching experience and level of educational attainment. A statistically significant average difference was found between Cycle 1 veteran teachers, who reported fewer numbers of hours spent in PD activities, and less experienced Cycle 1 teachers; however, this negative relationship was not found to be statistically significant in correlational analyses. No other analyses found statistically significant differences in teacher participation in PD and coaching based on teacher experiential or educational characteristics.

3. *How was teachers' participation in MIC PD and coaching activities related to their beliefs about their teaching effectiveness, content knowledge, and instructional strategies?*

A statistically significant negative relationship between the time spent in MIC PD and coaching and the perceived effect of the program on teacher math content knowledge and usage of MIC instructional strategies was observed for Cycle 1 teachers. So Cycle 1 teachers who spent more time in MIC PD and coaching were less likely to report that MIC had a great deal of effect on their math content knowledge, and usage of MIC instructional strategies. For Cycle 2 teachers, there was a significant positive relationship between the number of hours spent in MIC coaching and perceived effects of MIC on teachers' math content knowledge, assessment activities, and usage of instructional strategies. So Cycle 2 teachers who spent more time in MIC PD and coaching activities were more likely to report that MIC had a great deal of effect on their math content knowledge, assessment activities, and usage of instructional strategies. Despite reaching statistical significance, the prediction power of the two variables is low. There is little shared variance, even for the statistically significant correlations, indicating that other unmeasured factors are yielding a stronger influence on teacher perceptions of program effectiveness than are the number of hours spent in PD activities and MIC coaching.

6. MIC Cycle 1 Grants and Student Outcomes

As described in Chapter 3, one of the key evaluation questions addresses the relationship between teacher participation in MIC and student outcomes (i.e., math achievement, college readiness, and dropout). This chapter addresses the main evaluation question and associated research questions:

1. *What was the relationship of teacher participation in MIC to student math achievement, course completion rates, college readiness, and dropout?*
2. *What was the relationship between teacher professional development and student math achievement?*
3. *What was the relationship between teacher coaching and student math achievement?*

To investigate whether teacher participation in MIC was associated with improved student math achievement, college readiness, retention rates (and in turn reduced dropout rates), promotion rates, and math course completion rates, analyses were conducted using matched student-teacher data collected from the Cycle 1 schools. This chapter presents:

> *"You know what? Student engagement. Going into the classrooms and everybody is working. [Students are] not sitting there with [their] paper turned over because [they] don't know what to do. That's the biggest thing – for me to see student engagement. They may not get it right, but they are working on it!"*
>
> – High School Principal on evidence that students are more engaged due to MIC activities.

(1) an overview of the percentages of MIC Cycle 1 students who met TAKS-Math standards between 2008–09, and 2009–10 compared to state percentages,

(2) HLM analyses testing the relationships between student math achievement for students in MIC schools and the combination of the amount of student exposure to MIC teachers and the length of teacher participation in MIC (a combined variable),

(3) HLM analyses examining the relationships between teacher background and hours of participation in MIC activities, and seeing if these relationships influenced student math achievement,

(4) hierarchical logistic regression analyses of the relationship between teacher participation in MIC and college readiness, including the likelihood of meeting TAKS-Math commended status,

(5) logistic regression analyses of course completion rates,

(6) analyses of promotion rates and dropout, and

(7) a simple HLM analysis examining the linkages between teacher perceptions of their effectiveness as a result of participation in MIC and student math achievement.

Data on course completion were only available for high school students. In addition, only data through the 2008–09 school year on course completion, grade promotion, and dropout were available at the time this report was written. Additional information on the analyses presented in this chapter can be found in Appendix N.

What Percentage of MIC Cycle 1 Students (by Subgroup) Met the Standard on TAKS-Math between 2007–08 and 2009–10?

Tables 6.1 through 6.4 provide a snapshot of the percentages of students who met the standard on TAKS-Math (also described as passing TAKS-Math). First, the data for groups of students in Grades 6-8 in a MIC school are presented for 2007–08.[22] Second, the data are presented for groups of students who had a MIC teacher during both the first year (2008–09) and second year (2009–10) of MIC implementation at Cycle 1 schools. Statistical tests (independent t-tests) were conducted to explore whether the differences between 2008–09 and 2009–10 were statistically significant. In addition, the percentages of students who met the standard on TAKS-Math for all students in Texas and all economically disadvantaged students in Texas are presented for comparison across years. Only TAKS-Math passing rates were compared over time since the focus of the program was solely on math.

Table 6.1 shows the percentages of middle school students at MIC schools, and Table 6.2 shows similar results for high school students at MIC schools. Tables 6.3 and 6.4 present the changes in passing rates by grade for middle school and high school students, respectively.

The results by subgroup for all MIC middle school students (Table 6.1) show that there were statistically significant increases in the percentages of students passing TAKS-Math across the two years of MIC implementation, between 2008–09 and 2009–10. For all middle school students with a teacher participating in MIC, the passing rate in 2009–10 was 81%, compared to 74% 2008–09. This 7 percentage point increase was statistically significant and compared favorably with the changes in passing rates across the state. There was an increase of 2 percentage points in all middle schools students in Texas passing TAKS-Math over the same time period. This pattern of improvement held across ethnic groups, and for at-risk students and economically disadvantaged students. The percentage of at-risk students with MIC teachers passing TAKS-Math increased from 59% in 2008–09 to 65% in 2009–10. The percentage of economically disadvantaged students passing TAKS-Math between 2008–09 and 2009–10 increased by 8 percentage points in MIC schools compared to 3 percentage points for economically disadvantaged students in the state overall.

[22] Teacher-student links were not made for 2007–08, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.

Table 6.1

MIC Cycle 1 Middle School Students (Grades 6-8) Who Met TAKS-Math Standards by Student Subgroup, 2007–08, 2008–09, and 2009–10

Group	n Students in Grades 6-8 in a MIC School 07–08	% Students Passing TAKS-Math 07–08	n Students in Grades 6-8 with a MIC Teacher 08–09	% Students Passing TAKS-Math 08–09	n Students in Grades 6-8 with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	t (08–09 vs. 09–10)
All Students	31,735	70.8%	24,477	73.7%	21,294	80.7%	17.78*
White	4,284	79.6%	3,273	82.7%	2,688	87.0%	4.61*
Hispanic	23,417	69.7%	18,477	72.9%	16,203	80.0%	15.72*
African American	3,372	63.6%	2,237	64.2%	1,951	74.2%	7.07*
At-Risk	16,881	54.7%	12,659	58.8%	9,672	64.7%	8.95*
Economically Disadvantaged	22,329	67.2%	17,586	70.4%	15,458	78.2%	16.27*
Special Education	2,163	24.6%	1,782	50.7%	757	53.9%	1.46
Regular Education	29,555	74.1%	22,689	75.5%	20,536	81.7%	15.57*
All Texas Students in Grades 6-8	728,320	77%	960,483	79%	978,579	81%	n/a
All Texas Economically Disadvantaged Students in Grades 6-8	494,990	69%	513,572	72%	550,418	75%	n/a

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2007–08, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
*Year-to-year changes being compared were statistically significantly different ($p < .05$)

At the high school level, on average there was an increase in the percentages of MIC students who met the standard on TAKS-Math between 2008–09 and 2009–10 (Table 6.2).[23] Except for special education students there were increases in the percentages of students passing across all subgroups. For all students with a teacher participating in MIC there was an increase in the percentage of students who met TAKS-Math standards from 65% to 73% between 2008-09 and 2009–10. The percentages of at-risk students who met TAKS-Math standards increased from 50% to 59% between

[23] Teacher-student links were not made for 2007–08, but the data for all Grades 9-11 students in MIC high schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.

2008-09 and 2009–10. This 9 percentage increase in high school students with a MIC teacher passing TAKS-Math between 2008-09 and 2009–10 compares favorably with the rates of passing for all high school students in Texas. Across all students in Texas, there was a 7 percentage point increase in the rates of passing over the same one-year period.

Table 6.2

MIC Cycle 1 High School Students (Grades 9-11) Who Met TAKS-Math Standards by Student Subgroup, in 2007–08, 2008–09, and 2009–10

Group	n Students in Grades 9-11 in a MIC School 07–08	% Students Passing TAKS-Math 07–08	n Students in Grades 9-11 with a MIC Teacher 08–09	% Students Passing TAKS-Math 08–09	n Students in Grades 9-11 with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10)
All Students	51,509	56.5%	29,117	64.5%	29,933	73.3%	23.15*
White	6,204	71.6%	3,158	75.4%	3,275	83.7%	8.29*
Hispanic	40,109	54.7%	22,543	63.7%	23,432	71.9%	18.96*
African American	4,404	47.0%	2,880	55.6%	2,671	69.8%	11.06*
At-Risk	33,307	40.5%	18,048	50.1%	17,009	59.2%	17.00*
Economically Disadvantaged	35,856	52.4%	20,903	61.0%	21,428	70.2%	20.03*
Special Education	3,254	12.9%	2,028	33.4%	1,297	31.0%	-1.47
Regular Education	48,230	59.4%	27,082	66.9%	28,632	75.2%	21.81*
All Texas Students in Grades 9-11	891,651	66%	891,127	70%	910,981	77%	n/a
All Texas Economically Disadvantaged Students in Grades 9-11	397,123	54%	406,598	60%	447,642	69%	n/a

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2007–08, but the data for all Grades 9-11 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
*Year-to-year changes being compared were statistically significantly different ($p < .05$)

Table 6.3 presents the year-to-year changes in TAKS-Math passing rates that were found to be statistically significant, broken down by MIC middle-school grade level. [24] Multiple cohorts of

[24] Teacher-student links were not made for 2007–08 because these data were not requested from participating campuses, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.

students are presented. Findings indicate that across Grades 6-8 in the MIC schools, the program does seem to be benefitting multiple subgroups of students, particularly when looked at across the one-year grant period. The percentage of at-risk Grade 6 students meeting standards on TAKS-Math increased from 59% to 69% between the 2008-09 and 2009–10 school years. The percentage of at-risk Grade 7 students meeting standards on TAKS-Math increased from 58% to 63%, and the percentage of at-risk Grade 8 students meeting standards increased from 59% to 64% over the same time period. For all Grade 6 students, the percentage passing increased from 73% to 82% between 2008–09 and 2009–10. The percentage of Grade 7 students who met the standard on TAKS-Math increased from 73% to 80% over the same time period. Finally, 75% of all Grade 8 students in MIC schools met TAKS-Math standards in 2008-09, and in 2009–10 that percentage increased to 80%.

Table 6.3

MIC Cycle 1 Middle School Students (Grades 6-8) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2007–08, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 07–08	% Students Passing TAKS-Math 07–08	n Students in Each Grade with a MIC Teacher 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10)
Grade 6							
All Grade 6 Students	9,567	74.5%	7,690	73.2%	6,011	82.4%	13.06*
White	1,264	83.2%	1,041	81.9%	811	89.4%	4.63*
Hispanic	7,178	74.0%	5,805	72.5%	4,595	81.2%	10.53*
African American	928	63.6%	707	63.4%	467	78.6%	5.80*
At-Risk	4,784	60.1%	3,869	59.0%	2,602	68.5%	7.87*
Economically Disadvantaged	6,985	71.0%	5,672	69.7%	4,368	79.6%	11.45*
Special Education	672	30.1%	541	50.1%	225	57.3%	1.84
Regular Education	8,894	77.9%	7,148	74.9%	5,785	83.4%	11.92*
All Texas Students in Grade 6	317,052	80%	323,730	80%	329,839	82%	n/a
All Texas Economically Disadvantaged Students in Grade 6	171,487	73%	178,820	73%	191,351	76%	n/a
Grade 7							
All Grade 7 Students	11,226	69.7%	8,308	73.2%	7,548	79.6%	9.46*
White	1,439	78.9%	1,057	81.5%	923	84.8%	2.01*

(CONTINUED)

Table 6.3 (CONTINUED)

MIC Cycle 1 Middle School Students (Grades 6-8) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2007–08, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 07–08	% Students Passing TAKS-Math 07–08	n Students in Each Grade with a MIC Teacher 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10)
Hispanic	8,297	68.6%	6,409	72.7%	5,768	79.4%	8.67*
African American	1,259	62.4%	688	62.4%	722	72.0%	3.88*
At-Risk	5,946	52.7%	4,316	58.0%	3,405	62.5%	3.98*
Economically Disadvantaged	7,951	66.2%	6,049	70.5%	5,568	77.6%	8.72*
Special Education	783	23.1%	596	51.8%	260	47.7%	-1.12
Regular Education	10,440	73.1%	7,711	74.9%	7,288	80.7%	8.64*
All Texas Students in Grade 7	318,800	76%	318,922	79%	327,536	81%	n/a
All Texas Economically Disadvantaged Students in Grade 7	167,687	67%	169,601	71%	183,459	75%	n/a
Grade 8							
All Grade 8 Students	10,942	68.6%	8,479	74.7%	7,735	80.4%	8.70*
White	1,581	77.2%	1,175	84.5%	954	87.0%	1.64
Hispanic	7,942	66.8%	6,263	73.5%	5,840	79.8%	8.20*
African American	1,185	64.9%	842	66.4%	762	73.6%	3.17*
At-Risk	6,151	52.4%	4,474	59.4%	3,665	64.0%	4.24*
Economically Disadvantaged	7,393	64.5%	5,865	71.0%	5,522	77.7%	8.25*
Special Education	708	21.0%	645	50.2%	272	57.0%	1.88
Regular Education	10,221	71.9%	7,830	76.7%	7,463	81.2%	6.84*
All Texas Students in Grade 8	309,854	75%	317,831	79%	321,204	80%	n/a
All Texas Economically Disadvantaged Students in Grade 8	155,816	68%	165,151	71%	175,608	73%	n/a

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2007–08, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
*Year-to-year changes being compared were statistically significantly different ($p < .05$)

Table 6.4 presents the year-to-year changes in TAKS-Math passing rates broken down by high-school grade level.[25] As with the results for middle school students, MIC does seem to be benefitting multiple subgroups of students in Cycle 1 high schools. The increases in the percentages of high school students in some grades who met the TAKS-Math standard were relatively large. Specifically, the percentage of at-risk students in Grade 10 who met the standard on TAKS-Math increased from 43% to 58% (15 percentage points) between the 2008-09 and 2009–10 school years. The percentage of at-risk students in Grade 11 who met the standard increased from 63% to 78% (15 percentage points) between 2008-09 and 2009–10. The percentage of all Grade 9 students in MIC schools who met the standard on TAKS-Math increased from 61% to 64% between 2008–09 and 2009–10. The percentage of all Grade 10 students in MIC schools who met the standard on TAKS-Math increased from 62% to 75%. Lastly, 73% of all Grade 11 students in MIC schools who met the standard on TAKS-Math in 2008–09, and in 2009–10 that percentage increased to 86%.

So though students are doing better overall in both the middle and high schools, MIC may be particularly beneficial for high school students since the relative increase in percentages of high school students passing TAKS-Math compared to state percentages, was larger than the percentage of middle school students passing TAKS-Math compared to state averages. This may have to do with the difficulty of the math course content at the high school levels. MIC high school teachers may have particularly benefited from the extra coaching and professional development they received in the program.

[25] Teacher-student links were not made for 2007–08, but the data for all Grades 9-11 students in MIC high schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.

Table 6.4

MIC Cycle 1 High School Students (Grades 9-11) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2007–08, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 07–08	% Students Passing TAKS-Math 07–08	n Students in Each Grade with a MIC Teacher 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10)
Grade 9							
All Grade 9 Students	21,248	48.6%	11,916	60.7%	12,538	63.9%	5.13*
White	2,309	64.6%	1,043	72.7%	1,126	75.0%	1.25
Hispanic	16,864	47.0%	9,581	59.8%	10,217	62.5%	3.88*
African American	1,784	38.6%	1,125	54.0%	1,006	61.6%	3.59*
At-Risk	13,879	31.2%	7,311	45.4%	7,142	46.4%	1.21
Economically Disadvantaged	15,420	44.5%	9,089	57.6%	9,601	61.2%	4.97*
Special Education	1,556	11.1%	956	31.6%	628	25.6%	-2.59*
Regular Education	19,682	51.6%	10,958	63.2%	11,906	65.9%	4.19*
All Texas Students in Grade 9	345,916	60%	336,081	67%	343,517	70%	n/a
All Texas Economically Disadvantaged Students in Grade 9	169,364	48%	165768	56%	182,152	62%	n/a
Grade 10							
All Grade 10 Students	16,133	53.9%	8,884	61.5%	8,921	74.8%	19.17*
White	2,026	68.1%	1,007	73.7%	1,077	85.1%	6.45*
Hispanic	12,498	52.3%	6,754	60.5%	6,879	73.5%	16.31*
African American	1,369	43.8%	928	49.9%	788	68.1%	7.82*
At-Risk	10,183	35.8%	5,216	43.4%	4,740	58.0%	14.68*
Economically Disadvantaged	11,125	50.6%	6,196	57.5%	6,197	71.3%	16.29*
Special Education	1,005	9.9%	565	33.6%	346	29.5%	-1.31
Regular Education	15,123	56.9%	8,314	63.4%	8,575	76.6%	18.82*
All Texas Students in Grade 10	293,041	63%	293,402	65%	296,255	74%	n/a
All Texas Economically Disadvantaged Students in Grade 10	127,130	51%	132,114	55%	142,049	66%	n/a

(CONTINUED)

Table 6.4 (CONTINUED)

MIC Cycle 1 High School Students (Grades 9-11) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2007–08, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 07–08	% Students Passing TAKS-Math 07–08	n Students in Each Grades with a MIC Teacher 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10)
Grade 11							
All Grade 11 Students	14,128	71.1%	8,317	73.2%	8,474	85.8%	20.30*
White	1,869	84.1%	1,108	79.6%	1,072	91.5%	8.05*
Hispanic	10,747	69.5%	6,208	73.0%	6,336	85.3%	17.09*
African American	1,251	62.6%	827	64.2%	877	80.6%	7.68*
At-Risk	9,245	59.4%	5,521	62.8%	5,127	78.0%	17.46*
Economically Disadvantaged	9,311	67.4%	5,618	70.2%	5,630	84.2%	17.94*
Special Education	693	21.2%	507	36.7%	323	43.0%	1.82
Regular Education	13,425	73.7%	7,810	75.6%	8,151	87.4%	19.43*
All Texas Students in Grade 11	252,694	79%	261,644	81%	271,209	89%	n/a
All Texas Economically Disadvantaged Students in Grade 11	100,629	69%	108,716	73%	123,441	84%	n/a

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2007–08, but the data for all Grades 9-11 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2007–08 and the years of MIC implementation (2008–09 and 2009–10), as well as between the two years of MIC implementation.
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
*Year-to-year changes being compared were statistically significantly different ($p < .05$)

Is Teacher Participation in MIC Associated with Changes in Student Math Achievement?

In order to assess whether the observed changes in TAKS-Math scale scores over time were related to participation in MIC, the evaluation team conducted a number of HLM analyses. For the analyses of the effect of MIC on student math achievement, HLM analyses were conducted separately for middle school grades and high school grades. Middle school grades were identified as Grades 7 and 8 solely for the purposes of this analysis. Pretest scores for these analyses came from 2007–08, and in 2007–08, the 2009–10 cohort of Grade 6 students would have still been in Grade 4. At the time the analyses were conducted TAKS-Math scores were not requested for Grade 4 students, therefore longitudinal data analyses were not conducted for these students. High school grades were identified as Grades 9-11 because there is no Grade 12 TAKS-Math assessment. The Grade 11 TAKS-Math assessment serves as the exit-level exam for high school students.

As indicated in Chapter 3, the amount of exposure to MIC of both the students and teachers needs to be taken into account in the analysis of the relationship between MIC and student math achievement. Both students, and teachers could have zero, one, or two years of exposure to MIC and these differing levels could affect the relationship between MIC and student math achievement. To take these levels of exposure into account, the Cycle 1 teachers and students were classified into the following six categories:[26]

A. Student no experience 2008-2010: Non-MIC teacher no experience 2008-2010
B. Student one year experience in 2008–09: MIC teacher one year experience in 2008–09/ Non-MIC teacher 2009–10
C. Student one year of experience in 2009–10: Non-MIC teacher in 2008–09/ MIC teacher one year of experience in 2009–10
D. Student one year experience in 2009–10: Non-MIC teacher in 2008–09/ MIC teacher two years of experience in 2009–10
E. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher one year of experience in 2009–10
F. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher two years of experience in 2009–10

By design there was variability in the way the program was implemented in the schools across grantees, and in the numbers of teacher participants in each school. Some schools had high percentages of math teachers who participated, while others had very few. Due to this, the effect of the program may vary across schools. In order to address this issue, two HLM models were run, with one including all schools with statistical adjustments for the differences in teacher participants per school and one including just schools where all teacher and student exposure types were represented. Results from the first type of HLM model are presented in this chapter ("full dataset"). The sample size for the latter analysis was smaller and thus this was labeled the "reduced dataset model." These analyses were done as an additional check on the results and additional details about these analyses, along with the results are presented in Appendix N. The outcome in these analyses is the standardized TAKS-Math scale score.

Teacher Participation in MIC, Middle School, and High School Student Math Achievement

Table 6.5 presents the results of the HLM analysis of the relationship between having a MIC teacher in a Cycle 1 middle school or high school and student achievement as measured by TAKS-Math. TAKS-Math scale scores were standardized using the state TAKS-Math average and standard

[26] A comparison of the demographic characteristics of the students by category is provided in Appendix N.

deviation (see table notes and Appendix N for more information).[27] Since standardized TAKS-Math scale scores were used as the outcome in these analyses, the results need to be interpreted in terms of numbers of standard deviations of increase or decrease.

Cycle 1 Middle School Math Achievement

For the middle school analyses, as noted in Table 6.5, students in MIC Cycle 1 schools who were in Grades 7 and 8 in 2009–10 were considered. There were 16,440[28] students in the analysis sample for the Cycle 1 middle schools, with 90% having had a MIC teacher for either one or two years during the grant period. Overall, 49% of the middle school students were in Grade 7 and 51% were in Grade 8. In addition, 73% of the students were identified as economically disadvantaged, and 46% were at-risk. Hispanic students were the largest portion of the population at about 79%. At the school level, 37% of the students were in schools with a District-to-Teacher MIC program type. Less than 1% of students were in schools that had a Peer-to-Peer MIC program type, and 45% of the students were in schools whose MIC programs fell into the “Other” program type category. The remaining 18% of students were in schools with an ASP-to-District MIC program type. Additional details about the composition of the Cycle 1 middle school analysis sample are provided in Appendix N.

A positive relationship between having a MIC teacher and student math achievement was found, particularly in the case of teachers who had more than one year of experience in MIC. In other words, middle school students who had teachers with more experience in MIC scored higher on TAKS-Math, than students who never had a MIC teacher. The largest relationships were seen for the students who have been exposed to MIC teachers for two years (groups D and F). The largest positive relationships were for students who had two years of exposure to MIC in 2009–10 who also had a teacher with two years of experience in 2009–10 (group F). Findings indicate that middle school students who had two years of exposure to a teacher with two years of MIC experience (group F) scored .31 of a standard deviation higher on average than students whose teacher never participated in MIC (group A). The second largest effect was seen for students with one year of exposure, but whose teachers had two years of experience in 2009–10 (group D). These students (group D) scored .23 of a standard deviation higher than students whose teacher never participated in MIC (group A). There were larger effects for these students (group D) than for students who had two years of experience, but whose teachers had one year of experience (group E). These findings suggest that middle school students benefit more the longer the teachers spend in the program, and that once teachers are in their second year of experience with MIC they begin to have an impact on student math achievement within that year.

[27]This method of standardization was possible because the evaluators had access to TAKS-Math data for all students in Texas in Grades 5-12.

[28]The analysis sample includes both MIC and non-MIC students, thus this number is larger than the sample sizes detailed in Table 6.3.

Table 6.5

MIC Cycle 1 Middle School (Grades 7 and 8) and High School (Grades 9-11) Students: Average TAKS-Math Scale Scores as a Function of Teacher and Student Characteristics and MIC Program Type, 2009–10

Variable Name	Middle School (n=16,440) Standardized TAKS-Math Scale Score	High School (n=38,961) Standardized TAKS-Math Scale Score
Intercept [Standardized TAKS-Math Scale Score (2009–10)]	-0.05	-0.02
Pretest Standardized TAKS-Math Scale Score (2007–08)	0.64*	0.69*
MIC group B	0.04	0.07*
MIC group C	0.16*	0.04
MIC group D	0.23*	0.06*
MIC group E	0.15*	0.14*
MIC group F	0.31*	0.16*
Grade 8 (vs. Grade 7)	0.00	n/a
Grade 10 (vs. Grade 9)	n/a	-0.01
Grade 11 (vs. Grade 9)	n/a	-0.15*
Economically Disadvantaged	-0.04*	-0.01
At-Risk	-0.32*	-0.25*
Female	0.02*	-0.03*
Native American	-0.05	0.01
Asian	0.29*	0.19*
Black	-0.08*	-0.04*
White	0.05*	0.06*
LEP	0.06*	-0.01
Special Education	-0.05	-0.15*
District-to-Teacher MIC Program Type	0.01	0.13*
Peer-to-Peer MIC Program Type	-0.31	0.04
Other MIC Program Type	0.03	-0.04

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09.
* $p < .05$
Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Grade 7 (Middle School), Grade 9 (High School), Hispanic students, and ASP-to-District MIC Program Type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.
Definition of Groups defined by teachers' MIC experience
A. Student no experience 2008-2010/teacher no experience 2008-2010
B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10
C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09
D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09
E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09
F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Cycle 1 High School Math Achievement

For the high school analyses presented in Table 6.5, students in MIC Cycle 1 schools who were in Grades 9-11 in 2009–10 were considered. Again, as with the middle school analyses, TAKS-Math scale scores were standardized using the state TAKS-Math average and standard deviation (see Appendix N for more information). Alternative high schools were not included in these analyses. There were 38,961 students in total present in the analysis sample for the Cycle 1 high schools, which again includes students who never had a MIC teacher. In the Cycle 1 high school analysis sample, 79% had a MIC teacher for a math course over the two-years the program has been implemented. At the school level, 25% of the students were in schools with a District-to-Teacher MIC program type, 21% were in schools that had a Peer-to-Peer MIC program type, and 42% of the full sample were in schools whose MIC programs fell into the "Other" MIC program type category. The remaining 12% of students in the analyses were in schools where the ASP provided coaches to the district.

As with the middle school students, a positive effect of MIC on student math achievement was found, though it seems interlinked with the students' length of experience with MIC teachers. Findings show that the largest effects are seen for the students who have been exposed to MIC teachers for two years (groups E and F). The largest positive effects were for students who had two years of exposure to MIC in 2009–10 who also had a teacher with two years of experience in 2009–10 (group F). The findings indicate that high school students who had two years of exposure who also had a teacher with two years of MIC experience (group F) scored .16 of a standard deviation higher on average than students whose teacher never participated in MIC (group A). Notably, the second largest effect was seen for students who had two years of exposure to teachers participating in MIC, but whose teacher in 2009–10 had only one year of experience (group E). These students (group E) scored .14 of a standard deviation higher than students whose teacher never participated in MIC (group A). There were larger effects for these students (group E) than for students who had one year of experience but whose teachers had two years of experience, (group D, .06 of a standard deviation higher). Notably, this was the middle school group showing the second largest effect. This indicates that there may be a cumulative effect of the program on student math achievement at the high school level, with the students doing better after two of years of experience with teachers who were in the program, regardless of the length of time the teacher participated in the program.

Is There an Added Benefit of PD and Coaching on Student Math Achievement Once Teacher Background Characteristics are Considered?

In addition to the years that a teacher has been involved in MIC, it is possible that there is a separate relationship between the number of hours that the teachers spent in coaching and PD and student achievement. To assess the relationship of MIC coaching and PD with student achievement once teacher background characteristics are considered along with years of experience in MIC, HLM analyses were conducted using only the sample of MIC Cycle 1 teachers and their students. This was because teacher background characteristics were not available for non-MIC teachers. Teachers with one year of experience were used as the comparison group. Only the coefficients for MIC coaching hours, MIC PD hours, advanced degree, years of experience, and certification are presented. The average MIC coaching and PD hours that the teachers participated in per year were included in the model in order to account for the differing times that the teachers participated in program activities.

The estimated models also took into consideration MIC exposure groups (D, E, and F), grade, prior year's achievement, economically disadvantaged status, at-risk status, student gender, race and ethnicity, LEP status, special education status, and variables for the school-level MIC program types. However, these variables were not presented here in order to simplify the presentation. The full HLM models and descriptive statistics for the analysis samples are presented in Appendix N.

There is little influence of the actual number of coaching hours once years of participation and teacher background variables are considered (Table 6.6). At the high school level, students with MIC teachers who had participated in 60 or more hours of PD per year scored an average of .14 of a standard deviation on TAKS-Math higher than students whose teachers only had 1-20 hours of PD on average per year. Again, as indicated in Chapter 4, some grantees may have misinterpreted what was meant by "coaching" versus "professional development," so these results should be interpreted with some caution.

Table 6.6

MIC Cycle 1 Middle School (Grade 7 and 8) and High School (Grades 9-11) Students: Average TAKS-Math Scale Scores as a Function of Hours of PD, Hours of Coaching, and Teacher Characteristics by School Level, 2009–10

Level	Variable Name	Coaching Models (Middle School, n = 13, 678) (High School, n = 26,136) Standardized TAKS-Math Scale Score	PD Models (Middle School, n = 13, 428) (High School, n = 25,776) Standardized TAKS-Math Scale Score
Middle School	Intercept [Coaching/PD 0 to 20 Hours]	-0.06	-0.10
	Coaching/PD 21 to 40 Hours	-0.01	-0.04
	Coaching/PD 41 or 60 Hours	0.01	-0.03
	Coaching/PD 60 or More Hours	-0.19	0.05
	Advanced Degree	0.00	-0.01
	Years of Experience	0.01*	0.01*
	Certified in Other Fields	0.05	0.04
High School	Intercept [Coaching/PD 0 to 20 Hours]	-0.06	-0.11*
	Coaching/PD 21 to 40 Hours	0.05	0.06
	Coaching /PD 41 or 60 Hours	0.04	0.07*
	Coaching/PD 60 or More Hours	-0.09	0.14*
	Advanced Degree	0.01	0.00
	Years of Experience	0.00*	0.00*
	Certified in Other Fields	0.01	0.01

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;
* $p < .05$
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS –Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Note: The 3-level HLM models were employed (level-1 student, level-2 teacher, level 3 school). The models included pretest TAKS-Math scale score, MIC experience group A to F, Grades (7 and 8 if middle school; 9, 10, 11 if high schools), economically disadvantaged status, at-risk status, gender, race and ethnicity, LEP status, special education status, grantee MIC program type.
Note: Only MIC teachers were included in these analyses since educational and professional experience data were not collected as part of this evaluation for non-MIC teachers.
Reference category: Coaching or PD 0 to 20 hours.

Is Teacher Participation in MIC Associated with Changes in Student College Readiness?

Two outcome measures were used to assess college readiness: (1) the likelihood of meeting (or exceeding) commended status and (2) the likelihood of meeting (or exceeding) the HERC cutoff on the Grade 11 TAKS-Math exit-level assessment. Commended status is a measure of college readiness at any grade and is a higher standard of achievement than passing TAKS-Math. The HERC is a slightly less stringent standard than commended status on TAKS-Math, but still higher than meeting the standard on TAKS-Math. The HERC is only applicable to students in Grade 11 (see Appendix O).

For the analyses that predicted meeting (or exceeding) commended status in TAKS-Math and meeting (or exceeding) the HERC cutoff on the Grade 11 TAKS-Math assessment, odds ratios are presented to give the reader information about the strength of the relationship between each predictor and each outcome. Intuitively speaking, odds ratios describe how many times more (or less) a given group is likely to meet or exceed the cutoffs in TAKS-Math than a comparison group.[29]

Teacher Participation in MIC and Middle School and High School Student College Readiness

Cycle 1 Middle School College Readiness as Measured by Commended Status

Table 6.7 presents analyses of the likelihood of MIC Cycle 1 middle school students meeting (or exceeding) commended status. After taking into consideration pretest TAKS-Math scores, grade, economically disadvantaged status, at-risk status, race and ethnicity, and other student demographic characteristics, students with a MIC teacher with two years of experience are more likely to meet commended status than middle school students in other groups. Students with teachers who had two years of MIC experience who also had two years of experience with MIC teachers were 2.65 times more likely (based on the odds ratio) to meet commended status than students who never had a MIC teacher as of 2009–10. Similarly, students with teachers who had two years of MIC experience in 2009–10 who also had one year of experience with MIC teachers in 2009–10 were 1.87 times more likely to meet commended status than students who never had a MIC teacher as of 2009–10.

[29] These analyses were performed using Hierarchical Logistic Regression which is similar to basic HLM but is appropriate for nested data where the outcome is dichotomous (e.g., meeting/exceeding commended status or not).

Table 6.7

MIC Cycle 1 Middle School (Grades 7 and 8) and High School (Grades 9-11): Likelihood that Students Will Meet Commended Status on TAKS-Math as a Function of Having a MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Middle School (n = 16,440)		High School (n = 38,961)	
	Statistically Significant	Odds Ratio	Statistically Significant	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	-	n/a	-	n/a
Pretest TAKS-Math Scale Score (2007–08)	+	6.00	+	10.42
MIC group B	n.s.	1.09	n.s.	0.99
MIC group C	+	1.54	n.s.	0.90
MIC group D	+	1.87	n.s.	0.96
MIC group E	n.s.	1.31	+	1.20
MIC group F	+	2.65	n.s.	1.25
Grade 8 (vs. Grade 7)	n.s.	0.96	n/a	n/a
Grade 10 (vs. Grade 9)	n/a	n/a	-	0.44
Grade 11 (vs. Grade 9)	n/a	n/a	n.s.	0.74
Economically Disadvantaged	-	0.85	n.s.	0.93
At-Risk	-	0.38	-	0.46
Female	n.s.	1.01	-	0.84
Native American	n.s	0.99	n.s.	0.51
Asian	+	2.04	n.s.	1.43
Black	n.s.	0.83	n.s.	0.95
White	+	1.26	n.s.	1.13
LEP	+	1.30	n.s.	0.98
Special Education	n.s.	1.03	n.s.	0.79
District-to-Teacher MIC Program Type	n.s.	1.43	n/a	1.00
Peer-to-Peer MIC Program Type	n.s.	0.02	n.s.	0.85
Other MIC Program Type	n.s.	1.16	n.s.	1.25

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;
+= Statistically significant positive effects; - = Statistically significant negative effects; n.s. = Not statistically significant
Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Definition of groups defined by teachers' MIC experience
A. Student no experience 2008-2010/teacher no experience 2008-2010
B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10
C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09
D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09
E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09
F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Cycle 1 High School College Readiness as Measured by Commended Status

Table 6.7 above presents analyses of the likelihood of MIC high school students meeting commended status. After taking into consideration pretest TAKS-Math scale scores, grade, economically disadvantaged status, at-risk status, race and ethnicity, and other student demographic characteristics high school students with two years of experience with MIC teachers may be more likely to meet commended status than students in other groups. In Table 6.7 high school students who had MIC teachers for two years, but a teacher with one year of experience (Group E) in 2009–10 were 1.20 times as likely (as measured by the odds ratio) to meet commended status as students with no experience whose teachers never had any MIC experience. This adds additional evidence that at the high school level students benefit more from MIC the longer they experience teachers who have had MIC training, perhaps due to the complexity of the subject material at high school, but no other tested groups had significant findings.

Cycle 1 High School College Readiness as Measured by the HERC Standard

In addition to the likelihood of meeting (or exceeding) commended status, the relationship between teacher participation in MIC and the special case of college readiness in Grade 11 was examined. The sample for these analyses was limited to Grade 11 students and the outcome measure was 2009–10 HERC (Grade 11 TAKS-Math) scores. Grade 11 students who score over 2200 on HERC are considered to be "college ready" (See Appendix O for a discussion). There is some indication that more time exposed to MIC teachers on the part of students is positively related to college readiness. The odds of meeting the HERC standard increased by 36% if a student was in group E. Group E is comprised of students who had two years of exposure to MIC teachers, but whose teachers during each of those years only had one year of exposure to MIC. So the likelihood, as measured by the odds ratio, of scoring at the threshold of college readiness or above increased by 1.36 times if a student was in group E. This result is similar to that from the earlier high school HLM models of student math achievement where the length of student exposure to MIC-participating teachers was a key factor to increasing achievement (Table 6.8).

Table 6.8

MIC Cycle 1 High School Students (Grade 11 only): Modeling Student College Readiness Based on HERC Cut Point of TAKS-Math Scale Scores, 2009–10

Variable Name	Met HERC College Readiness Standard, Grade 11 (n=12,045)	
	Statistically Significant	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	+	n/a
Pretest TAKS-Math Scale Score (2007–08)	+	12.77
MIC group B	n.s.	1.13
MIC group C	n.s.	0.98
MIC group D	n.s.	1.14
MIC group E	+	1.36
MIC group F	n.s.	1.28
Economically Disadvantaged	n.s.	1.07
At-Risk	-	0.48
Female	n.s.	0.95
Native American	n.s.	1.24
Asian	n.s.	1.55
Black	-	0.73
White	n.s.	0.95
LEP	n.s.	0.99
Special Education	-	0.49
District-to-Teacher MIC Program Type	n.s.	1.41
Peer-to-Peer MIC Program Type	n.s.	1.03
Other MIC Program Type	n.s.	0.79

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09

+ = Statistically significant positive effects; = Statistically significant negative effects; n.s. = Not statistically significant
Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Definition of groups defined by teachers' MIC experience
A. Student no experience 2008-2010/teacher no experience 2008-2010
B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10
C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09
D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09
E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09
F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Is Teacher Participation in MIC Associated with Changes in Student Math Course Completion Rates?

Table 6.9 presents the results of logistic regression models predicting the likelihood of passing three key math courses, Algebra 1, Algebra 2, and Geometry in 2008–09.[30] As indicated in Chapter 3, only one year of course completion data for the Cycle 1 high schools was available at the time this report was written. Findings indicate that, after controlling for student characteristics and 2007–08 pretest TAKS-Math scale scores, students were significantly more likely to successfully complete Geometry, Algebra 1, and Algebra 2 when the student had a MIC teacher. The odds of successfully completing Geometry increased by 34% which means these students were 1.34 times more likely to complete Geometry than a student without a MIC teacher in 2008–09. Students with a MIC teacher in 2008–09 were 1.38 times more likely to complete Algebra 1 than students with a non-MIC teacher. Finally, high school students with a MIC teacher were 1.53 times more likely to complete Algebra 2 than students being taught by a teacher who was not participating in MIC.

Table 6.9

MIC Cycle 1 High School Students (Grades 9-11): Likelihood that Students Will Pass Math Courses as a Function of Teacher and Student Characteristics and MIC Program Type, 2008–09

Variable Name	Geometry (n = 18,282)		Algebra 1 (n = 16,685)		Algebra 2 (n = 13,036)	
	Statistically Significant	Odds Ratio	Statistically Significant	Odds Ratio	Statistically Significant	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	+	n/a	+	n/a	+	n/a
Pretest TAKS-Math Scale Score (2007–08)	n.s.	1.00	-	0.99	n.s.	0.99
MIC Single-Year Teacher Participants	+	1.34	+	1.38	+	1.53
Grade 10	+	1.56	n.s.	1.03	n.s.	1.06
Grade 11	+	1.20	+	1.98	n.s.	1.17
Economically Disadvantaged	n.s.	0.93	-	0.84	n.s.	0.97
At-Risk	-	0.25	-	0.29	-	0.29
Female	+	1.30	+	1.31	+	1.32
Native American	n.s.	1.71	n.s	1.08	n.s.	0.45
Asian	+	1.76	+	2.85	+	2.15
Black	n.s.	0.99	+	1.28	n.s.	1.14
White	+	1.29	+	1.18	+	1.31
LEP	n.s.	1.07	n.s.	1.00	n.s.	1.13
Special Education	n.s.	1.01	n.s.	0.93	n.s.	0.91
District -to-Teacher MIC Program Type	n.s.	0.97	-	0.79	-	0.73
Peer-to-Peer MIC Program Type	+	1.53	+	2.06	n.s.	1.02
Other MIC Program Type	+	1.26	+	1.27	n.s.	0.88

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
+= Statistically significant positive effects; - = Statistically significant negative effects; n.s. = Not statistically significant
Note: Reference categories for multiple category information are Grade 9 students, Hispanic students, and ASP-to-District MIC Program Type.
Note: Fixed effect logistic regression models were used. The HLM approach that treated schools as random effects did not converge.
Note: The outcome variable received a value of 1 if students passed the course without failing; 0 if students failed course or had mixed results of pass and failure.
Note: The analysis sample includes students in Grades 9-11 who took Algebra 1, Algebra 2, or Geometry. The analysis sample includes both MIC students (students who took courses from teachers who participated in MIC) and non-MIC students (students who took courses from teachers who did not participate in MIC).

[30] HLM models failed to converge indicating that there was little variability between schools.

Is Teacher Participation in MIC Associated with Changes in Student Grade Promotion Rates?

Table 6.10 illustrates the status of promotion for MIC and non-MIC students in MIC schools at different grade levels. Overall, MIC students had better promotion rates than non-MIC students in 2008-2009, especially for those students in Grade 9, Grade 10, and Grade 11.

Grade promotion was examined by comparing student's grade levels in 2008–09 and 2009–10. From Grade 5 to Grade 11, the majority of both MIC and non-MIC students were promoted to the next level in 2009–10. In terms of high schools, MIC students showed significantly better promotion rates than non-MIC students. Specifically, at Grade 9, promotion rates were 6 percentage points higher among MIC students (86%) than non-MIC students (80%). Fewer MIC students than non-MIC students were retained in Grades 10 and 11, approximately 5% and 3% fewer respectively. These results may need to be viewed with some caution since retention occurs relatively infrequently except at Grade 9, and extensive statistical controls were not used in these analyses.

Table 6.10

MIC Cycle 1 Middle School and High School Students (Grades 6-12): Grade Promotion for MIC and Non-MIC Students by Grade Level, 2008–09 to 2009–10

Grade Level	MIC Students			Non-MIC Students		
	n	% Promoted	% Retained	n	% Promoted	% Retained
Grade 6	6,834	99%	1%	2,218	99%	1%
Grade 7**	7,542	100%	0%	3,279	99%	1%
Grade 8	6,801	99%	1%	2,974	99%	1%
Grade 9***	11,138	86%	14%	8,517	80%	20%
Grade 10***	8,334	97%	3%	7,262	92%	8%
Grade 11***	7,501	94%	6%	6,918	91%	9%
Grade 12	195	-	-	933	-	-

Source: PEIMS 2008–09; PEIMS 2009–10; MIC Cycle 1 Schools Data
*$p < .05$; ** $p < .01$; *** $p < .001$

Is Teacher Participation in MIC Associated with Changes in Student Dropout Rates?

As indicated in Chapter 3, information on dropout, graduation, and leaving rates was only available for high school students in the year 2008–09. Table 6.11 presents rates of dropout, graduation, and leaving by subgroup for students who were high school seniors in 2008–09. MIC students have higher rates of graduation, lower rates of dropout, and lower rates of leaving than non-MIC students across the subgroups. This finding should be interpreted with some caution in that the non-MIC students included both those who took math and did not take math their senior year.

Table 6.11

MIC Cycle 1 High School Students (Grade 12 only): Graduation, Dropout, and Leaving for MIC and Non-MIC Students by Subgroup, 2008–09

Group	Students' MIC Status	n	Graduation Rate	Graduation Difference Between MIC and Non-MIC	Dropout Rate	Dropout Difference Between MIC and Non-MIC	Leaving Rate	Leaving Difference Between MIC and Non-MIC
All MIC Grade 12 Students	Non-MIC	11,970	85.6%	7.3%	5.6%	-3.0%	8.8%	-4.2%
	MIC	2,758	92.9%		2.6%		4.5%	
White	Non-MIC	1,390	90.4%	5.6%	2.7%	-1.3%	6.9%	-4.4%
	MIC	472	96.0%		1.5%		2.5%	
Hispanic	Non-MIC	9,251	85.6%	7.0%	5.8%	-3.1%	8.6%	-3.9%
	MIC	1,921	92.6%		2.7%		4.7%	
Black	Non-MIC	1,199	79.7%	9.0%	7.9%	-3.7%	12.3%	-5.2%
	MIC	239	88.7%		4.2%		7.1%	
At-Risk	Non-MIC	7,797	79.2%	8.5%	8.3%	-3.8%	12.5%	-4.7%
	MIC	1,520	87.8%		4.5%		7.8%	
Economically Disadvantaged	Non-MIC	7,965	87.2%	3.4%	4.9%	-1.3%	7.9%	-2.1%
	MIC	1,617	90.6%		3.6%		5.8%	
Special Education	Non-MIC	1,116	93.2%	0.8%	2.2%	0.8%	4.6%	-1.6%
	MIC	133	94.0%		3.0%		3.0%	
Regular Education	Non-MIC	10,854	84.9%	8.0%	6.0%	-3.4%	9.2%	-4.6%
	MIC	2,625	92.8%		2.6%		4.6%	
LEP	Non-MIC	1,299	70.7%	8.6%	11.3%	-3.6%	17.9%	-5.0%
	MIC	339	79.4%		7.7%		13.0%	
Female	Non-MIC	6,046	84.9%	7.6%	6.1%	-3.4%	9.0%	-4.2%
	MIC	1,412	92.5%		2.7%		4.8%	

Source: PEIMS, 2008–09
Note: MIC vs. non-MIC distinction is based on math course enrollment. If students took math courses from MIC teachers, they were considered as MIC students.
Note: Non-MIC students include both students who took math courses from non-MIC teachers and students who did not take math courses in the senior year, which may also be related to the lower graduation, dropout, and leaving rates.

Is There a Relationship between Teacher Perceptions, Practices, and Student Math Achievement?

With a study of PD programs, one can ideally link the program to changes in teacher behaviors, which can then be linked to changes in student outcomes (Yoon et al., 2007). No direct observations of teachers were conducted as part of this evaluation, so to get a sense of whether there is a link between changes in teacher behavior and student math achievement, analyses were conducted using the Cycle 1 teacher survey data. It should be noted again that not all teachers completed the survey, so the results of this analysis should not be considered conclusive, but can be used to potentially gain insight into potential relationships. Detailed survey response rates can be found in Chapter 3 or in Appendix M.

Table 6.12 presents the average teacher perceptions of the effects of the program on their content knowledge, technical knowledge, instructional skills, and usage of instructional strategies. The teachers on average were fairly positive in their assessments of the effects of the program on their content knowledge, technical knowledge, instructional skills, and usage of instructional strategies. This is consistent with the results in Chapter 5 regarding teachers' perceptions of the effect of MIC.

Table 6.12

MIC Cycle 1 Teacher Perceptions of the Effects of MIC on Their Content Knowledge, Technical Knowledge, Instructional Skills, and Usage of Instructional Strategies by School Level, 2009–10

High School	n	Mean	SD
MIC Students' TAKS-Math Scale Scores	7,239	-0.25	0.88
MIC Teachers' Perceptions of Content Knowledge	7,239	2.26	1.18
MIC Teachers' Perceptions of Technical Knowledge	7,349	2.60	1.04
MIC Teachers' Perceptions of Instructional Skills	7,349	2.72	1.06
MIC Teachers' Usage of Instructional Strategies	6,799	2.25	1.18
Middle School	**n**	**Mean**	**SD**
MIC Students TAKS-Math Scale Scores	4,868	0.01	0.96
MIC Teachers' Perceptions of Content Knowledge	4,868	2.29	1.00
MIC Teachers' Perceptions of Technical Knowledge	4,778	2.35	1.01
MIC Teachers' Perceptions of Instructional Skills	4,801	2.39	1.05
MIC Teachers' Usage of Instructional Strategies	4,571	1.91	1.17

Source: PEIMS, 2008–09; PEIMS, 2009–10

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: For the teacher perceptions scales 0=Not At All, 1=Very Little, 2=To Some Extent, 3=Quite a Bit, 4=A Great Deal, and NR=Not Raised in Training (recoded as 0 for mean calculations)

HLM analyses of the teacher survey and student math achievement data are presented in Table 6.13. Due to the small sample sizes, simple HLM models were estimated taking into account prior student achievement and grade level (See Appendix N for additional details). The relationships between the teacher survey responses and achievement were small and inconclusive. Most of the relationships were positive, meaning that more positive feelings on the part of the teachers were associated with increased student math achievement. Perception scores were on a scale from 1-4 with higher scores meaning the teachers had more positive perceptions of the program. In high school, teacher's perceptions of increases in their content knowledge, technical knowledge, and instructional skills as a result of MIC were positively associated with student math achievement. For middle school teachers, only their perceptions that their technical knowledge increased were positively associated with student math achievement.

For both the high school and middle school teachers, teacher self reports that they used the instructional techniques presented were negatively related to student math achievement. Again, these results should be interpreted with some caution, but perhaps these teachers were in particularly low performing classes to begin with and thus were attempting to implement additional instructional strategies in order to improve achievement. There were also indications from the case studies that MIC teachers struggled with discipline problems, so although MIC teachers were attempting to implement the MIC instructional strategies, discipline problems may have impeded their ability to influence positive student math achievement.

Table 6.13

HLM Analyses of the Relationships between MIC Cycle 1 Teacher Perceptions of MIC and Student Math Achievement by School Level, 2009–10

School Level	Teachers' Perceptions of Effects of MIC	Average Standardized Student TAKS-Math Scale Score
High School	MIC Teachers' Perceptions of Content Knowledge	0.030*
	MIC Teachers' Perceptions of Technical Knowledge	0.030*
	MIC Teachers' Perceptions of Instructional Skills	0.018*
	MIC Teachers' Usage of Instructional Strategies	-0.013
Middle School	MIC Teachers' Perceptions of Content Knowledge	0.017
	MIC Teachers' Perceptions of Technical Knowledge	0.040*
	MIC Teachers' Perceptions of Instructional Skills	0.017
	MIC Teachers' Usage of Instructional Strategies	-0.054*

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; MIC Teacher Survey, 2009-2010
*$p < .05$
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Note: For the teacher perceptions scales 0=Not At All, 1=Very Little, 2=To Some Extent, 3=Quite a Bit, 4=A Great Deal, and NR=Not Raised in Training (recoded as 0 for mean calculations)

Summary

MIC Cycle 1 grantees completed their second and final year of implementation during the 2009–10 school year. Both the Cycle 1 middle school and high school teacher participation in MIC were associated with increases in student math achievement, indicating that the Cycle 1 grantees are meeting the fourth critical success factor: *Students demonstrating successful learning of math concepts targeted by the district's action plan during a reasonable period of time*. Length of exposure to the program over time moderated the effect of MIC on student math achievement with longer exposure being associated with greater increases in student math achievement. In both middle school and high school, groups of matched students and teacher where both the teacher and the student had two years of exposure to MIC had the largest gains in student math achievement. At the middle school level, having a teacher that participated in MIC for two years appeared to be more important for increasing student math achievement. At the high school level exposing the student to two years of MIC was associated with greater gains than having a teacher with two years of experience and a student with one year of experience. This has to do with the different course material between middle school and high school, and that students (via the MIC teachers) are accumulating a tool-kit of strategies they can apply and build upon over time. Similarly, being exposed to MIC teachers for two years can improve students' college readiness, again indicating that becoming "college ready" involves an accumulation of skills over time.

When looking to see if there was an additional benefit of hours spent in coaching and PD over and above length of participation in the program in years, results showed that at the high school level, higher number of hours of PD were associated with greater student math achievement. For the most part the results of these analyses indicate that participation of any hourly amount per year in coaching and PD, as long as it is sustained over time, can have an impact student math achievement.

As with student math achievement, the results indicate that MIC may be helpful in reducing dropout rates, improving graduation rates, and improving grade promotion rates. This evidence is preliminary since only one year of data on these student outcomes were available at the time this report was written, so some caution needs to be taken when interpreting these results.

7. MIC Cycle 2 Grants and Student Outcomes

As described in Chapter 6, MIC is having a beneficial effect on student outcomes in Cycle 1 schools. In this chapter, the same research questions are addressed for MIC Cycle 2 grantees:

1. *What was the relationship of teacher participation in MIC to student math achievement, course completion rates, college readiness, and dropout?*
2. *What was the relationship between teacher professional development and student math achievement?*
3. *What was the relationship between teacher coaching and student math achievement?*

Again, as discussed in Chapter 3, grade promotion, graduation rates, course completion rates, and dropout rates were not available for Cycle 2 schools at the time this was report was written. To investigate whether teacher participation in MIC was associated with improved student math achievement, HLM analyses were conducted using matched student-teacher data collected from the Cycle 2 schools. This chapter presents:

> *"For example, if I see a student [in my office] and then see him in [the participating teacher's] class and realize he is engaged in class, answering questions, is the leader of a group, and working on teams, I am thankful because it helps me to see him in a new light and [realize] that the teacher can pull that out of him. It leads to [the teachers'] belief they can make a difference with kids in the classroom."*
>
> – Middle school principal, providing anecdotal evidence for the observation that the MIC pilot program has increased teachers' efficacy and students' engagement

(1) an overview of the percentages of MIC Cycle 2 students who met TAKS-Math standards between 2008–09 and 2009–10

(2) HLM analyses testing the relationship of having a MIC teacher (for one year) with student math achievement

(3) Hierarchical logistic regression analyses of the relationship between MIC and college readiness

(4) HLM analyses examining the relationship between teacher background and hours of participation in MIC activities, and whether this relationship was associated with student math achievement

(5) a simple HLM analysis examining the linkages between teacher perceptions of their effectiveness as a result of participation in MIC and student math achievement.

What Percentage of MIC Cycle 2 Students (by Subgroup) Met the Standard on TAKS-Math between 2008–09 and 2009–10?

Tables 7.1 through 7.4 provide a snapshot of the percentages of students who met the standard on TAKS-Math (also described as passing TAKS-Math). First, the data for groups of students in Grades 6-8 in a MIC school are presented for 2008–09.[31] Second, the data are presented for groups of students who had a MIC teacher during the first year (2009–10) of MIC implementation at Cycle 2 schools. Statistical tests (independent t-tests) were conducted to explore the differences between 2008–09 and 2009–10; however, since the same students were not followed over time, these results should be considered with some caution. In addition, the percentages of students who met the standard on TAKS-Math for all students in Texas and all economically disadvantaged students in Texas are presented for comparison across years. Only TAKS-Math passing rates were compared over time since the focus of the program was solely on math. Table 7.1 shows the percentages of middle school students at MIC schools, and Table 7.2 shows similar results for high school students at MIC schools. Tables 7.3 and 7.4 present the changes that were statistically significant by grade for middle school and high school students, respectively.

Among Cycle 2 MIC middle school students (Table 7.1), when considered in the aggregate, the results indicate that the TAKS-Math passing rates did not change dramatically between 2008–09 and 2009–10. There was about a three percentage point increase in the passing rate for all MIC middle school students as a whole (71% in 2008–09 vs. 74% in 2009–10) which is 1 percentage point higher than the 2 percentage point increase that occurred across the state. There was a decline in the percentage of middle school special education students across Grades 6-8 who met standards (43% in 2008–09 to 37% in 2009–10); however, for the other groups the rates remained fairly constant. One notable exception was that the percentage of middle school African American students who met TAKS-Math standards increased from 59% to 64%.

[31] Teacher-student links were not made for 2008–09, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time. Therefore, these data are preliminary and caution should be used when making comparisons between 2008–09 and the first year of MIC implementation in Cycle 2 schools (2009–10).

Table 7.1

MIC Cycle 2 Middle School Students (Grades 6-8) Who Met TAKS-Math Standards by Student Subgroup, 2008–09 and 2009–10

Group	n Students in Grades 6-8 in a MIC School 08–09	% Students Passing TAKS-Math 08–09	n Students in Grades 6-8 with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10
All Students	34,761	71.3%	12,482	73.5%	-4.86*
White	5,474	82.2%	2,353	83.0%	-0.85
Hispanic	23,872	70.7%	7,843	72.7%	-3.44*
African American	4,804	59.0%	2,055	63.8%	-3.84*
At-Risk	18,691	55.8%	6,340	56.0%	-0.23
Economically Disadvantaged	26,193	67.7%	9,556	70.5%	-5.10*
Special Education	3,366	42.5%	574	36.8%	2.65*
Regular Education	31,389	74.4%	11,905	75.3%	-2.01*
All Texas Students in Grades 6-8	960,483	79%	978,579	81%	n/a
All Texas Economically Disadvantaged Students in Grades 6-8	513,572	72%	550,418	75%	n/a

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2008–09, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time. Therefore, caution should be used when making comparisons between 2008–09 and the year of MIC implementation (2009–10).
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
*Year-to-year changes being compared were statistically significantly different ($p < .05$)

At the high school level, on average there was an increase in the percentages of MIC students who met TAKS-Math standards (Table 7.2).[32] There was a 7 percentage point increase between 2008–09 and 2009–10 in the rates of passing for MIC high school students (63% vs. 70% respectively), which is comparable to the 7 percentage point increase that occurred at the state level. Except for special education students, there were statistically significant increases in the percentages of students passing across all subgroups. The percentages of at-risk students who met TAKS-Math standards increased from 47% to 54% between 2008–09 and 2009–10.

[32] Teacher-student links were not made for 2008–09, but the data for all Grades 9-11 students in MIC high schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time. Therefore, these data are preliminary and caution should be used when making comparisons between 2008–09 and the first year of MIC implementation in Cycle 2 schools (2009–10).

Table 7.2

MIC Cycle 2 High School Students (Grades 9-11) Who Met TAKS-Math Standards by Student Subgroup, 2008–09 and 2009–10

Group	n Students in Grades 9-11 in a MIC School 08–09	% Students Passing TAKS-Math 08–09	n Students in Grades 9-11 with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10
All Students	46,346	62.6%	19,883	70.2%	-19.14*
White	10,087	75.3%	4,853	83.0%	-11.24*
Hispanic	29,105	60.4%	11,663	67.2%	-13.07*
African American	6,302	49.9%	3,086	59.7%	-9.06*
At-Risk	26,977	46.7%	10,774	54.0%	-12.87*
Economically Disadvantaged	29,016	56.9%	13,233	65.0%	-16.00*
Special Education	4,869	26.4%	1,203	28.3%	-1.34
Regular Education	41,469	66.8%	18,680	72.8%	-15.03*
All Texas Students in Grades 9-11	891,127	70%	910,981	77%	n/a
All Texas Economically Disadvantaged Students in Grades 9-11	406,598	60%	447,642	69%	n/a

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2008–09, but the data for all Grades 9-11 students in MIC high schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time. Therefore, caution should be used when making comparisons between 2008–09 and the year of MIC implementation (2009–10).
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
*Year-to-year changes being compared were statistically significantly different ($*p < .05$)

Table 7.3 presents the year-to-year changes in TAKS-Math passing rates , broken down by middle school grade level.[33] In Grade 6, regular education students, economically disadvantaged students, Hispanic students, African American students, and at-risk students all experienced statistically significant increases in passing rates on TAKS-Math. At Grade 7 there was a slight decline in the passing rates of at-risk students from 56% in 2008–09 to 54% in 2009–10. The passing rates for the Cycle 2 at-risk students in Grade 8 increased from 55.5% to 56.3% between 2008–09 and 2009–10. At Grade 8, Hispanic students, African American students and economically disadvantaged students experienced statistically significant increases in rates of meeting standards on TAKS-Math.

[33] Teacher-student links were not made for 2008–09, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time. Therefore, these data are preliminary and caution should be used when making comparisons between 2008–09 and the first year of MIC implementation in Cycle 2 schools (2009–10).

Table 7.3

MIC Cycle 2 Middle School Students (Grades 6-8) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10
Grade 6					
All Grade 6 Students	8,652	70.1%	2,283	75.6%	-5.45*
White	1,308	82.2%	444	83.1%	-0.45
Hispanic	5,912	69.7%	1,353	73.8%	-3.03*
African American	1,309	57.4%	422	70.6%	-5.08*
At-Risk	4,713	55.9%	1,094	60.1%	-2.56*
Economically Disadvantaged	6,688	66.2%	1,722	73.3%	-5.84*
Special Education	843	46.9%	99	34.3%	2.47*
Regular Education	7,809	72.6%	2,184	77.5%	-4.82*
All Texas Students in Grade 6	323,730	80%	329,839	82%	n/a
All Texas Economically Disadvantaged Students in Grade 6	178,820	73%	191,351	76%	n/a
Grade 7					
All Grade 7 Students	12,976	71.2%	4,378	71.7%	-0.57
White	2,095	81.0%	843	82.1%	-0.72
Hispanic	8,926	70.7%	2,748	71.3%	-0.57
African American	1,708	59.3%	716	59.2%	0.04
At-Risk	7,050	56.1%	2,305	53.5%	2.13*
Economically Disadvantaged	9,801	68.1%	3,379	68.2%	-0.09
Special Education	1,255	41.1%	199	38.7%	0.65
Regular Education	11,718	74.5%	4,178	73.3%	1.52
All Texas Students in Grade 7	318,922	79%	327,536	81%	n/a
All Texas Economically Disadvantaged Students in Grade 7	169,601	71%	183,459	75%	n/a

(CONTINUED)

Table 7.3 (CONTINUED)

MIC Cycle 2 Middle School Students (Grades 6-8) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10
Grade 8					
All Grade 8 Students	13,133	72.1%	5,821	74.1%	-2.84*
White	2,071	83.5%	1,066	83.7%	-0.14
Hispanic	9,034	71.3%	3,742	73.3%	-2.37*
African American	1,787	59.8%	917	64.3%	-2.33*
At-Risk	6,928	55.5%	2,941	56.3%	-0.81
Economically Disadvantaged	9,704	68.4%	4,455	71.2%	-3.44*
Special Education	1,268	41.1%	276	36.2%	1.51
Regular Education	11,862	75.4%	5,543	75.9%	-0.75
All Texas Students in Grade 8	317,831	79%	321,204	80%	n/a
All Texas Economically Disadvantaged Students in Grade 8	165,151	71%	175,608	73%	n/a

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2008–09, but the data for all Grades 6-8 students in MIC middle schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2008–09 and the year of MIC implementation (2009–10).
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
Year-to-year changes being compared were statistically significantly different ($p < .05$)

Table 7.4 presents year-to-year changes broken down by high school grade level. At the high school level, the program does seem to be benefitting the at-risk students who are one of the targets of MIC.[34] In Grade 10, regular education students, at-risk students, economically disadvantaged students, African American students, Hispanic students, and White students all experienced statistically significant increases in passing rates on TAKS-Math. In Grade 11, Hispanic students, African American students, and White students all experienced statistically significant increases in

[34] Teacher-student links were not made for 2008–09, but the data for all Grades 9-11 students in MIC high schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time. Therefore, these data are preliminary and caution should be used when making comparisons between 2008–09 and the first year of MIC implementation in Cycle 2 schools (2009–10).

passing rates on TAKS-Math. Additionally, Grade 11 at-risk students, economically disadvantaged students, special education students, and regular education students all demonstrated statistically significant increases in their rates of passing TAKS-Math. At Grade 9, White, Hispanic, economically disadvantaged, and regular education students demonstrated statistically significant increasing in rates of meeting TAKS-Math standards between 2008–09 and 2009–10.

Table 7.4

MIC Cycle 2 High School Students (Grades 9-11) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10
Grade 9					
All Grade 9 Students	17,725	59.5%	8,621	63.8%	-6.64*
White	3,540	73.7%	1,920	78.1%	-3.67*
Hispanic	11,463	56.9%	5,178	61.2%	-5.22*
African American	2,416	48.5%	1,394	51.7%	-1.91
At-Risk	10,064	42.7%	4,463	43.6%	-1.01
Economically Disadvantaged	11,764	54.3%	6,009	58.4%	-5.17*
Special Education	2,014	25.4%	518	21.6%	1.85
Regular Education	15,708	63.9%	8,103	66.5%	-3.89*
All Texas Students in Grade 9	336,081	67%	343,517	70%	n/a
All Texas Economically Disadvantaged Students in Grade 9	165,768	56%	182,152	62%	n/a
Grade 10					
All Grade 10 Students	15,365	56.4%	6,596	67.7%	-16.05*
White	3,455	70.1%	1,591	79.9%	-7.73*
Hispanic	9,560	53.7%	3,956	64.3%	-11.55*
African American	2,081	43.4%	964	59.8%	-8.51*
At-Risk	8,946	38.0%	3,605	49.8%	-12.00*

(CONTINUED)

Table 7.4 (CONTINUED)

MIC Cycle 2 High School Students (Grades 9-11) Who Met TAKS-Math Standards by Student Subgroup and by Grade Level, 2008–09 and 2009–10

Group	n Students in Each Grade in a MIC School 08–09	% Students Passing TAKS-Math 08–09	n Students in Each Grade with a MIC Teacher 09–10	% Students Passing TAKS-Math 09–10	*t* (08–09 vs. 09–10
Economically Disadvantaged	9,515	50.2%	4,391	63.3%	-14.69*
Special Education	1,568	24.7%	394	26.1%	-0.59
Regular Education	13,795	60.0%	6,202	70.3%	-14.39*
All Texas Students in Grade 10	293,402	65%	296,255	74%	n/a
All Texas Economically Disadvantaged Students in Grade 10	132,114	55%	142,049	66%	n/a
Grade 11					
All Grade 11 Students	13,256	73.9%	4,666	85.5%	-18.13*
White	3,092	82.9%	1,342	93.8%	-11.54*
Hispanic	8,082	73.1%	2,529	83.9%	-12.20*
African American	1,805	59.1%	728	74.9%	-7.98*
At-Risk	7,967	61.5%	2,706	76.8%	-15.71*
Economically Disadvantaged	7,737	69.0%	2,833	81.7%	-14.15*
Special Education	1,287	30.1%	291	43.3%	-4.17*
Regular Education	11,966	78.6%	4,375	88.3%	-15.85*
All Texas Students in Grade 11	261,644	81%	271,209	89%	n/a
All Texas Economically Disadvantaged Students in Grade 11	108,716	73%	123,441	84%	n/a

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; State Accountability Tables, 2009–10 (see online here)
Note: Teacher-student links were not made for 2008–09, but the data for all Grades 9-11 students in MIC high schools are provided for context. There is potential for selection bias introduced by the fact that the same students are not tracked over time and there were some different teachers participating each year. Therefore, caution should be used when making comparisons between 2008–09 and the year of MIC implementation (2009–10).
Note: The *t* statistic indicates the degree to which an estimate value should be considered as a result of a mere chance or as a value of statistical significance. It is derived by dividing the estimate by the standard error. The larger the absolute value of the *t* statistic, the greater the likelihood that the estimates are real and not a result of random chance.
Year-to-year changes being compared were statistically significantly different ($p < .05$)

Is Teacher Participation in MIC Associated with Changes in Student Math Achievement?

For the analyses of the effect of MIC on student math achievement, HLM analyses were conducted separately for middle school grades and high school grades. Middle school grades were identified as Grades 6-8. High school grades were identified as Grades 9 through 11. TAKS-Math data were not available for students in Grade 12 because Grade 12 students do not take TAKS-Math.

As described in Chapter 6, by design there was variability in the way the program was implemented in the schools across grantees, and in the numbers of teacher participants in each school. Some schools had high percentages of math teachers who participated, while others had very few. Due to this, the effect of the program may vary across schools. In order to address this issue, two HLM models were estimated, with one including all schools with statistical adjustments for the differences in teacher participants per school and one including just schools where all teacher and student exposure types were represented. Since Cycle 2 was only in its first year of implementation, there were less possible combinations of exposure to MIC between the students and teachers than were evident in Cycle 1. In the latter model type, the sample was restricted to schools where at least five students appeared in each of the following categories: a) students with a non-MIC teacher, and b) students with a MIC teacher that participated for a full year. This distinction was necessary because there were some smaller schools where 100% of the teachers participated in MIC. Results from the first type of HLM model are presented in this chapter ("full dataset"). The sample size for the latter analysis was smaller and thus this was labeled the "reduced dataset model." These analyses were done as an additional check on the results and additional details about these analyses, along with the results are presented in Appendix N. The outcome in these analyses was the standardized TAKS-Math scale score.

Teacher Participation in MIC and Middle School and High School Student Math Achievement

Table 7.5 presents the results of the HLM analysis of the relationship between having a MIC teacher in a Cycle 2 middle school or high school and student achievement. TAKS-Math scale scores were standardized using the state TAKS-Math average and standard deviation (see table notes and Appendix N for more information).[35] Since standardized TAKS-Math scale scores were used as the outcome in these analyses, the results need to be interpreted in terms of numbers of standard deviations of increase or decrease.

Cycle 2 Middle School Math Achievement

All students in MIC middle schools were considered in the analyses. There were 30,534 students in the full dataset for the Cycle 2 middle schools, with 38% having a MIC teacher. In addition, 38% of the middle school students were in Grade 7, and 38% were in Grade 8, and 24% were in Grade 6. At the school level, 17% of the students were in schools with a District-to-Teacher MIC program type, 12%

[35] This method of standardization was possible because the evaluators had access to TAKS-Math data for all the students in Texas in Grades 5-12.

of the students were in schools that had a Peer-to-Peer MIC program type, and 38% of students were in schools whose MIC programs fell into the "Other" MIC program type category. The final 33% of students were in schools with ASP-to-District MIC program types.

The analysis of the relationship between having a MIC teacher in middle school and student math achievement is presented in Table 7.5. Findings indicate that when prior year (2008–09) TAKS-Math scale score, grade, student demographic variables, and school-level program type are taken into account, there is no effect of having a MIC teacher on student math achievement in comparison to the students who did not have a MIC teacher. Given that this was the first year of program implementation in these Cycle 2 schools, this was not an unexpected result. Recall that in Chapter 6 it was found that for Cycle 1 most of the findings were related to having a MIC teacher who participated for two consecutive years.

In the Cycle 2 middle schools, there was an effect of MIC program type on student math achievement at the school level. Students in MIC schools with District-to-Teacher program types, whether or not they had a MIC teacher, scored higher on TAKS-Math than the students in MIC schools with ASP-to-District Expert Coaches MIC program types. This result may have been due to these staff being already present in the district prior to MIC, and thus the practices were disseminated more widely amongst the staff than in MIC schools with an ASP-to-District program type. Students in these schools scored .16 of a standard deviation higher on TAKS-Math than students in MIC Cycle 2 middle schools with an ASP-to-District program type.

Table 7.5

MIC Cycle 2 Middle School (Grade 6-8) and High School (Grade 9-11) Students: Average TAKS-Math Scale Scores as a Function of Teacher and Student Characteristics and MIC Program Type, 2009–10

Variable Name	Middle School (n = 30,534)	High School (n=39,842)
	Standardized TAKS-Math Scale Score	Standardized TAKS-Math Scale Score
Intercept [Standardized TAKS-Math Scale Score (2009–10)]	-0.08	0.066
Prior Year TAKS-Math Scale Score (2008–09)	0.69*	0.724*
MIC Single-Year Teacher Participant	0.04	0.025
Grade 7 (vs. Grade 6)	0.10*	n/a
Grade 8 (vs. Grade 6)	0.09*	n/a
Grade 10 (vs. Grade 9)	n/a	-0.090*
Grade 11 (vs. Grade 9)	n/a	-0.032*
Economically Disadvantaged	-0.04*	-0.032*
At-Risk	-0.18*	-0.170*
Female	-0.01	-0.021*
Native American	0.02	-0.025
Asian	0.29*	0.182*
Black	-0.08*	-0.068*
White	0.00	0.058*
LEP	-0.03*	-0.040*
Special Education	-0.33*	-0.324*
District-to-Teacher MIC Program Type	0.16*	0.112
Peer-to-Peer MIC Program Type	0.05	0.009
Other MIC Program Type	0.06	-0.045

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09

*$p < .05$

Note: Reference categories for multiple category information are MIC teacher non-participants, Grade 6, Hispanic students, and ASP-to-District MIC Program Type.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Cycle 2 High School Math Achievement

Table 7.5 also presents an analysis of the relationship between MIC and high school student math achievement. Again, as with the previous middle school analyses, TAKS-Math scale scores were standardized using the state TAKS-Math average and standard deviation (see Appendix N for more information). All students in MIC Cycle 2 high schools were considered in the analyses. There were 39,842 students in total present in the full dataset for the Cycle 2 high schools, with 47% having a MIC teacher. In addition, 37% of the high school students were in Grade 9, 33% were in Grade 10, and 30% were in Grade 11. At the high school level, 34% of students were in schools that had an ASP-to-District MIC program type, 19% of the students were in schools with a District-to-Teacher MIC program type, 11% were in schools that had a Peer-to-Peer MIC program type, and 36% were in schools whose MIC programs fell into the “Other” MIC program type category.

Findings from the analysis of the relationship between student achievement and MIC participation in Cycle 2 high schools indicate that, as with the middle school students, when prior year TAKS-Math scale score, grade, student demographic variables, and school-level MIC program type are taken into account, there is no effect of having a MIC teacher on student math achievement in comparison to the students who did not have a MIC teacher. Again, given that this is the first year of program implementation in these Cycle 2 schools, this is not an unexpected result.

Teacher MIC Coaching and PD Hours, Middle School and High School Student Math Achievement

Replacing the indicator for MIC participation in the HLM model with the numbers of hours of PD and coaching, there was evidence of an effect of coaching on student math achievement (Table 7.6). Only the coefficients for the PD and coaching hours are reported in Table 7.6 to simplify the presentation.[36] PD and coaching were modeled separately because they were highly correlated with each other. Non-MIC teachers were given a value of 0 for these variables.

Findings indicate that spending more than 21 hours of coaching is associated with higher 2009–10 TAKS-Math scale scores. This was a particularly true relationship for middle school math teachers with a very high number of hours spent in coaching. For middle school math teachers, spending 61 or more hours in coaching was associated with a 0.2 standard deviation increase in student math achievement. This represented a relatively small percentage of the student sample (about 2% of the students, see Appendix N) so this result should be considered with some caution.

Table 7.6

MIC Cycle 2 Middle School Students (Grade 6-8): Average Standardized TAKS-Math Scale Scores as a Function of Hours of PD and Hours of Coaching, 2009–10

Hours	PD Models	Coaching Models
	Standardized TAKS-Math Scale Score	Standardized TAKS-Math Scale Score
Intercept [0 hours]	-0.033	-0.048
1 to 20 hours	-0.011	-0.011
21 to 40 hours	0.025	0.051*
41 to 60 hours	0.017	0.046*
61 hours or more	0.019	0.200*

Source: PEIMS, 2008–09; PEIMS, 2009–10;*$p < .05$
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS –Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

[36] Data were not available on the background characteristics of the teachers of the comparison group students, those whose math teachers were not in MIC, so the only teacher characteristic in these models is whether or not the teacher was in MIC. Additional teacher characteristics are considered in the within-MIC teacher analyses presented later in this chapter.

Again, as with the middle school analyses, the indicator for MIC participation in the model was replaced with the numbers of hours of PD and coaching (Table 7.7). Results indicate relatively small, negative effects for both PD and coaching. As indicated in Chapter 4, there may have been some confusion among the grantees about what activities constituted PD versus coaching so these results should be interpreted with some caution.

Table 7.7

MIC Cycle 2 High School Students (Grade 9-11): Average TAKS-Math Scale Scores as a Function of Hours of PD and Hours of Coaching, 2009–10

Hours	PD Models	Coaching Models
	Standardized TAKS-Math Scale Score	Standardized TAKS-Math Scale Score
Intercept [0 hours]	0.114*	0.112*
1 to 20 hours	-0.042*	-0.028*
21 to 40 hours	0.011	-0.036*
41 to 60 hours	-0.044*	-0.025
61 hours or more	-0.041*	-0.052*

Source: PEIMS, 2008–09; PEIMS, 2009–10;
*$p < .05$
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Is There an Added Benefit of PD and Coaching on Student Math Achievement Once Teacher Background Characteristics are Considered?

To assess the relative impact of MIC coaching and PD once teacher background characteristics are considered, HLM analyses were conducted using just the sample of MIC Cycle 2 teachers and their students. As indicated earlier, teacher background characteristics were not available for non-MIC teachers, so these analyses were limited to only MIC teachers. Only the coefficients for MIC coaching hours, MIC PD hours, advanced degree, years of experience, and certification are presented in Table 7.8. The estimated models also included as controls grade, prior year's achievement, economically disadvantaged status, at-risk status, student gender, race and ethnicity, LEP, special education status, and variables for the school-level MIC program types; however, these variables were not presented here in order to simplify the report.

Among the MIC teachers, increased hours of coaching or PD are not related to changes in student math achievement when teacher's degree, years of experience, and certification are taken into account (Table 7.8). None of the relationships between teacher hours of participation in MIC PD and coaching and student math achievement were statistically significant. Since the middle school models showed a significant effect of MIC on student math achievement, it may be a case of "quality versus quantity." Since there is variability in MIC program type, there may not be a direct relationship between the numbers of hours spent in the program by teachers and student math achievement.

Table 7.8

MIC Cycle 2: Average TAKS-Math Scale Scores as a Function of Hours of PD, Hours of Coaching, and Teacher Characteristics by School Level, 2009–10

Level	Variable Name	Coaching Models (Middle School, n = 11,148) (High School, n = 17,920) Standardized TAKS-Math Scale Score	PD Models (Middle School, n = 10,864 (High School, n = 17,499) Standardized TAKS-Math Scale Score
Middle School	Intercept [Coaching/PD 0 to 20 Hours]	-0.02	0.03
	Coaching/PD 21 to 40 Hours	0.00	-0.03
	Coaching /PD 41 or 60 Hours	-0.01	-0.06
	Coaching/PD 60 or More Hours	0.07	-0.05
	Advanced Degree	0.03	0.02
	Years of Experience	0.00	0.00
	Certified in Other Fields	-0.01	-0.01
High School	Intercept [Coaching/PD 0 to 20 Hours]	0.07	0.05
	Coaching/PD 21 to 40 Hours	0.01	0.06
	Coaching /PD 41 or 60 Hours	0.05	0.00
	Coaching/PD 60 or More Hours	-0.01	0.00
	Advanced Degree	0.03	0.04
	Years of Experience	0.01*	0.01*
	Certified in Other Fields	-0.03	-0.03

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
*$p < .05$
Note: The 3-level HLM models were employed (level-1 student, level-2 teacher, level-3 school). The models included pretest TAKS-Math scale score, Grades (6, 7, and 8 if middle school; 9, 10, and 11 if high schools), economically disadvantaged status, at-risk status, gender, race and ethnicity, LEP status, special education status, grantee MIC program type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Reference category: Coaching or PD 0 to 20 hours.

Is Teacher Participation in MIC Associated with Changes in Student College Readiness?

As described in Chapter 6, two outcome measures were used to assess college readiness: 1) the likelihood of meeting (or exceeding) commended status and 2) meeting or exceeding the HERC cutoff on the Grade 11 TAKS-Math assessment. Commended status is a measure of college readiness at any grade and is a higher standard of achievement than passing TAKS-Math. The HERC is a slightly less stringent standard than commended status, but still higher than passing TAKS-Math. The HERC is only applicable for Grade 11 (see Appendix O).

For the analyses that predicted meeting (or exceeding) commended status in TAKS-Math and meeting (or exceeding) the HERC cutoff on the Grade 11 TAKS-Math assessment, odds ratios are presented to give the reader information about the strength of the relationship between each predictor and each outcome. Again, as described in Chapter 6, odds ratios describe how many times more (or less) a given group is likely to meet or exceed the cutoffs in TAKS-Math than a comparison group.[37]

Cycle 2 Middle School College Readiness as Measured by Commended Status

Table 7.9 presents analyses of the likelihood of MIC Cycle 2 middle school students meeting (or exceeding) commended status. After taking into consideration pretest (2008–09) TAKS-Math scale scores, grade, economically disadvantaged status, at-risk status, race and ethnicity, and other student demographic characteristics, Cycle 2 middle school students with a MIC teacher were not more likely to meet TAKS-Math commended status than comparable students who did not have a MIC teacher. As discussed in Chapter 6, with the Cycle 1 middle school students, students who had teachers with two years of experience were more likely to meet commended status, so the program may take two years to have an impact. Also commended status on any TAKS assessment is a college-ready marker, and as such, programs may first impact passing rates and then eventually influence college readiness.

[37] These analyses were performed using Hierarchical Logistic Regression which is similar to basic HLM but is appropriate for nested data where the outcome is dichotomous (e.g., meeting/exceeding commended status or not).

Table 7.9

MIC Cycle 2 Middle School (Grade 6-8) and High School (Grade 9-11) Students: Likelihood that Students Will Meet Commended Status on TAKS-Math as a Function of Having a MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Middle School (n=30,534)		High School (n=39,842)	
	Statistically Significant	Odds Ratio	Statistically Significant	Odds Ratio
Intercept [Likelihood of Meeting TAKS-Math Commended Status (2009–10)]	-	n/a	-	n/a
Prior Year TAKS-Math Scale Score (2008–09)	+	8.51	+	13.74
MIC Single-Year Teacher Participant	n.s.	0.85	-	0.69
Grade 7 (vs. Grade 6)	-	0.74	n/a	n/a
Grade 8 (vs. Grade 6)	-	0.74	n/a	n/a
Grade 10 (vs. Grade 9)	n/a	n/a	-	0.31
Grade 11 (vs. Grade 9)	n/a	n/a	-	0.89
Economically Disadvantaged	-	0.84	-	0.83
At-Risk	-	0.53	-	0.54
Female	n.s.	0.94	-	0.87
Native American	n.s.	1.11	n.s.	1.18
Asian	+	2.97	+	1.91
Black	-	0.78	-	0.71
White	n.s.	1.02	+	1.19
LEP	n.s.	1.03	n.s.	0.96
Special Education	-	0.30	-	0.23
District-to-Teacher MIC Program Type	n.s.	1.27	n.s.	1.20
Peer-to-Peer MIC Program Type	n.s.	0.91	n.s.	0.86
Other MIC Program Type	n.s.	1.06	n.s.	0.81

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
+= Statistically significant positive effects; - = Statistically significant negative effects; n.s. = Not statistically significant
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Note: Reference categories for multiple category information are students not taught by MIC teachers, Grade 6 (Middle School), Grade 9 (High School), Hispanic students, and ASP-to-District MIC Model.

Cycle 2 High School College Readiness as Measured by Commended Status

Table 7.9 presents analyses of the likelihood of MIC Cycle 2 high school students meeting commended status. After considering pretest (2008–09) TAKS-Math scale scores, grade, economically disadvantaged status, at-risk status, race and ethnicity, and other student demographic characteristics, high school students with one year of experience with MIC teachers are less likely to meet commended status than comparable students who did not have a MIC teacher. These results are preliminary since the Cycle 1 results (Chapter 6) indicated that it may take two years for the program to have an effect on high school student TAKS-Math scale scores.

Cycle 2 High School College Readiness as Measured by the HERC Standard

The relationship between teacher participation in MIC and college readiness at Grade 11 was assessed (Table 7.10). For this analysis the sample was limited to Grade 11 students and the outcome measure was 2009–10 HERC (Grade 11 TAKS-Math) scores. Students who score over 2200 on the HERC are considered to be "college-ready," which is a slightly lower standard than TAKS-Math commended status. (See Appendix O for a discussion.) Findings indicate that one year of teacher participation in MIC does not appear to have a statistically significant effect on the college readiness of the MIC Cycle 2 Grade 11 students (Table 7.10).

Table 7.10

MIC Cycle 2 High School Students (Grade 11 Only): Modeling Student College Readiness Based on HERC Cut Point of TAKS-Math Scale Scores, 2009–10

Variable Name	Met HERC College Readiness Standard, Grade 11 (n=11,885)	
	Statistically Significant	Odds Ratio
Intercept [Likelihood of meeting HERC Standard (2009–10)]	+	n/a
Prior Year TAKS-Math Scale Score (2008–09)	+	14.68
MIC Single-Year Teacher Participant	n.s.	1.04
Economically Disadvantaged	n.s.	0.97
At-Risk	-	0.56
Female	-	0.86
Native American	n.s.	0.46
Asian	n.s.	1.21
Black	-	0.59
White	n.s.	0.98
LEP	-	0.73
Special Education	-	0.25
District-to-Teacher MIC Program Type	n.s.	0.96
Peer-to-Peer MIC Program Type	n.s.	1.18
Other MIC Program Type	n.s.	1.02

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
*$p < .05$; ** $p < .01$; *** $p < .001$
+= Statistically significant positive effects; - = Statistically significant negative effects; n.s. = Not statistically significant
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of all TAKS –Math test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Note: Reference categories for multiple category information are zero year MIC experience teacher, Hispanic students, and ASP-to-District MIC Program Type.

Is There a Relationship between Teacher Perceptions, Practices, and Student Math Achievement?

With a study of PD programs, one can ideally link the program to changes in teacher behaviors, which can then be linked to changes in student outcomes (Yoon et al., 2007). No direct observations of teachers were conducted as part of this evaluation, so to get a sense of whether there is a link between changes in teacher behavior and student math achievement, analyses were conducted using the teacher survey data. In these analyses teacher perceptions based on their survey responses were used as a predictor of student math achievement as measured by TAKS-Math. It should be noted again that not all teachers completed the survey, so the results of this analysis should not be considered conclusive. Demographic comparisons of teachers who completed the survey to those who did not can be found in Appendix N.

Based on the descriptive statistics for the teachers in the analyses, the teachers on average were fairly positive in their assessments of the effects of the program on their content knowledge, technical knowledge, instructional skills, and usage of instructional strategies (Table 7.11). The average responses for these teachers to the items that made up the scales ranged between 2 (To some extent) and 3 (Quite a Bit). This is consistent with the results in Chapter 5 regarding teachers' perceptions of the effect of MIC. While the teachers felt fairly positively about the program, this may not be reflected in their students' TAKS-Math scores after one year. The students of the Cycle 2 teachers who responded to the teacher survey scored about -.22 to -.24 standard deviations (below the state average) on TAKS-Math.

Table 7.11

MIC Cycle 2 Teacher Perceptions of the Effects of MIC on Their Content Knowledge, Technical Knowledge, Instructional Skills, and Usage of Instructional Strategies by School Level, 2009–10

High School	**n**	**Mean**	**SD**
MIC Students' TAKS-Math Scale Scores	8,485	-0.24	0.87
MIC Teachers' Perceptions of Content Knowledge	8,485	2.24	1.18
MIC Teachers' Perceptions of Technical Knowledge	8,394	2.52	1.13
MIC Teachers' Perceptions of Instructional Skills	8,460	2.63	1.04
MIC Teachers' Usage of Instructional Strategies	7,623	2.02	1.22
Middle School			
MIC Students' TAKS-Math Scale Score	4,037	-0.22	0.95
MIC Teachers' Perceptions of Content Knowledge	4,037	2.51	1.04
MIC Teachers' Perceptions of Technical Knowledge	4,037	2.82	0.93
MIC Teachers' Perceptions of Instructional Skills	4,037	2.67	0.94
MIC Teachers' Usage of Instructional Strategies	3,680	2.07	1.26

Source: PEIMS, 2008–09; PEIMS, 2009–10

Note: The average TAKS-Math scale score was calculated from the students of the sample of teachers who answered the items making up the Perceptions of Content Knowledge scale, but the results are almost identical for other analysis samples.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations specific to grade levels of all TAKS –Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: For the teacher perceptions scales 0=Not At All, 1=Very Little, 2=To Some Extent, 3=Quite a Bit, 4=A Great Deal, and NR=Not Raised in Training (recoded as 0 for mean calculations)

HLM analyses of the teacher survey and student math achievement data are presented in Table 7.12. These analyses took into account prior achievement, and grade level. The relationships between the teacher survey responses and achievement were small and inconclusive. Most of the relationships were negative.

Table 7.12

HLM Analyses of Relationships between MIC Cycle 2 Teacher Perceptions of MIC and Student Math Achievement by School Level, 2009–10

Level	Teachers' Perceptions of Effects of MIC	Average Standardized Student TAKS-Math Scale Score
High School	MIC Teachers' Perceptions of Content Knowledge	-0.026*
	MIC Teacher's Perceptions of Technical Knowledge	-0.027*
	MIC Teachers' Perceptions of Instructional Skills	-0.022*
	MIC Teachers' Usage of Instructional Strategies	-0.004
Middle School	MIC Teachers' Perceptions of Content Knowledge	-0.027
	MIC Teachers' Perceptions of Technical Knowledge	-0.032*
	MIC Teachers' Perceptions of Instructional Skills	-0.010
	MIC Teachers' Usage of Instructional Strategies	0.023

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;
*$p < .05$
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations specific to grade levels of all TAKS-Math test takers in Texas. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Summary

MIC Cycle 2 grantees completed their first year of implementation during the 2009–10 school year and are making progress towards achieving the fourth critical success factor: "Students demonstrating successful learning of math concepts targeted by the district's action plan during a reasonable period of time." Even after this short amount of time, it was found that MIC coaching may be particularly beneficial at the middle school level. High amounts of coaching (61 hours and over) were associated with positive effects on student math achievement, as measured by 2009–10 TAKS-Math scale scores. This relationship remained after years of teaching experience, educational level, and certification were taken into consideration. Middle schools where a District-to-Teacher program type was implemented also had higher student math achievement, though it was unclear what was underlying this relationship. Perhaps since the coaches were district employees, the techniques were disseminated more widely. Overall, the teachers in the Cycle 2 middle schools may find the coaching component of MIC particularly beneficial.

The results for MIC at the high school level were inconclusive after one year of program implementation; however, this was not unexpected. Though there were some statistically significant findings at the high school level, the effects were small and negative. As reported in Chapter 6, the results for Cycle 1 indicated that at the high school level the greatest gains were for students who had two years of exposure to MIC, so perhaps at the high school level the program takes two years to have a measurable effect on student math achievement.

8. Cost-Effectiveness and Sustainability of MIC

This chapter includes findings from the analysis of cost-effectiveness and sustainability of MIC. Data from MIC grant applications, MIC expenditure reporting forms, and ISAS drawdown records were used to examine the flow of funds from grant award to grant implementation. In addition, the factors contributing to and prohibiting the sustainability of MIC are discussed based on grant coordinator, ASP representative, and administrator survey data, as well as grantee progress reports. Budgets and expenditures are reported for both Cycle 1 and Cycle 2 grantees. For Cycle 1 grantees, budgeted amounts and total expenditures in broad categories across the entire grant period were available. Only one year of expenditure data was available for Cycle 2 grantees at the time this report was written. The Cycle 2 expenditure data are also limited in that grantees are not required to draw down funds as they spend them. In other words, grantees make decisions about when to draw down their awarded funds as long as they draw down all funds by the final deadline established by TEA. Thus, at the time of this reporting, for Cycle 2, funds drawn down may be an underestimate of grantees' costs to date. Because of these limitations, the "cost per student" value was not reported for Cycle 2 grantees. This section addresses Evaluation Objective 4: To determine the cost-effectiveness and sustainability of MIC.

> *"I think it's a fabulous program and I hope we do get to continue with it."*
>
> – HS Principal talking about MIC

Eligible Use of Funds (Cycle 1 and Cycle 2)

In MIC Cycle 1 and Cycle 2, 62 LEAs received grant amounts between $25,000 and $225,000 to implement programs. Grantees were required to submit proposed budgets for each of the two years of the grant program. Grant funds could be used for expenses in the budget categories of payroll, professional and contracted services, supplies and materials, other operating costs, and capital outlay. These same categories were used to track expenditures for the cost analysis. Specific allowable expenditures included, but were not limited to:

- Providing classes for teachers on effective math instruction
- Providing tutoring or mentoring to teachers regarding effective math instruction
- Providing incentives to teachers to participate in the program
- Providing equipment and materials necessary to implement the coaching and PD program
- Covering other necessary costs (e.g., substitute teachers, travel for teachers to attend PD events)

Funds from the MIC grant could not be spent on certain program costs, including construction of new buildings, renovating/remodeling existing structures, conducting fundraising activities of any kind, covering indirect costs, writing grants to obtain other grant funds, and purchasing furniture.

Grantees in both cycles were required to complete a cost section in the grant application detailing how the funds would be budgeted. Each of the overall budget categories included several subcategories, which are outlined in Table 8.1.

Table 8.1

Budget Categories and Corresponding Subcategories

Major Budget Category	Subcategory
Payroll Costs	Academic
	Direct Program Management/Administration
	Auxiliary & Other
	Substitute Pay
	Professional Staff Extra-Duty Pay
	Support Staff Extra Duty Pay
	Employee Benefits
	Other
Professional and Contracted Services	Legal Services
	Professional/Consulting Services
	Staff or Student Tuition
	Education Service Center Services
	Contracted Maintenance and Repair of Equipment
	Utilities
	Rental/Lease Equipment
	Consulting Services
	Miscellaneous Contracted Services
	Other
Supplies and Materials	Textbooks and other reading materials
	Testing materials
	District food service
	General supplies and materials
	Hardware and Equipment Not Capitalized
	Other
Other Operating Costs	Travel and Subsistence
	Insurance Costs
	Teacher Incentives
	Miscellaneous Operating Costs
	Other
Capital Outlay	Equipment, Vehicles, or Software
	Capital Assets
	Library Books and Library Media (Catalogued and Controlled by Library)
	Other

Source: MIC Pilot Program Cycle 1 Request for Application (RFA) (TEA, 2008b)

During Cycle 1, 29 grantees were awarded an overall total of $4,587,220 to implement MIC, with grants ranging from $30,000 to $255,000. During Cycle 2, 32 grantees[38] were awarded an overall total of $6,550,723, with grants ranging from $53,125 to $250,000. The following sections examine the total average costs of Cycle 1 and Cycle 2 projects, and compare average project budgets to average expenditures. For Cycle 1, since the entire program period has passed, costs for both years of the grant period are included. For Cycle 2, since only one year of the grant period had passed when data

[38] Expenditure data were only received from 32 of 33 Cycle 2 grantees since one grantee did not implement MIC.

were collected, only one year of expenditures is reported.[39] Lastly, the cost per teacher and average cost per student estimates are discussed, along with grantee sustainability plans.

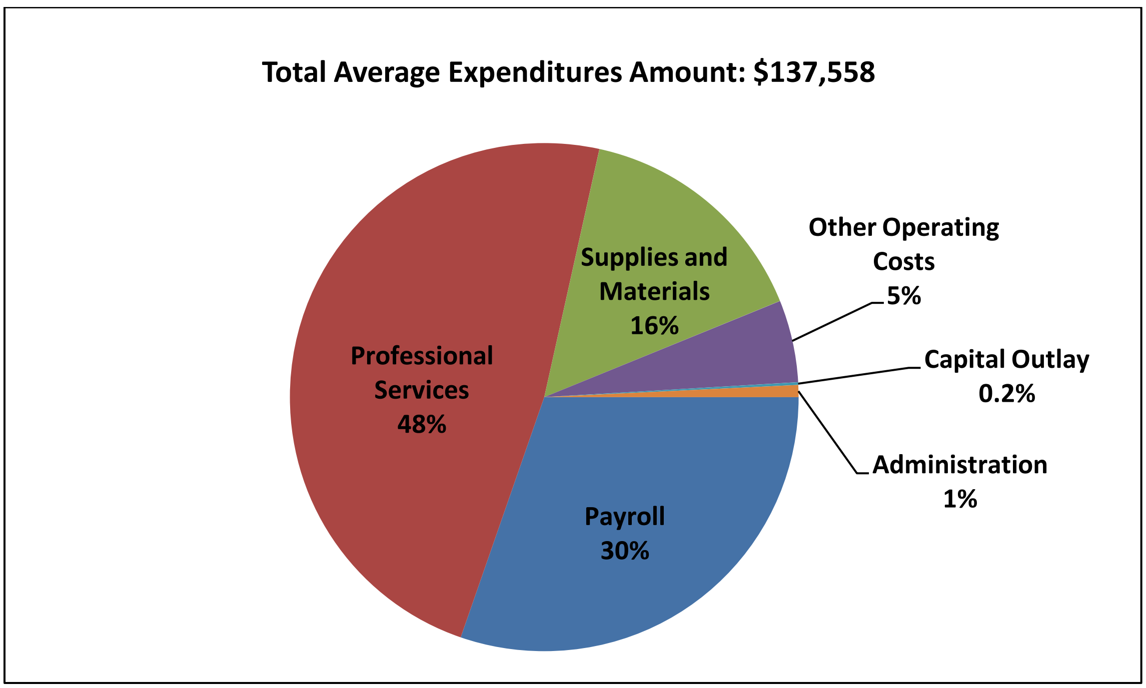
MIC Cycle 1 Grantee Allocations and Expenditures

Total Costs

Each of the 29 MIC Cycle 1 grantees actually spent an average of $137,558 over the entire Cycle 1 grant period, which totals $3,989,182 across all MIC Cycle 1 grantees (87% of awarded funds). Among the five major funding categories, the majority of funds were spent on professional and contracted services ($66,241, or 48% of the total expenditures), followed by payroll costs ($41,707, or 30% of the total expenditures) and supplies and materials ($21,116, or 16% of the total expenditures). Other operating costs, capital outlay, and indirect administration costs take approximately 6% of the total expenditures (see Figure 8.1).

Figure 8.1

Total Average Expenditures of MIC Cycle 1 Grantees (2008–2010, n=29)



Source: MIC Cycle 1 Grantee Drawdown Records from TEA

Comparison of Budgets to Expenditures

MIC Cycle 1 grantees budgeted, on average, a total of $158,180 to cover all program costs (see Table 8.2). Their actual program expenditures were roughly 87% of their budgeted amounts, at an average

[39] Grantees are only required to draw down funds by the end of their grant periods and not at any other time throughout the grant period. As a result, until the end of the grant period the expenditures collected through ISAS are representative of the amount drawn down by grantees and not necessarily reflective of actual expenditures by the district. The final expenditure report is due at the end of the grant period.

of $137,558 per grantee. In general, MIC Cycle 1 grantees spent less than they were awarded in total, but spent more on professional and contracted services, supplies and materials, and capital outlay than they had anticipated.

In terms of payroll costs, grantees budgeted an average of $61,976, but actually spent an average of $41,707 on such costs. This represents approximately 67% of the average budgeted amount for this type of expense. The actual expense on other operating costs is about 60% of the budgeted amount. MIC Cycle 1 grantees spent more than they budgeted in three categories: professional and contracted services, supplies and materials, and capital outlay. Whereas grantees budgeted an average of $63,892 for professional and contracted services, they actually spent an extra $2,349 on average, or 4% more than the budget amount. In terms of supplies and materials, actual expenditure on this category is 5% more ($990) than the budgeted amount. On average, MIC grantees also spent $31, or 15% more for capital outlay than the original budgeted amount.

Table 8.2

Comparison of Average Program Budgets to Average Program Expenditures for Cycle 1 Grantees, 2008–2010

	Total Average Amount (n=29)		
Category	**Budgeted**	**Spent**	**% Spent**
Payroll Costs	$61,976	$41,707	67%
Professional and Contracted Services	$63,892	$66,241	104%
Supplies and Materials	$20,126	$21,116	105%
Other Operating Costs	$11,982	$7,207	60%
Capital Outlay	$203	$234	115%
Administration	-	$1,052	-
Total Costs	$158,180	$137,558	87%

Source: MIC Cycle 1 Grant Applications; MIC Cycle 1 Grantee Drawdown Records from TEA

MIC Cycle 2 Grantee Award Amounts and Year 1 Expenditures

Total Costs (Year 1)

Overall, 32 of the 33 MIC Cycle 2 grantees[40] each spent an average of $64,202 to cover the costs of their programs in Year 1 (April 2009 through April 2010), which is a total of $2,054,464 (32% of total awarded funds after one year). Of the five major funding categories constituting grantees' expenditures (see Figure 8.2), the highest average amount spent was for professional and contracted

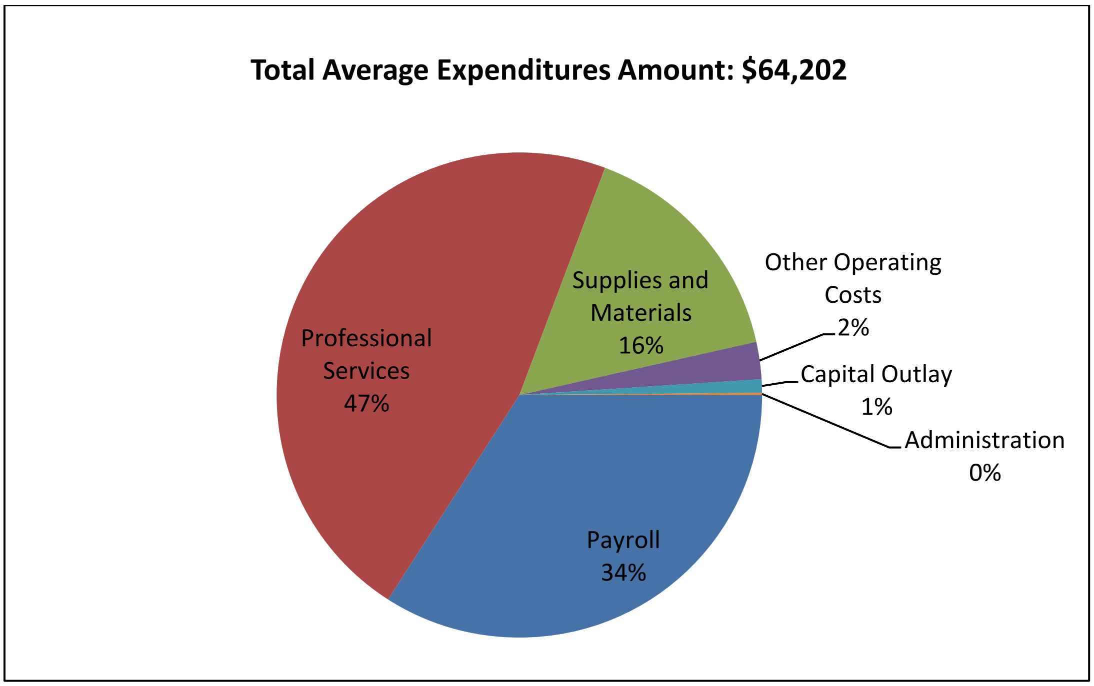
[40] Expenditure data was only received from 32 of the 33 grantees since one district did not implement MIC.

services ($29,954, or 47% of the total expenditures), followed by payroll costs ($21,879, or 34% of the total expenditures), and supplies and materials ($10,120, or 16% of the total budget). About 3% of the expenditures were spent on other operating costs ($1,583, or 2% of the total expenditures) and capital outlay ($571, or 1% of the total expenditures). Total average indirect administration costs were only $95 or 0.1% of the total expenditures.

Overall, Cycle 2 grantees spent the largest percentage of their budgets on professional and contracted services in Year 1, similarly to Cycle 1 sites.

Figure 8.2

Total Average Expenditure of Cycle 2 Grantees (2009–10, n=32)



Source: MIC Cycle 2 Grantee Expenditure Reporting Forms

Comparison of Budgets to Expenditures (Year 1)

Table 8.3 presents the detailed comparisons of overall program budgeted amounts (04/01/2009 - 05/31/2011) and Year 1 expenditures (04/01/2009-05/31/2010) on major expense categories for Cycle 2 grantees. Grantees budgeted, on average, a total of $194,007 to cover all program costs for the whole project period. Their actual program expenditures in Year 1 were about 33% of their budgeted amounts, at an average of $64,202 (see Table 8.3), less than half of the program budget.

In terms of payroll costs, grantees budgeted an average of $90,971; however, in Year 1, Cycle 2 grantees actually spent an average of $21,879 for such costs. This represents an average expenditure of 24% of what was budgeted. MIC sites budgeted, on average, $70,471 to cover professional services; they spent, on average $29,954. Thus, sites spent 43% of their professional services budgeted amount. Whereas grantees budgeted an average of $19,042 for supplies and materials, they spent $10,120 in Year 1; or slightly over 50% of their budgeted amount. Each MIC grantee budgeted an average of $11,538 for other operating costs, but only spent an average of $1,583, 14% of their budgeted amount for such costs. In terms of capital outlay, each grantee budgeted, on average, $1,984, and actually spent $571 in Year 1, representing 29% of their budgeted amount for such costs.

Overall, in Year 1, Cycle 2 grantees spent less than half of the funds they budgeted for the overall program in all but one category. Cycle 2 grantees spent more than 50% of their budgeted amounts on supplies and materials. It should be noted that since this was the first year of implementation of MIC for the Cycle 2 grantees, these patterns of expenditures may not remain consistent over the whole grant project period. Cycle 2 grant funds were still available to Cycle 2 grantees during the second year of the grant project period, so these data may look different after the second year of the grant period.

Table 8.3

Comparison of Average Program Budgets to Average Program Expenditures for Cycle 2 Grantees, 2009–10

	Total Average Amount (n=32)		
Category	**Budgeted***	**Spent****	**% Spent**
Payroll Costs	$90,971	$21,879	24%
Professional and Contracted Services	$70,471	$29,954	43%
Supplies and Materials	$19,042	$10,120	53%
Other Operating Costs	$11,538	$1,583	14%
Capital Outlay	$1,984	$571	29%
Administration:	-	$95	-
Total Costs	$194,007	$64,202	33%

Source: MIC Cycle 2 Grant Applications; MIC Cycle 2 Grantee Expenditure Reporting Forms
Note: Cycle 2 grantees only completed their first year of grant funding in 2009–10, so these costs may not remain consistent over time. Only 32 Cycle 2 grantees submitted expenditure data.
*Overall project period: April 1, 2009 through May 31, 2011
**Expenditure Reporting Period: April 1, 2009 through May 31, 2010

Cost-Effectiveness of MIC Grants

Ultimately, the analysis of costs leads to the question of cost-effectiveness. For this study, cost-effectiveness was defined as "cost per student." As shown in Table 8.4, Cycle 1 grantees served larger numbers of teachers and students on average than did Cycle 2 grantees. Cycle 1 expenditures were higher than those of Cycle 2 ($137,558 vs. $64,202); however, this is to be expected as these data only reflect year one spending by Cycle 2 grantees.

The average actual cost per teacher among Cycle 1 grantees across the entire grant period was $6,971 per teacher participant. This works out to the average cost per student among Cycle 1 grantees of $131 per student for the entire grant period. For Cycle 2 grantees, the average cost per teacher during the first year of the grant was $2,993, which works out to $59 per student. Assuming that teachers are making an impact and perhaps will have more of an impact over time, and that they need less support as they gain more experience, these costs per student should decrease over time. Again, it should be noted that since this was the first year of implementation of MIC for the Cycle 2 grantees, these patterns of expenditures may not remain consistent over the whole course of the grant. Appendix P presents detailed cost effectiveness data by MIC grantee.

Compared to the other two dropout prevention programs studied under the HSSPP evaluation (ISP and CDR), MIC was much more cost-effective based on the "cost per student" measure. However, given that MIC is a teacher-level intervention, the cost per teacher participant may seem high compared to other professional development programs. However, the cost per teacher amount spent on average ($6,971) by Cycle 1 grantees indicates that the grantees spent significantly less ($3,029) than the maximum amount TEA allowed to serve each teacher ($10,000) as indicated in the grant requests for application (TEA, 2008b; TEA, 2008c). Using that as an indicator, results show that MIC grantees served teachers for about $3,000 less per teacher on average than originally estimated.

Table 8.4

Program Average Cost Per Teacher and Student for MIC Grantees

	Cycle 1	Cycle 2*
Average number of participating teachers by grantee	42	25
Average number of participating students served by grantee	3,108	1,670
Total average cost per grantee	$137,558	$64,202
Average cost per teacher	$6,971	$2,993
Average cost per student	$131	$59

Source: MIC Grantee Uploads (including linked teacher-student databases); MIC Cycle 1 ISAS Drawdown Records; MIC Cycle 2 Grantee Expenditure Reporting Forms
*Cycle 2 grantees only completed their first year of grant funding in 2009–10, so these costs may not remain consistent over time.

MIC Grantee Sustainability Plans

Cycle 1

MIC Cycle 1 grant coordinators, ASP representatives, and campus administrators were asked through a series of open-ended questions as part of the online survey about their thoughts regarding sustainability of MIC at their school and/or district. A common theme among the responses was that funding is a concern for all respondents, but that the benefits of the program outweighed the costs. MIC grant coordinators, ASP representatives, and campus administrators identified benefits such as staff retention, usefulness of having a coach who is not affiliated with the district present to coach staff, teachers' increased knowledge and skills regarding their profession, teachers' increased motivation in ways not seen before, and teachers' improved understanding of what needs to be taught in the classroom and how to teach effectively. Respondents also said it was a benefit that the program is effective for increasing teachers' mathematical skills, as well as increasing students' achievement in math.

However, cost and competing initiatives were also mentioned as factors that might inhibit the continuation of the MIC pilot program after grant funding ends. Another theme was that districts cannot afford to continue the program without additional funding, but no specific sources of funding to remedy this were identified. Despite the lack of future funding, districts that are training lead math teachers to become coaches indicated they are doing this so that funding would not be needed to pay additional salaries for coaches beyond the grant and they would still have the capacity to provide math coaching.

Cycle 2

Based on an analysis of the MIC Cycle 2 grant applications, 11 of the 33 Cycle 2 grantees (33%) said they planned to sustain the grant program by having teachers and administrators who were trained during the grant period use their training to coach new and existing teachers/administrators. These grantees also discussed utilizing the technical knowledge, materials, and software to sustain the math program after the grant funding ended. Two additional grantees said that materials, including survey instruments, content CDs, video meetings with faculty on specific content topics, and online training sessions, will all continue to be available for future programmatic use. A guidebook was mentioned as a plan for two grantees, for PD improvement initiative tracking, and to track the efficiency of program and funding streams used to sustain the program beyond current funding.

Summary

Findings from the analysis of the cost-effectiveness and sustainability of MIC were presented in this chapter. This provides the complete look at the budgeted amounts and expenditures of funds in MIC Cycle 1 and Cycle 2 (Year 1) grantees. At the end of the grant project of Cycle 1, grantees spent 87% of the total awarded funds. Specifically, three funding categories experienced an average of 4% overages compared to the original budgeted amounts. In the current reporting period, Cycle 2 grantees have completed their first grant year. The initial Cycle 2 grantee expenditure data shows that grantees have spent 33% of the total awarded funds.

The cost-effectiveness analysis of Cycle 1 shows that the actual number of participating teachers is substantially higher than grantees budgeted (42 vs.15). The average cost per teacher in MIC Cycle 1 program is $6,971. Appendix P includes more detailed cost information for grantees.

Respondents indicated a desire to continue the program after the grant period has ended. Though some presented concerns over funding, the grantees seem to be developing creative ways of continuing the program. Some grantees had the administrators train teachers, had the administrators be coaches themselves, or used the current grant funding to build up an infrastructure of materials that can be used later. The Cycle 2 schools in particular seem to have created programs with materials such as online training sessions and software that will continue to be available after the program ends. This forethought may in part be due to the greater experience of the service providers after their experience with Cycle 1.

9. Conclusions

Discussion of Evaluation Findings

The following sections include discussion of the key findings of the MIC evaluation.

Findings from the Implementation Study: Cycle 1 and Cycle 2

Overall, the programs are meeting the implementation milestones necessary to achieve the critical success factors established by TEA for the MIC grant program. In the second year of the MIC grant implementation, the Cycle 1 programs were more developed than the Cycle 2 programs, which was not surprising given that Cycle 1 programs were in their second year of the program. In 2009–10, the MIC pilot program included 29 Cycle 1 grantees from 14 of the 20 ESC Regions in Texas and 33 Cycle 2 grantees dispersed among 12 of the 20 ESC Regions throughout Texas, with a total of 241 campuses served by these grantees. Teachers and coaches participated in PD activities (e.g., training) and coaching activities (e.g., mentoring, classroom observation). One of the most common services performed by the coaches was providing feedback on the teachers' instructional materials and techniques. Coaches also provided training in data collection and analysis, content area knowledge, and instructional techniques.

> *When I think of coach too, I think of motivator. She's always been about if you have a bad day or a kid's mean to you or whatever, she'll help you. She's always right there telling you 'it'll be ok!" And she's very good at always helping you see the light at the end of the tunnel. Or reminding you that the next day, that kid who never listens to you might listen, motivating and not giving up.*
>
> – High school teacher talking about her relationship with the math coach

Administrator support and buy-in was a key element in the successful implementation of the program. Teachers reported that the greatest barrier to MIC program implementation was the amount of time required for PD activities, meetings, planning, and coaching; however, this could be mitigated in part by having a supportive administration. A collaborative environment where all staff were invested in the program and in improving student academic outcomes was one of the elements identified as being key to success.

Findings from the Teacher Effectiveness Analysis: Cycle 1 Grantees and Cycle 2 Grantees

It was found that Cycle 1 schools are meeting the critical success factors related to teacher implementation of MIC strategies and increasing teacher math content knowledge. Cycle 1 teachers rated MIC as influential in increasing their math content knowledge and teaching knowledge and skills, and in broadening their use of various assessment and instructional strategies. Newer teachers in particular felt that they benefited from the program as compared to veteran teachers. Focus group results indicated that the teachers benefited from participation in MIC, particularly in the area of gaining varied instructional strategies.

As with the Cycle 1 grantees, it was found that Cycle 2 grantees were meeting the critical success factors related to teacher implementation of MIC strategies and increasing teacher math content knowledge. Teachers rated MIC as influential in increasing their math content knowledge and teaching knowledge and skills, and in broadening their use of various assessment and instructional strategies. Again, as with the teachers in the Cycle 1 schools, novice teachers in the Cycle 2 schools seemed to derive particular benefit from the program.

> *A math expert at a campus does wonders, especially in an area that's in need of improving.*
>
> – MIC principal

Teacher survey results were supported by information obtained in focus groups with Cycle 2 teachers. Cycle 2 teachers indicated that they benefited from participation in MIC, particularly in learning creative instructional strategies and gaining confidence to take risks with new instructional strategies. Overall, Cycle 2 teachers were positive about the effects of MIC coaching on their effectiveness, content knowledge, and instructional skills.

Findings from the Student Outcomes Analyses: Cycle 1 Grantees

Cycle 1 grantees were meeting the critical success factor of *students demonstrating successful learning of math concepts*. In both the Cycle 1 middle schools and high schools, longer exposure to MIC on the part of both students and teachers was associated with increases in TAKS-Math achievement. Though it was hypothesized that higher amounts of teacher time spent in coaching and PD would be associated with greater gains in student math achievement, overall any amount of participation in coaching and PD on the part of teachers seemed to benefit the students. This may be due in part to the variability in the program types among the grantees or confusion among the grantees about what activities constituted coaching versus PD. The evidence from the Cycle 1 grantees also suggested that teacher participation in MIC may be associated with an increased likelihood of students meeting college readiness markers, particularly among students that have been exposed to MIC teachers for longer periods of time. Preliminary evidence exists to demonstrate that MIC may be helpful in reducing dropout rates, improving graduation rates, and improving grade promotion rates; however, since only one year of data were available at the time this report was written, these results should be interpreted with some caution.

> *With their help, I can always come back and in some way or form, implement what we've been discussing and see that success in my students.*
>
> – High school teacher speaking about impact of MIC coaches

Findings from the Student Outcomes Analyses: Cycle 2 Grantees

Cycle 2 MIC grantees completed their first year of implementation during the 2009–10 school year. Even after this short amount of time, the results indicate that MIC grantees may be meeting the critical success factor: *students demonstrating successful learning of math concepts.* Participation in the program was associated with gains in middle school student math achievement. Notably, middle schools where a District-to-Teacher program model was implemented also had higher student achievement scores, though it was unclear from the available data what was underlying this relationship. Perhaps since the coaches were district employees, the techniques were disseminated more widely.

The results for MIC at the high school level were inconclusive after one year of program implementation; however, this was not unexpected. The results from the evaluation of the Cycle 1 grantees indicate that student math achievement gains at the high school level may take longer to materialize.

Findings from the Cost and Sustainability Analyses for Cycle 1 and Cycle 2

Overall findings indicate that MIC is cost effective. The results from the Cycle 1 grantees that completed their period of funding in 2010 indicated that even though they had more teachers participating in the program than they budgeted for, they did not spend their full award. In a similar trend, after one year, the Cycle 2 grantees have only drawn down about one-third of their funds.

The MIC grantees as a group expressed desire to continue the program after the grant period has ended. The grantees were developing creative strategies for continuing the program after the funding ends, though the Cycle 2 grantees seemed to have built this more into their programs from the outset in terms of the materials and programs they set up. This forethought may in part be due to the greater experience of the ASPs after their experience with Cycle 1.

Limitations

It is important to note that a full evaluation of the impact of MIC on student outcomes has not been completed at this time. Due to lag times in the release of data, the primary outcomes such as dropout rates, graduation rates, and course completion rates were only available for the first year of Cycle 1 program implementation. Case study findings allowed for an in-depth examination of particular issues and questions generally on a single subject; therefore, case study findings cannot be generalized to a larger population. This means that external validity is limited. In other words, the findings from one urban school district may not be applicable to other urban school districts. Recognizing the limitations of case study data, the ICF team used the case studies in the MIC evaluation to complement survey and interview data and identify overall themes across MIC.

Recommendations for the Future

As more data become available, findings could be refined and expanded accordingly. As additional data on dropout become available the relationships between the program and reducing dropout can be investigated further. In addition, Cycle 2 grantees will complete their grant period during the 2010-11 allowing for a complete comparison of results between the Cycle 1 and 2 grantees to see if the effects have been replicated or enhanced over time. Other potential strands for future research include further investigation of how differences in program types may be related to teacher and student outcomes and in-depth explorations of the differences in the findings of the program at the high school level and middle school level. Some other topics for future research are the efforts the programs took to make them sustainable, and whether the findings from the first two years were maintained over time.

References

Adelman, C. (1999). Answers in the Tool Box: Academic Intensity, Attendance Patterns and Bachelor's Degree Attainment, Washington DC: U.S. Department of Education, Office of Educational Research and Improvement.

Alexander, K., Entwisle, D., & Horsey, C. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*, *70*, 87–107.

Alliance for Excellent Education. (2010, January). *The economic benefits from halving the dropout rate: A boom to businesses in the nation's largest metropolitan areas*. Retrieved May 13 from http://www.all4ed.org/files/NationalMSA_leb.pdf.

American Youth Policy Forum. (2005). Every nine seconds in America a student becomes a dropout: The dropout problem in numbers. Washington, DC: Author. Accessed on March 8, 2009 at http://www.aypf.org/publications/EveryNineSeconds.pdf.

Arizona Department of Education. (n.d.). Arizona models of effective strategies application. Phoenix, AZ: Author. Accessed on March 8, 2009 at http://www.ade.state.az.us/asd/dropout/AZModelsofEffectiveStrategiesApp.pdf.

Balfanz, R., & Bridgeland, J. (November 23, 2007). A plan to fix 'dropout factories'. *Christian Science Monitor*. Accessed on March 13, 2009 at http://www.csmonitor.com/2007/1123/p09s01-coop.html.

Balfanz, R., Legters, N., West, T.C., & Weber, L.M. (2007). Are NCLB's measures, incentives, and improvement strategies the right ones for the nation's low-performing high schools? *American Educational Research Journal, 44* (3), 559-593.

Barrington, B.L., & Hendricks, B. (1989).Differentiating characteristics of high school graduates, dropouts, and nongraduates. *The Journal of Educational Research*, *82*(6), 309-19.

Battin-Pearson, S., Newcomb, M.D., Abbott, R.D., Hill, K.G., Catalano, R.F., & Hawkins, J.D. (2000). Predictors of early high school dropout: A test of five theories. *Journal of Educational Psychology, 92*(3), 568-82.

Berg, A.C., Melaville, A., & Blank, M.J. (2006). Community and family engagement: Principals share what works. Washington, DC: Coalition for Community Schools.

Blank, R.K., de las Alas, N., & Smith, C. (2008). Does teacher professional development have effects on teaching and learning? Analysis of evaluation findings from programs for mathematics and science teachers in 14 states. Washington, DC: Council of Chief State School Officers. Retrieved from http://www.ccsso.org/content/pdfs/crossstate_study_rpt_final.pdf.

Bost, L.W., & Riccomini, P.J. (2006). Effective instruction: An inconspicuous strategy for dropout prevention. *Remedial and Special Education*, *27*(5), 301-311.

Bounds, H., Martez Hill, J., & Smith, S.R. (2007). Mississippi Department of Education state dropout prevention plan: 2007-2019. Jackson, MS: Mississippi Department of Education. Accessed on March 8, 2009 at http://www.mde.k12.ms.us/Dropout_Prevention/Dropout%20Prevention%20Plan%20-%20Final.pdf.

Cataldi, E.F., Laird, J., & KewalRamani, A. (2009). High School Dropout and Completion Rates in the United States: 2007 (NCES 2009-064). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. Retrieved December 22, 2010 from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2009064.

Chapman, C., Laird, J., & KewalRamani, A. (2010). *Trends in High School Dropout and Completion Rates in the United States: 1972–2008* (NCES 2011-012). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC. Retrieved [date] from http://nces.ed.gov/pubsearch.

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Cohen, D.K., & Hill, H.C. (2000). Instructional Policy and Classroom Performance: The Mathematics Reform in California. *Teachers College Record, 102*(2), 294–343.

Darling-Hammond, L., & McLaughlin, M.W. (1995). Policies that support professional development in an era of reform. *Phi Delta Kappan,* 76(8), 597-604.

Day, J.C. & Newburger, E. (2002) "*The big payoff: Educational attainment and synthetic estimates of work-life earnings,*" (Current Populations Reports, No. P23-210). Washington, DC: U.S. Census Bureau.

Dynarski, M., Clarke, L., Cobb, B., Finn, J., Rumberger, R., & Smink, J. (2008). Dropout prevention: A practice guide (NCEE 2008–4025). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc.

Edley, C. (February 27, 2004). The hidden dropout crisis. Washington, DC. Center for American Progress. Retrieved March 8, 2009 from http://www.americanprogress.org/issues/2004/02/b35101.html.

Englund, M.M., Egeland, B., & Collins, W.A. (2008). Exceptions to high school dropout predictions in a low-income sample: Do adults make a difference? *Journal of Social Issues, 64*, 77-93.

Ensminger, M., & Slusarick, A. (1992). Paths to high school graduation or dropout: A longitudinal study of a first grade cohort. *Sociology of Education, 65*, 95–113.

Fan, X., & Chen, M. (2001). Parental Involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review*, *13*, 1-22.

Finn, J.D., & Rock, D.A. (1997). Academic success among students at risk for school failure. *Journal of Applied Psychology 82*(2), 221–34.

Latterall, C., & Frauenholtz, T. (2007). Causes and Possible Solutions to the Mathematics College Readiness Problem. *Research and Teaching in Developmental Education, 24* (1), 8-16.

Garnier, H.E., Stein, J.A., & Jacobs, J. (1997). The process of dropping out of high school: a 19-year perspective. *American Educational Research Journal, 34*(2), 395–419.

Hammond, C., Linton, D., Smink, J., & Drew, S. (2007). *Dropout risk factors and exemplary programs*. Clemson, SC: National Dropout Prevention Center, Communities In Schools, Inc.

Harlow, C. (2003). *Education and correctional populations*. Bureau of Justice Statistics Special Report. Washington, DC: U.S. Department of Justice.

Hiatt-Michael, D.B. (Ed.). (2001). *Promising practices for family involvement in schools*. Greenwich, CT: Information Age Publishing.

Hill, N.E., & Tyson, D.F. (2009). Parental involvement in education during middle school: A meta-analytic assessment of the strategies that promote achievement. *Developmental Psychology, 45*(3), 740-763.

Ho, D.E., Imai, K., King, G., & Stuart, E.A. (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. *Political Analysis*, 15(3), 199-229.

Hox, J. (2002). *Multilevel analysis: Techniques and applications*. Mahwah, NJ: Lawrence Erlbaum Associates.

ICF International and the National Dropout Prevention Center/Network. (2008). Best practices in dropout prevention. Report prepared for the Texas Education Agency. Fairfax: VA: Authors. Available at: http://ritter.tea.state.tx.us/comm/leg_reports/bpdp_finalreport_20081219_toTEA.pdf.

Jimerson, S. R., Anderson, G.E., & Whipple, A.D. (2002). Winning the battle and losing the war: examining the relation between grade retention and dropping out of high school. *Psychology in the Schools*, *39*, 441–57.

Kilpatrick, J., Swafford, J., & Findell, B., Eds. (2001). *Adding It Up: Helping Children Learn Mathematics*. Washington, DC: National Academy Press, National Research Council. Retrieved on January 13, 2011 from http://www.nap.edu/openbook.php?record_id=9822&page=R1.

Levin, H., Belfield, C., Muennig, P., & Rouse, C. (2007). *The costs and benefits of an excellent education for all of America's children*. New York: Columbia University, Teachers College.

Miller, S. (2002). *Validated practices for teaching students with diverse needs and abilities*. Boston: Allyn & Bacon.

Morris, J.D., Ehren, B.J., & Lenz, B.K. (1991). Building a model to predict which fourth through eighth graders will drop out of high school. *Journal of Experimental Education, 59*(3), 286–93.

Neter, J., Kutner, M., Nachtshiem, C., & Wasserman, W. (1996). *Applied linear statistical models*. Chicago, IL: Irwin.

Planty, M., Hussar, W., Snyder, T., Kena, G., KewalRamani, A., Kemp, J., Bianco, K., & Dinkes, R. (2009). *The Condition of Education 2009* (NCES 2009-081). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Powell, A.J. (2008). Keynote address for America's Promise Alliance and White House Office of Faith-Based and Community Initiatives Policy Briefing, "The Dropout Epidemic in the U.S. and Cross-Sector Solutions."

Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear models: Applications and data analysis methods*. 2nd edition. Newbury Park, CA: Sage.

Riggs, J.P., Carruthers, G.E., & Thorstensen, B.I. (n.d.). If you build it, they will come: Investing in public education. Retrieved October 7, 2009 from http://abec.unm.edu/resources/gallery/present/invest_in_ed.pdf.

Rosenbaum, P.R., & Rubin, D.B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.

Rumberger, R.W. (1995). Dropping out of middle school: a multilevel analysis of students and schools. *American Educational Research Journal*, *32*, 583–625.

Steen, L. (2007). How Mathematics Counts. *Educational Leadership*, November, 8-14.

Stone, S. (2006). Correlates of change in student reported parent involvement in schooling: A new look at the National Education Longitudinal Study of 1988. *American Journal of Orthopsychiatry*, *76*(4), 518-530.

Texas Education Agency. (2001). Academic Excellence Indicator System, 2000-01 State Performance Report. TEA Division of Performance Reporting. Accessed online on November 24, 2008, at: http://www.tea.state.tx.us/perfreport/aeis/2001/state.html.

Texas Education Agency. (2007). Academic Excellence Indicator System, 2006-07 State Performance Report. TEA Division of Performance Reporting. Accessed online on November 24, 2008, at: http://www.tea.state.tx.us/perfreport/aeis/2007/state.html.

Texas Education Agency. (2008a). Academic Excellence Indicator System, 2007–08 State Performance Report. TEA Division of Performance Reporting. Retrieved October 7, 2009 from http://www.tea.state.tx.us/perfreport/aeis/2008/state.html.

Texas Education Agency (2008b). Request for application: Mathematics Instructional Coaches Pilot Program, Cycle 1 (RFA No. 701-08-105). Austin, TX: Author. Retrieved on October 9, 2009 from the TEA grant opportunities database.

Texas Education Agency (2008c). Request for application: Mathematics Instructional Coaches Pilot Program, Cycle 2 (RFA No. 701-09-102). Austin, TX: Author. Retrieved on October 9, 2009 from the TEA grant opportunities database.

Texas Education Agency. (2009). *Enrollment in Texas public schools, 2008–09.* (Document No. GE10 601 02). Austin TX: Author.

Texas Education Agency. (2010). *Secondary school completion and dropouts in Texas public schools, 2008–09* (Document No. GE10 601 08). Austin, TX: Author.

Texas Education Agency & ICF International. (2010). *Texas High School Completion and Success: Final Report on Performance of Programs Authorized by House Bill 2237*. Austin, TX: Authors. Available on TEA's website at: http://www.tea.state.tx.us/index4.aspx?id=2147489836&menu_id=680&menu_id2=797&cid=2147483656.

U.S. Census Bureau. (2006). Income in 2005 by educational attainment of the population 18 years and over. Washington, DC: U.S. Government Printing Office.

U.S. Census Bureau. (2008). Public education finances 2006. Accessed online on November 28, 2008, at: http://ftp2.census.gov/govs/school/06f33pub.pdf.

Vogel, C. (2008). Algebra: Changing the Equation. *District Administration.* Accessed online on January 13, 2011 at: http://www.districtadministration.com/viewarticle.aspx?articleid=1581.

What Works Clearinghouse. (2008). Dropout prevention topic report. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc.

Wirt, J., Choy, S., Rooney, P., Provasnik, S., Sen, A., & Tobin, R. (2004). The Condition of Education 2004 (NCES 2004-077). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Yoon, K.S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues & Answers Report, REL 2007–No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from http://ies.ed.gov/ncee/edlabs.

Appendix A: 2009 & 2010 MIC Expenditure Form

Cycle 1

Math Instructional Coaches (MIC) Pilot Program Expenditure Reporting Form for Project to Date for Cycle 1, Year 2 (May 1, 2009 to April 30, 2010	
District/Charter School Name:	WEST OSO ISD
Name and Title of Person Completing Form:	DR. MARY JANE GARZA
Date:	27-May-10
Class/Object Description	TEA Grant Amount Spent Yr. 2 thru 04/30/10
6100 - Payroll Costs	
Academic	
Direct Program Management/Administration	
Auxillary & Other	
6112 - Substitute Pay	
6119 - Professional Staff Extra-Duty Pay	
6121 - Support Staff Extra Duty Pay	
6140 - Employee Benefits	
Other (please describe and add additional rows as needed)	
TOTAL PAYROLL COSTS	0
6200 - Professional and Contracted Services	
6211 - Legal Services	
6219 - Professional Development/ Consulting Services	
6220 - Staff or Student Tuition	
6239 - Education Service Center Services	
6249 - Contracted Maintenance and Repair of Equipment	
6259 - Utilities	
6269 - Rental/Lease Equipment	
6299 - Miscellaneous Contracted Services	
Other (please describe and add additional rows as needed)	
TOTAL PROFESSIONAL AND CONTRACTED SERVICES COSTS	0
6300 - Supplies and Materials	
6310 - Maintenance and/ or Operations Supplies and Materials	
6320 - Textbooks and Other Reading Materials	
6339 - Testing Materials	
6340 - District Food Service	
6390 - General Supplies and Materials	
6399 - Hardware and Equipment Not Capitalized	
Other (please describe and add additional rows as needed)	
TOTAL SUPPLIES AND MATERIALS COSTS	0
6400 - Other Operating Costs	
6410 - Travel and Subsistence	
6420 - Insurance Costs	
6430 - Student Incentives	
6490 - Miscellaneous Operating Costs	
Other (please describe and add additional rows as needed)	
TOTAL OTHER OPERATING COSTS	0
6600 - Capital Outlay (Exclusive of 6619 and 6629)	
6639 - Furniture, Equipment, Vehicles, or Software	
6649 - Capital Assets	
6669 - Library Books and Library Media (Catalogued and Controlled by Library)	
Other (please describe and add additional rows as needed)	
TOTAL CAPITAL OUTLAY	0
Indirect Administrative Costs	
Indirect Administrative Expenses	
TOTAL COSTS	0

Instructions:
1) This form should be filled by Grant Coordinators or Grant Administrators only
2) Provide best possible estimates for ACTUAL SPENDING amounts through Year 2 program period thru 04/30/10

Cycle 2

Math Instructional Coaches (MIC) Pilot Program Expenditure Reporting Form for Project to Date for Cycle 2, Year 1 (April 1, 2009 to April 30, 2010)	
District/Charter School Name:	
Name and Title of Person Completing Form:	
Date:	
Class/Object Description	TEA Grant Amount Spent Yr. 1 thru 04/30/10
6100 - Payroll Costs	
Academic	
Direct Program Management/Administration	
Auxillary & Other	
6112 - Substitute Pay	
6119 - Professional Staff Extra-Duty Pay	
6121 - Support Staff Extra Duty Pay	
6140 - Employee Benefits	
Other (please describe and add additional rows as needed)	
TOTAL PAYROLL COSTS	0
6200 - Professional and Contracted Services	
6211 - Legal Services	
6219 - Professional Development/ Consulting Services	
6220 - Staff or Student Tuition	
6239 - Education Service Center Services	
6249 - Contracted Maintenance and Repair of Equipment	
6259 - Utilities	
6269 - Rental/Lease Equipment	
6299 - Miscellaneous Contracted Services	
Other (please describe and add additional rows as needed)	
TOTAL PROFESSIONAL AND CONTRACTED SERVICES COSTS	0
6300 - Supplies and Materials	
6310 - Maintenance and/ or Operations Supplies and Materials	
6320 - Textbooks and Other Reading Materials	
6339 - Testing Materials	
6340 - District Food Service	
6390 - General Supplies and Materials	
6399 - Hardware and Equipment Not Capitalized	
Other (please describe and add additional rows as needed)	
TOTAL SUPPLIES AND MATERIALS COSTS	0
6400 - Other Operating Costs	
6410 - Travel and Subsistence	
6420 - Insurance Costs	
6430 - Student Incentives	
6490 - Miscellaneous Operating Costs	
Other (please describe and add additional rows as needed)	
TOTAL OTHER OPERATING COSTS	0
6600 - Capital Outlay (Exclusive of 6619 and 6629)	
6639 - Furniture, Equipment, Vehicles, or Software	
6649 - Capital Assets	
6669 - Library Books and Library Media (Catalogued and Controlled by Library)	
Other (please describe and add additional rows as needed)	
TOTAL CAPITAL OUTLAY	0
Indirect Administrative Costs	
Indirect Administrative Expenses	
TOTAL COSTS	0

Instructions:
1) This form should be filled by Grant Coordinators or Grant Administrators only
2) Provide best possible estimates for ACTUAL SPENDING amounts through Year 1 program period thru 04/30/10.

Appendix B: 2009 MIC Implementation Interview Protocol (Cycle 1 Only)

Mathematics Instructional Coaches
Joint Telephone Interview Protocol: MIC Grant Project Coordinators AND Approved Service Provider Representatives

NOTE: ICF will send the interview questions to interviewees a few days beforehand so that they are able to see the questions and read the list of answer choices.

Hello, my name is _____________________ from ICF International. As you know, we are working with the Texas Education Agency (TEA) to evaluate the Mathematics Instructional Coaches (MIC) pilot program. You were selected to participate in this interview because you are key personnel for your MIC grant project. Thank you for agreeing to this time and for signing and returning the consent form that outlined the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved with participating in the evaluation. As a reminder, since this is a joint interview, we ask that you keep confidential the responses of the other person and not share responses with other people.

We would like to take this opportunity to speak with you to obtain more information about the specifics of the MIC pilot project you are implementing.

This interview should take approximately 30 minutes.

Do you have any questions before we begin?

Date:

Time:

To start off, could each of you say your title and how long you've been in your current position? (Pre-fill information below prior to the interview; if information is not available, ask respondents for the following contact information during the interview.)

Contact Information

MIC Grant Project Coordinator	**ASP Representative**
District Name:	ASP Name:
Name:	Name:
Title:	Title:
Years in Position:	Years in Position:
Phone:	Phone:
Email:	Email:

General Information about Your MIC Project

To get us started, I will ask a few general questions about your project to get a sense of your vision of your MIC project and any modifications and/or barriers you have experienced since implementing the project.

1. Briefly, in a few sentences, how would each of you describe the overall purpose of your MIC project?

2. In what ways, if at all, has your MIC project changed from what you originally proposed in your final action plan approved by TEA?

3. What barriers, if any, have you encountered while implementing your MIC project?
    a. (If applicable) How did you overcome these barriers?

4. What factors, if any, do you believe are helping to facilitate the implementation of your MIC project?

5. On what research or model is your MIC project based?
    a. Would you be able to send us the manual/program materials? Y_ N _

Teacher and Administrator Participation in Your MIC Project

In this next section I'd like to get a better sense of who is participating in your MIC project. Please tell me…

6. How many **mathematics teachers** in each of the participating campuses are participating in your MIC project? (Note: List the number for each of the types of schools.)
    a. Middle Schools
    b. Junior High Schools
    c. High Schools

7. How many **administrators** (staff other than teachers) in each of the participating campuses are participating in your MIC project? (Note: List the number for each of the types of schools.)
    a. Middle Schools
    b. Junior High Schools
    c. High Schools

Components of Your MIC Project

Okay, great. Now I would like to get a better sense of the actual components of your MIC project in terms of the types of professional development and coaching activities you are implementing. Many of the TEA-approved MIC project action plans separated the activities into these two categories to differentiate between them. I'm going to read you the question along with several answer choices. You can select more than one answer choice and if there are other components I do not mention, please let me know so I can add them to the list.

8. Please describe your MIC project in terms of the types of activities that are being implemented (or planned to be implemented) in the following categories:
    a. **Professional Development Activities**
        - Math TEKS (in which specific skill areas?):
            - Number, operation, and quantitative reasoning
            - Patterns, relationships, and algebraic thinking
            - Geometry and spatial reasoning
            - Measurement
            - Probability and statistics
        - Specific Math TEKS trainings:
            - Math TEKS Connections (MTC) Training
            - Teaching Math TEKS through Technology (TMT3)
            - Math TEKS Refinement (MTR) Training
            - Mathematics for English Language Learners (MELL)
        - Use of common scope and sequence
        - 5D Lesson Model
        - Blooms Taxonomy
        - Enhance teacher lesson planning
        - Use of a Professional Learning Community for teachers to plan collaboratively and implement their lessons
        - Redesign structural and collaborative teaching practices
        - Curriculum development and realignment
        - Use of pre- and post-test measures

- Other: ________________

  ____

b. **Coaching Activities**

- One-on-one meetings between participating teacher and math coach
- Group meetings with coach(es) and teachers
- Observation of participating teacher's classroom by math coach
- Participating teacher's observation of other mathematics teachers
- Feedback from coach about participating teacher's instructional strategies
- Lesson planning
- Curriculum development
- Scaffolding of math instruction
- Instructional time management skills
- Model teaching and/or co-teaching
- Provide math mentor to teachers
- Provide math facilitator to teachers to assist with planning and delivery of lessons to students
- Coaching for Success
- Other: ____

  ____

c. **Other Activities**

- Other:

  ____
  ____
  ____
  ____

Level of Participation in Various MIC Project Components

Okay, great. Now in this last section I would like to get a sense of the level of mathematics teacher participation in professional development, coaching and other activities we just talked about.

9. How often do mathematics teachers and administrators participate in:
   a) Professional Development Activities

	Teachers	**Administrators**
Total number of hours per ***week***: OR		
Total number of hours per ***month***: OR		
Total number of days per ***year***:		

   b) Coaching Activities

	Teachers	**Administrators**
Total number of hours per ***week***: OR		
Total number of hours per ***month***: OR		
Total number of days per ***year***:		

   c) Other Activities with Teachers (specify activity)
   Activity: ____

	Teachers	**Administrators**
Total number of hours per ***week***: OR		
Total number of hours per ***month***: OR		
Total number of days per ***year***:		

10. In what ways, if any, are you monitoring change in teacher content knowledge before and after program implementation?

11. From each of your perspectives, how do you feel about the way your MIC project has been implemented so far?
    a. How has the partnership between the district and the ASP been working out?

Additional Comments

12. Lastly, what else would you like to add about the implementation of your MIC project?

Thank you very much for your time! Have a nice day!

Appendix C: 2009 MIC Grant Coordinator/ ASP Representative Survey

Evaluation of the Mathematics Instructional Coaches (MIC) Pilot Program

Grant Coordinator/ASP Representative Survey

ICF International, in conjunction with the Texas Education Agency, requests your participation in the evaluation of the Mathematics Instructional Coaches (MIC) pilot program. As a grant coordinator or Approved Service Provider (ASP) partner with the MIC program during the 2008–09 school year, you are being asked to respond to a series of survey items related to the following topics:

- Your role in the MIC program,
- General information about the MIC program,
- The implementation of your MIC program, and
- Your perceptions of the quality and effectiveness of the MIC program.

We are conducting surveys with at least one grant coordinator and one ASP representative from each of the 29 MIC Cycle 1 grantees. Findings from this survey and others like it will help us to learn about the ways that the MIC program is effective and alert evaluators and program managers to areas for possible program improvements.

In the paragraphs below, we summarize the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved in participating in this evaluation.

Procedures: TEA has partnered with ICF International to conduct the MIC evaluation. This survey should take approximately 15 minutes to complete. By participating in the survey, you are giving permission for ICF International to use your information for evaluation purposes. ICF may ask you to complete other surveys like this one up to two additional times between March 2009 and May 2011.

Confidentiality: *Grant Coordinators*: As a representative of the district that is a direct recipient of the MIC grant, you are required to participate in all evaluation activities, including this survey. *ASP Representatives*: Participation in this survey is completely voluntary for you and you may choose to skip any questions you do not want to answer or to terminate your participation at any time, without consequence. Both: While TEA is aware that you are participating in this survey, the information gathered from this survey is strictly confidential and will be used for the purposes of this evaluation only. The data collected from this survey, and others like it, will be entered into a database (with your ID number), analyzed, and used in reports on the effectiveness of the MIC program.

ICF will develop a name-to-ID-number database to track your data over the course of the evaluation. Upon completion of the evaluation, ICF will destroy this name-to-ID database. ICF will submit a database to TEA for record-keeping purposes, but your name and any other identifying information will not appear in any databases or reports associated with this evaluation. Specifically, any quotations you provide to open-ended questions that are used in reporting will be de-identified so that you or other individuals will not be able to be singled out based on the information that you provide.

Risks and Benefits: Because this survey includes questions about your experiences with the MIC pilot program and not personal information, there are minimal risks posed to you for participating in this survey. While there are no direct benefits to you, as a participant in the evaluation, you can benefit from knowing that your contributions will help the evaluation of the MIC pilot program.

If you have any questions about this evaluation, please contact Thomas J. Horwood (ICF Evaluation Manager) by e-mail at THorwood@icfi.com or by telephone at 866-924-7728. If you have questions about the project or TEA, please contact John Kucsera (TEA Project Manager) by e-mail at ProgramEval@tea.state.tx.us or by telephone at 512-463-9057. If you have questions about your rights as a participant, please contact Laurie May (ICF Institutional Review Board Chair) by e-mail LMay@icfi.com or by telephone at 800-532-4783.

Thank you in advance for your participation.

Consent statement:

I have read the preceding information describing this evaluation and the purpose of this survey. I freely consent to participate. I understand that my privacy will be protected and any information I provide here today will be used for evaluation purposes only. (For ASP Representatives: I understand that I am free to skip questions or stop the survey at any time.) Finally, I can contact Mr. Thomas J. Horwood (Evaluation Manager) or Dr. Laurie May (IRB Chair) at ICF should I have questions or concerns about this survey or my rights as a participant, respectively.

☐ I Accept ☐ I Do Not Accept

Part I: MIC Role

We would like to obtain some background information about you and your current role in the MIC program. Please answer the following questions.

1. What is your current role in the MIC program?
   - MIC Grant Coordinator
   - Approved Service Provider (ASP) Representative

Part II: General Information about Your MIC Program

The following items pertain to information about the MIC program with which you are associated.

1. What grade level teachers are served through your MIC program? (Select all that apply)
   - 6th grade
   - 7th grade
   - 8th grade
   - 9th grade
   - 10th grade
   - 11th grade
   - 12th grade

2. With what special population(s) of students, if any, do teachers who are served by your MIC program work? (Select all that apply)
   - Students at-risk for dropping out
   - English as a second language (ESL) students
   - English language learners (ELLs)
   - Special education students
   - Economically disadvantaged students (e.g., students receiving free or reduced lunch)
   - Other (please specify) ______________________________
   - None of the above

3. How were teachers selected to receive coaching in your MIC program? (Select all that apply)

   - Teachers were referred by their principal
   - Teachers volunteered
   - Teachers were selected based upon their students' academic records
   - Teachers were selected based upon their students' Texas Assessment of Knowledge and Skills (TAKS) scores
   - I don't know
   - Other (please specify) ______________________________

4. How were coaches selected to provide coaching in your MIC program? (Select all that apply)

- o The Approved Service Provider provided the coaches to the district
- o The district/school already had district-level mathematics coaches
- o The district/school already had school-level mathematics coaches
- o The district/school asked the "highest performing" mathematics teachers to become coaches to coach their peers
- o The principal/school administrator recommended the coaches
- o I don't know
- o Other (please specify) ____

5. To what extent do you feel there is sufficient support for the MIC program in your district from each of the following stakeholders?	Not Supportive	Somewhat Supportive	Neutral	Supportive	Very Supportive	No Basis for Judgment
District Superintendent	○	○	○	○	○	○
Campus Principals	○	○	○	○	○	○
Approved Service Provider Staff	○	○	○	○	○	○
Teachers	○	○	○	○	○	○
Other _______________	○	○	○	○	○	○

Part III: Implementation of Your MIC Program

1. How would you characterize the structure of your MIC grant program? (*Please select all that apply to best describe your program)*

- o Approved Service Provider (ASP)-to-District Expert Coaches Model: The ASP provides coaches to the district, and these coaches visit the campus(es), meet with the teachers, observe the teachers, and model effective teaching strategies.
- o District-to-Teachers Expert Coaches Model: Involves district personnel who already serve as coaches or were hired as mathematics instructional coaches. These coaches are trained by the ASP on coaching methods, and then the coaches work with the teachers.
- o Peer-to-Peer Teacher Coaches Model: A peer-to-peer coaching approach where veteran teachers are selected to coach struggling or novice teachers. The peer teacher coaches are trained in coaching practices through professional development from the ASP.
- o Other (please describe) ____

2. Coaching activities are generally one-to-one or one-to-two person activities in which a coach observes teachers in the classroom, offers each one personalized/individualized teaching methods/strategies, and/or provides individualized on-going support via phone or email. How would you describe the targeted teachers' attendance/participation in coaching activities related to the MIC pilot program?

- o A few of the targeted teachers attended/participated
- o Many but not most of the targeted teachers attended/participated
- o Most of the targeted teachers attended/participated
- o All of the targeted teachers attended/participated

2a. Which answer below do you think best explains the targeted teachers' attitude about participating in coaching activities?

- o Targeted teachers are required to participate, and they do participate
- o Targeted teachers are required to participate, but they do not participate
- o Targeted teachers are not required to participate, but they do participate.
- o Targeted teachers are not required to participate, and they do not participate.

2b. How invested are targeted teachers in participating in MIC coaching activities?

- Not at all invested
- Slightly invested
- Moderately invested
- Very much invested
- Totally invested

3. Professional development activities are instructional training courses that teachers participated in, usually as a group in addition to regular coaching activities. The focus is usually on a specific topic. If your MIC program offered professional development activities to the teachers participating in the MIC program, how would you describe the targeted teachers' attendance/participation in these professional development activities related to the MIC pilot program?

- Professional development was not offered as part of our MIC program [skip logic: if not offered, go to question 4]
- A few of the targeted teachers attended/participated
- Many but not most of the targeted teachers attended/participated
- Most of the targeted teachers attended/participated
- All of the targeted teachers attended/participated

3a.. Which of the following do you think best explains the targeted teachers' attitudes about participating in professional development activities (Select all that apply)?

- Targeted teachers are required to participate, and they do participate
- Targeted teachers are required to participate, but they do not participate
- Targeted teachers are not required to participate, but they do participate.
- Targeted teachers are not required to participate, and they do not participate.

3b. How invested are targeted teachers in participating in MIC professional development activities?

- Not at all invested
- Slightly invested
- Moderately invested
- Very much invested
- Totally invested

4. In year 2 (of your current Cycle 1 grant) for your MIC pilot program do you…

- Plan to continue with your action plan? [Skip logic: if plan to continue, skip to Q 6]
- Revise your action plan? [Skip logic: if plan to revise action plan ask question 5]

5. What revisions do you currently plan to make with regards to your MIC professional development and/or coaching activities?

6. Do you currently assess, or plan to assess, teachers' content knowledge as part of your MIC pilot program?

- No [Skip logic: if no, have respondent skip to Q7]
- Yes [Skip logic: if yes, have respondent answer Qs 6a, 6b, and 6c]

6a. How do you or will you assess teachers' content knowledge (Select all that apply)?

- o Have teachers complete an assessment before participation or early on in participation (pre-implementation)
- o Have teachers complete an assessment after participation or near end of participation (post-implementation)
- o Have teachers complete an assessment both before and after participation (pre- and post-implementation)
- o Have teachers be observed to assess their level of content knowledge
- o Look at changes in student performance on classroom diagnostic assessments and/or TAKS
- o Other (please specify): ______________________________

6b. How would you describe teachers' content knowledge in relation to where you would like them to be in order to teach mathematics to students in the grade level(s) to which they are assigned?

o Much higher

o Slightly higher

o About where it should be

o Slightly lower

o Much lower

6c. What changes in, or other characteristics of, teachers' content knowledge, if any, have you observed based on these assessments? ____

7. Do any district or campus administrators participate in any of the MIC program activities?

- o No [Skip logic: if no, skip to question 8]
- o Yes [Skip logic: if yes, answer question 7a]

7a. If yes, to what extent has it been helpful in facilitating the implementation of the MIC grant to have district/campus administrators participate in the MIC activities?

- o Not at all helpful
- o Somewhat helpful
- o Neutral
- o Helpful
- o Very helpful

Please explain: ________________________

8. In addition to your MIC pilot program, what other mathematics programs, if any, exist currently in this district that teachers and/or students could have participated in during the 2008-2009 academic year?

Part IV: Perceptions of the Quality and Effectiveness of the MIC Program

Please indicate ***your opinion*** on the following questions about teachers participating in the MIC program activities, as well as students served by these teachers participating in the MIC program in your school district:

To what extent do you believe the MIC program activities in which the mathematics teachers have participated thus far...	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1. …improved their beliefs about teaching mathematics?	○	○	○	○	○	○
2. …improved their sense that they can make a difference in their students' learning of mathematics?	○	○	○	○	○	○
3. …improved their mathematics content knowledge?	○	○	○	○	○	○
4. …improved their effectiveness?	○	○	○	○	○	○

To what extent do you believe the MIC program activities in which the mathematics teachers have participated thus far...	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
5.…increased student achievement in mathematics in your school district?	○	○	○	○	○	○
6.…increased student achievement overall in your school district?	○	○	○	○	○	○
7.…lowered dropout rates in your school district?	○	○	○	○	○	○
8.…increased graduation rates in your school district?	○	○	○	○	○	○
9.…increased (grade) promotion rates in your school district?	○	○	○	○	○	○
10.…increased mathematics course completion rates in your school district?	○	○	○	○	○	○
11.…increased course completion rates overall in your school district?	○	○	○	○	○	○

12….increased SAT/ACT mathematics scores in your school district?	○	○	○	○	○	○
13….increased SAT/ACT scores overall in your school district?	○	○	○	○	○	○

14. What barriers, if any, do you feel this school district has faced while implementing the MIC program? If you were able to overcome some of these barriers, how did you do so?

15. What factors, if any, do you feel have helped facilitate the implementation of this district's MIC program?

16. What is the single most important result of this program that you would like to see? What evidence, if any have you seen of this result?

17. Do you believe the MIC program had positive effects in your district? If so, what were they? If not, why not?

18. What are your thoughts on the sustainability of the MIC program in your district? Is MIC worth the costs associated with continuing the program? Why or why not?

19. Is there anything else you would like to add about the implementation of the MIC program in this school district? If so, please explain below.

Thank you very much for your time!

Appendix D: 2009 MIC Coach Survey

Evaluation of the Mathematics Instructional Coaches (MIC) Pilot Program

Coach Survey

ICF International, in conjunction with the Texas Education Agency, requests your participation in the evaluation of the Mathematics Instructional Coaches (MIC) pilot program. As a coach who is providing support to teachers as part of the MIC program during the 2008–09 school year, you are being asked to respond to a series of survey items related to the following topics:

- Your professional background and role in the MIC program
- MIC program activities
- Perceptions of training of coaches (if you received any)
- Impact of the MIC program
- Implementation of the MIC program

We are conducting surveys with all coaches from each of the 29 MIC Cycle 1 grantees. Findings from this survey and others like it will help us to learn about the ways that the MIC program is effective and alert evaluators and program managers to areas for possible program improvements.

In the paragraphs below, we summarize the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved in participating in this evaluation.

Procedures: TEA has partnered with ICF International to conduct the MIC evaluation. This survey should take approximately 15 minutes to complete. By participating in the survey, you are giving permission for ICF International to use your information for evaluation purposes. ICF may ask you to complete other surveys like this one up to two additional times between March 2009 and May 2011.

Confidentiality: Your participation in this survey is completely voluntary and you may choose to skip any questions you do not want to answer or to terminate your participation at any time, without consequence. While TEA is aware that you are participating in this survey, the information gathered from this survey is strictly confidential and will be used for the purposes of this evaluation only. The data collected from this survey, and others like it, will be entered into a database (with your ID number), analyzed, and used in reports on the effectiveness of MIC program.

ICF will develop a name-to-ID-number database to track your data over the course of the evaluation. Upon completion of the evaluation, ICF will destroy this name-to-ID database. ICF will submit a database to TEA for record-keeping purposes, but your name and any other identifying information will not appear in any databases or reports associated with this evaluation. Specifically, any quotations you provide to open-ended questions that are used in reporting will be de-identified so that you or other individuals will not be able to be singled out based on the information that you provide.

Risks and Benefits: Because this survey includes questions about your experiences with the MIC pilot program and not personal information, there are minimal risks posed to you for participating in this survey. While there are no direct benefits to you, as a participant in the evaluation, you can benefit from knowing that your contributions will help the evaluation of the MIC pilot program.

If you have any questions about this evaluation, please contact Thomas J. Horwood (ICF Evaluation Manager) by e-mail at THorwood@icfi.com or by telephone at 866-924-7728. If you have questions about the project or TEA, please contact John Kucsera (TEA Project Manager) by e-mail at ProgramEval@tea.state.tx.us or by telephone at 512-463-9057. If you have questions about your rights as a participant, please contact Laurie May (ICF Institutional Review Board Chair) by e-mail LMay@icfi.com or by telephone at 800-532-4783.

Thank you in advance for your participation.

Consent statement:

I have read the preceding information describing this evaluation and the purpose of this survey. I freely consent to participate. I understand that my privacy will be protected and any information I provide here today will be used for evaluation purposes only. I understand that I am free to skip questions or stop the survey at any time. Finally, I can contact Mr. Thomas J. Horwood (Evaluation Manager) or Dr. Laurie May (IRB Chair) at ICF should I have questions or concerns about this survey or my rights as a participant, respectively.

☐ I Accept ☐ I Do Not Accept

Part I: Background Information and MIC Role

We would like to obtain some background information about you and your current role in the MIC program. Please answer the following questions.

1. What is your current role in the MIC program?

- o Coach (provide support such as coaching mathematics teachers and/or teaching workshops/trainings to mathematics teachers)
- o Coach in Training (you are a teacher/school administrator/other staff member being trained to become a coach and you provide/will provide support such as coaching to mathematics teachers in your school and/or district)

2. What is the name of the district(s) where you provide coaching or other MIC related activities? [select all that apply from a list of all participating districts]

3. What is the name of the school(s) where you provide coaching or other MIC related activities? [select all that apply from a list of schools and type in the school name if it is not listed]

4. If you are not from this district or school, what is the name of your organization where you work?

____

5. What grade level(s) have you ever taught mathematics? (Select all that apply)

- o I have never taught mathematics.[skip logic: if selected, skip to question 8]
- o I have taught mathematics, but to grade 5 or below. [skip logic: if selected, skip to question 8]
- o 6th grade
- o 7th grade
- o 8th grade
- o 9th grade
- o 10th grade
- o 11th grade
- o 12th grade

6. How many years of experience have you had teaching mathematics to students in grades 6-12?

- o Less than 1 year
- o 1-3 years
- o 4-10 years
- o More than 10 years

7. What types of mathematics courses have you ever taught for students in grades 6-12? (Select all that apply)

- o Mathematics, Grade 6
- o Mathematics, Grade 7
- o Mathematics, Grade 8
- o Algebra I
- o Algebra II
- o Geometry
- o Precalculus
- o AP Statistics
- o AP Calculus AB
- o AP Calculus BC
- o IB Mathematical Studies Standard Level
- o IB Mathematics Standard Level
- o IB Mathematics Higher Level
- o IB Further Mathematics Standard Level
- o Mathematical Models with Applications
- o Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 6-8
- o Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 9-12
- o Implementation of TEKS for Mathematics, Other High School Mathematics Courses
- o Independent Study in Mathematics
- o Other (please specify ___________________)

8. Which other subject area(s) have you taught or do you currently teach? (Select all that apply)

- o Not applicable
- o English language arts (ELA)
- o Reading
- o Science
- o Social studies
- o Other (please specify): ____________________________

9. To your knowledge, which grade level(s) do the teachers you coach teach? (Select all that apply)

- o 6^{th} grade
- o 7^{th} grade
- o 8^{th} grade
- o 9^{th} grade
- o 10^{th} grade
- o 11^{th} grade
- o 12^{th} grade

3b. To your knowledge, what type of math courses do the teachers you coach teach? (Select all that apply)

- Mathematics, Grade 6
- Mathematics, Grade 7
- Mathematics, Grade 8
- Algebra I
- Algebra II
- Geometry
- Precalculus
- AP Statistics
- AP Calculus AB
- AP Calculus BC
- IB Mathematical Studies Standard Level
- IB Mathematics Standard Level
- IB Mathematics Higher Level
- IB Further Mathematics Standard Level
- Mathematical Models with Applications
- Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 6-8
- Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 9-12
- Implementation of TEKS for Mathematics, Other High School Mathematics Courses
- Independent Study in Mathematics
- Other (please specify ________________________)

4. How many years of experience have you had as a mathematics trainer/coach/mentor to 6th -12th grade teachers?

- Less than 1 year
- 1-3 years
- 4-10 years
- More than 10 years

5. Which of the following applies to you: (Select all that apply)

- I have taught mathematics at a 2-year college
- I have taught mathematics at a 4-year college/university
- I majored in mathematics
- I minored in mathematics
- I have an advanced degree (e.g. Masters/Ph.D.) in a STEM*-related field (*STEM stands for Science, Technology, Engineering, and Mathematics)
- None of the above

6. What special population(s) of students, if any, are served by teachers with whom you work? (Select all that apply)

- Students at-risk for dropping out
- English as a second language (ESL) students
- English language learners (ELLs)
- Special education students
- Economically disadvantaged students (e.g., students receiving free or reduced lunch)

- None of the above
- I do not know
- Other (please specify) ____

7. With what special population(s) of students, if any, do you have specialized training to coach/mentor teachers to work with? (Select all that apply)

- Students at-risk for dropping out
- English as a second language (ESL) students
- English language learners (ELLs)
- Special education students
- Economically disadvantaged students (e.g., students receiving free or reduced lunch)
- None of the above
- I do not know
- Other (please specify) ____

8. How did you become involved as a coach as part of the MIC program in your district? (Select all that apply)

- I am employed/subcontracted by the Approved Service Provider for the district(s) to provide coaching/training
- I have been a mathematics coach in this district prior to the MIC program (e.g. Mathematics Instructional Coach)
- I was asked by the school district/school administrator to become a coach to my peers because I am one of the "higher performing" mathematics teachers in the school/district.
- My school principal recommended me.
- I don't know
- Other (please specify) ____

Part II: MIC Program Activities

1. What mathematics coaching strategies did you implement while working with the teachers you support as part of the MIC program?

2. Approximately how many hours per week do you spend working with individual teachers?

3. Has the amount of time you have spent working with individual teachers shifted over the course of the MIC grant period?

- No
- Yes

3a. If yes, please explain.

4. Approximately how many hours per week do you spend working with groups of teachers?

5. Has the amount of time you have spent working with groups of teachers shifted over the course of the MIC grant period?

- o No
- o Yes

5a. If yes, please explain.

6. Have you received any training on coaching practices in mathematics as part of the MIC program?

- o No (skip logic: if no, proceed to Part IV)
- o Yes (skip logic: if yes, proceed to Part III)

Part III: Perceptions of Training of Coaches

Some MIC programs provided training to mathematics coaches in mathematics coaching practices. Please respond to the following questions about your experiences with the training of mathematics coaches.

Please answer the following questions using the scale that ranges from "Very Poor" to "Excellent".

Question	Very Poor	Below Average	Average	Above Average	Excellent
1. How would you rate the overall quality of the training you received?	○	○	○	○	○
2. How would you rate the overall effectiveness of the trainers provided by the Approved Service Provider (ASP)?	○	○	○	○	○
3. How would you rate the overall quality of the training content?	○	○	○	○	○

Please answer the following questions using the scale that ranges from "Not at All Effective" to "Extremely Effective".

Question	Not at All Effective	Slightly Effective	Moderately Effective	Very Effective	Extremely Effective
4. To what extent was the training structure effective in meeting your learning needs?	○	○	○	○	○
5. How effective was the training of mathematics coaches you attended in preparing you for your roles/responsibilities as a mathematics coach?	○	○	○	○	○

Please rate your level of agreement with the following statement using the scale that ranges from "Strongly Disagree" to "Strongly Agree".

Statement	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
6. The training of mathematics coaches I attended provided me with the requisite knowledge and skills to fulfill my responsibilities as a mathematics coach.	○	○	○	○	○

7. What would you definitely not want to change, if anything, about the training you received to be a mathematics coach?

8. What aspects of the training you received to be a mathematics coach, if any, could have been improved? Any suggestions for ways to make these improvements?

9. Please use this space to describe anything else you would like to add about your experience in being trained to be a mathematics coach?

Part IV: Perceptions of the Effectiveness of the MIC Program

Please indicate ***your opinion*** on the following questions about teachers participating in MIC program activities, as well as students served by the teachers participating in the MIC program at your school(s)/school district(s):

To what extent do you believe the MIC program activities that you have provided thus far...	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1… improved participating teachers' beliefs about teaching mathematics?	○	○	○	○	○	○
2… improved participating teachers' sense that they can make a difference in their students' learning of mathematics?	○	○	○	○	○	○
3… improved participating teachers' mathematics content knowledge?	○	○	○	○	○	○
4. …improved participating teachers' effectiveness in mathematics instruction?	○	○	○	○	○	○

5. What advantages do you feel mathematics teachers participating in MIC have over other mathematics teachers who did not participate in the program?

6. What do you think were two of the most important things mathematics teachers you coached learned from you?

7. Have the teachers you coached implemented any new techniques? If so, what?

To what extent do you believe the <u>MIC program activities</u> that you have provided thus far…	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
8. Increased **student achievement in mathematics** among students with MIC teachers?	○	○	○	○	○	○
9. Increased **student achievement overall** among students with MIC teachers?	○	○	○	○	○	○
10. Lowered **dropout rates** among students with MIC teachers?	○	○	○	○	○	○
11. Increased **graduation rates** among students with MIC teachers?	○	○	○	○	○	○
12. Increased (grade) **promotion rates** among students with MIC teachers?	○	○	○	○	○	○
13. Increased **mathematics course completion rates** among students with MIC teachers?	○	○	○	○	○	○
14. Increased **course completion rates overall** among students with MIC teachers?	○	○	○	○	○	○
15. Increased **SAT/ACT mathematics scores** among students with MIC teachers?	○	○	○	○	○	○
16. Increased **SAT/ACT scores overall** among students with MIC teachers?	○	○	○	○	○	○

To what extent do you believe that, as a result of the <u>MIC program activities</u> you provided, students in the mathematics classes with MIC teachers are…	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
8. …turning in more of their mathematics homework assignments?	○	○	○	○	○	○
9. …passing more of their mathematics classroom tests/quizzes?	○	○	○	○	○	○
10. …attending mathematics class more often?	○	○	○	○	○	○

In retrospect, how prepared do you think you were to do the following when coaching teachers in mathematics instructional strategies?	Not At All Prepared	Somewhat Prepared	Fairly Well Prepared	Very Well Prepared
11. Present MIC activities as outlined in the training materials.	○	○	○	○
12. Present new mathematics content to teachers.	○	○	○	○
13. Enhance teachers' knowledge/skills so they can effectively teach students to understand mathematics.	○	○	○	○
14. Help teachers learn to implement research-based strategies in mathematics instruction.	○	○	○	○
15. Work with adult learners.	○	○	○	○
16. Build teachers' skill in linking their mathematics instruction to the Texas Essential Knowledge and Skills (TEKS).	○	○	○	○
17. Develop teachers' understanding of how to use the Texas Assessment of Knowledge and Skills (TAKS) system to develop and refine mathematical instruction. .	○	○	○	○
18. Differentiate mathematics instruction for various learning styles.	○	○	○	○
19. Motivate teachers to learn new mathematics instructional strategies.	○	○	○	○
20. Maintain a positive learning environment with the mathematics teachers with whom I work.	○	○	○	○

Part V: Implementation of the MIC Program

1. What barriers, if any, do you feel the school district(s) you have provided coaching to have faced while implementing the MIC program? If you were able to overcome some of the main barriers, how did you do so?

2. What factors, if any, do you feel have helped facilitate the implementation of the district(s) MIC program?

3. Is there anything else you would like to add about the implementation of the MIC program at a particular school district or a particular campus in which you provided coaching?

Thank you for your time!

Appendix E: 2009 MIC Principal/ Campus Administrator Survey (Cycle 1 Only)

Evaluation of the Mathematics Instructional Coaches (MIC) Pilot Program

Principal/Campus Administrator Survey

ICF International, in conjunction with the Texas Education Agency, requests your participation in the evaluation of the Mathematics Instructional Coaches (MIC) pilot program. As the principal or other administrator at a school that participated in the MIC program during the 2008–09 school year, you are being asked to respond to a series of survey items related to the following topics:

- Your professional background and experience,
- Your perceptions of the quality and effectiveness of the MIC program, and
- The implementation of your MIC program.

We are conducting surveys with the principals/school administrators from each of the 29 MIC Cycle 1 grantees. Findings from this survey and others like it will help us to learn about the ways that the MIC program is effective and alert evaluators and program managers to areas for possible program improvements.

In the paragraphs below, we summarize the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved in participating in this evaluation.

Procedures: TEA has partnered with ICF International to conduct the evaluation. This survey should take approximately 15 minutes to complete. By participating in the survey, you are giving permission for ICF International to use your information for evaluation purposes. ICF may ask you to complete other surveys like this one up to two additional times between March 2009 and May 2011.

Confidentiality: Your participation in this survey is completely voluntary and you may choose to skip any questions you do not want to answer or to terminate your participation at any time, without consequence. While TEA is aware that you are participating in this survey, the information gathered from this survey is strictly confidential and will be used for the purposes of this evaluation only. The data collected from this survey, and others like it, will be entered into a database (with your ID number), analyzed, and used in reports on the effectiveness of the MIC program.

ICF will develop a name-to-ID-number database to track your data over the course of the evaluation. Upon completion of the evaluation, ICF will destroy this name-to-ID database. ICF will submit a database to TEA for record-keeping purposes, but your name and any other identifying information will not appear in any databases or reports associated with this evaluation. Specifically, any quotations you provide to open-ended questions that are used in reporting will be de-identified so that you or other individuals will not be able to be singled out based on the information that you provide.

Risks and Benefits: Because this survey includes questions about your experiences with the MIC pilot program and not personal information, there are minimal risks posed to you for participating in this survey. While there are no direct benefits to you, as a participant in the evaluation, you can benefit from knowing that your contributions will help the evaluation of the MIC pilot program.

If you have any questions about this evaluation, please contact Thomas J. Horwood (ICF Evaluation Manager) by e-mail at THorwood@icfi.com or by telephone at 866-924-7728. If you have questions about the project or TEA, please contact John Kucsera (TEA Project Manager) by e-mail at ProgramEval@tea.state.tx.us or by telephone at 512-463-9057. If you have questions about your rights as a participant, please contact Laurie May (ICF Institutional Review Board Chair) by e-mail LMay@icfi.com or by telephone at 800-532-4783.

Thank you in advance for your participation.

Consent statement:

I have read the preceding information describing this evaluation and the purpose of this survey. I freely consent to participate. I understand that my privacy will be protected and any information I provide here today will be used for evaluation purposes only. I understand that I am free to skip questions or stop the survey at any time. Finally, I can contact Mr. Thomas J. Horwood (Evaluation Manager) or Dr. Laurie May (IRB Chair) at ICF should I have questions or concerns about this survey or my rights as a participant, respectively.

☐ I Accept ☐ I Do Not Accept

Part I: Background Information

We would like to obtain some background information about you. Please answer the following questions.

1a. What is the name of your school district/charter school? ________________________________[select from drop down menu]

1b. What is the name of your school? ________________________________

2. What is your job title?

- o Principal
- o Assistant Principal
- o Curriculum Coordinator
- o Other (please specify) ________________________________

3. How long have you been in this position?

- o Less than 1 year
- o 1-3 years
- o 4-10 years
- o More than 10 years

4. What types of mathematics courses are offered at your school for students in grades 6-12 (Select all that apply)?

- o Mathematics, Grade 6
- o Mathematics, Grade 7
- o Mathematics, Grade 8
- o Algebra I
- o Algebra II
- o Geometry
- o Precalculus
- o AP Statistics
- o AP Calculus AB
- o AP Calculus BC
- o IB Mathematical Studies Standard Level
- o IB Mathematics Standard Level
- o IB Mathematics Higher Level
- o IB Further Mathematics Standard Level
- o Mathematical Models with Applications
- o Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 6-8
- o Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 9-12
- o Implementation of TEKS for Mathematics, Other High School Mathematics Courses
- o Independent Study in Mathematics
- o Other (please specify) ________________

5. How familiar are you with the Mathematics Instructional Coaches (MIC) pilot program?

- o Not at all familiar with the MIC pilot program [skip logic: if selected, skip to Part II, question 1.]
- o Somewhat familiar with the MIC pilot program [skip logic: if selected, continue to question 6]
- o Very familiar with the MIC pilot program [skip logic: if selected, continue to question 6]

6. Please select the appropriate response(s) below in reference to participating in MIC activities (Select all that apply):

- o Although I am familiar with the program, I did not participate in any MIC activities
- o I was involved with selecting which mathematics teachers would participate (receive coaching/participate in professional development activities)
- o I was involved with selecting the coaches
- o I conducted classroom observations of teachers participating in the MIC program
- o I attended at least one professional development class/course offered by the MIC program
- o I observed coaching sessions between teachers and their coach
- o I encouraged teachers to participate
- o I provided release time for teachers so that they could participate
- o Other (please specify) _______________

Part II: Perceptions of the Quality and Effectiveness of the MIC Program

Please indicate ***your opinion*** on the following questions about teachers participating in the MIC program activities, as well as students served by these teachers participating in the MIC program at your school:

To what extent do you believe the MIC program activities in which the mathematics teachers have participated thus far...	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1. …improved their beliefs about teaching mathematics?	○	○	○	○	○	○
2. …improved their sense that they can make a difference in their students' learning of mathematics?	○	○	○	○	○	○
3. …improved their mathematics content knowledge?	○	○	○	○	○	○
4. …improved their effectiveness?	○	○	○	○	○	○

To what extent do you believe the MIC program activities in which the mathematics teachers have participated thus far…	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
5. …increased **student achievement in mathematics** at your school?	○	○	○	○	○	○
6. …increased **student achievement overall** at your school?	○	○	○	○	○	○
7. …lowered **dropout rates** at your school?	○	○	○	○	○	○
8. …increased **graduation rates** at your school?	○	○	○	○	○	○
9. …increased (grade) **promotion rates** at your school?	○	○	○	○	○	○
10. …increased **mathematics course completion rates** at your school?	○	○	○	○	○	○
11. …increased **course completion rates overall** at your school?	○	○	○	○	○	○
12. …increased **SAT/ACT scores in mathematics** at your school?	○	○	○	○	○	○
13. …increased **SAT/ACT scores overall** at your school?	○	○	○	○	○	○

14. Generally, do you believe the MIC program had positive effects on your school and/or in your school district? If so, what were they? If not, why not?

15. In what ways have mathematics teachers' content knowledge and/or teaching skills changed as a result of their participation in the MIC program? In other words, how do you know the program is working or not? If you think there have been no changes, why not?

Part III: Implementation of the MIC Program

1. What barriers, if any, do you feel your school and/or school district has faced while implementing the MIC program? If you were able to overcome some of these barriers, how did you do so?

2. What factors, if any, do you feel have helped facilitate the implementation of your school and/or school district's MIC program?

3. What are your thoughts on the sustainability of the MIC program at your school or in your district? Is MIC worth the costs associated with continuing the program? Why or why not?

4. Is there anything else you would like to add about the implementation of the MIC program at your school or in your school district? If so, please explain below.

Thank you for your time!

Appendix F: 2009 MIC Teacher Survey

Evaluation of the Mathematics Instructional Coaches (MIC) Pilot Program

Teacher Survey

ICF International, in conjunction with the Texas Education Agency, requests your participation in the evaluation of the Mathematics Instructional Coaches (MIC) pilot program. As a teacher who is receiving coaching and professional development support as part of the MIC program during the 2008–09 school year, you are being asked to respond to a series of survey items related to the following topics:

- Your professional background and experience
- Your participation in other coaching and professional development activities
- Impact of the MIC program
- Satisfaction with teaching
- Implementation of the MIC program

We are conducting surveys with all teachers from each of the 29 MIC Cycle 1 grantees. Findings from this survey and others like it will help us to learn about the ways that the MIC program is effective and alert evaluators and program managers to areas for possible program improvements.

In the paragraphs below, we summarize the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved in participating in this evaluation.

Procedures: TEA has partnered with ICF International to conduct the MIC evaluation. This survey should take approximately 15 minutes to complete. By participating in the survey, you are giving permission for ICF International to use your information for evaluation purposes. ICF may ask you to complete other surveys like this one up to two additional times between March 2009 and May 2011.

Confidentiality: Your participation in this survey is completely voluntary and you may choose to skip any questions you do not want to answer or to terminate your participation at any time, without consequence. While TEA is aware that you are participating in this survey, the information gathered from this survey is strictly confidential and will be used for the purposes of this evaluation only. The data collected from this survey, and others like it, will be entered into a database (with your ID number), analyzed, and used in reports on the effectiveness of MIC program.

ICF will develop a name-to-ID-number database to track your data over the course of the evaluation. Upon completion of the evaluation, ICF will destroy this name-to-ID database. ICF will submit a database to TEA for record-keeping purposes, but your name and any other identifying information will not appear in any databases or reports associated with this evaluation. Specifically, any quotations you provide to open-ended questions that are used in reporting will be de-identified so that you or other individuals will not be able to be singled out based on the information that you provide.

Risks and Benefits: Because this survey includes questions about your experiences with the MIC pilot program and not personal information, there are minimal risks posed to you for participating in this survey. While there are no direct benefits to you, as a participant in the evaluation, you can benefit from knowing that your contributions will help the evaluation of the MIC pilot program.

If you have any questions about this evaluation, please contact Thomas J. Horwood (ICF Evaluation Manager) by e-mail at THorwood@icfi.com or by telephone at 866-924-7728. If you have questions about the project or TEA, please contact John Kucsera (TEA Project Manager) by e-mail at ProgramEval@tea.state.tx.us or by telephone at 512-463-9057. If you have questions about your rights as a participant, please contact Laurie May (ICF Institutional Review Board Chair) by e-mail LMay@icfi.com or by telephone at 800-532-4783.

Thank you in advance for your participation.

Consent statement:

I have read the preceding information describing this evaluation and the purpose of this survey. I freely consent to participate. I understand that my privacy will be protected and any information I provide here today will be used for evaluation purposes only. I understand that I am free to skip questions or stop the survey at any time. Finally, I can contact Mr. Thomas J. Horwood (Evaluation Manager) or Dr. Laurie May (IRB Chair) at ICF should I have questions or concerns about this survey or my rights as a participant, respectively.

☐ I Accept ☐ I Do Not Accept

Part I: Background Information

We would like to obtain some background information about you. Please answer the following questions.

1. What is the name of the school district/charter school where you teach? [select from dropdown menu]

2. What is the name of the school/campus where you teach? [select from dropdown menu]

3. What grade level(s) do you currently teach mathematics? (Select all that apply)

- o 6th grade
- o 7th grade
- o 8th grade
- o 9th grade
- o 10th grade
- o 11th grade
- o 12th grade

4. How many years of experience have you had teaching mathematics to students in grades 6-12?

- o Less than 1 year
- o 1-3 years
- o 4-10 years
- o More than 10 years

5. What types of mathematics courses have you ever taught for students in grades 6-12? (Select all that apply)

- o Mathematics, Grade 6
- o Mathematics, Grade 7
- o Mathematics, Grade 8
- o Algebra I
- o Algebra II
- o Geometry
- o Precalculus
- o AP Statistics
- o AP Calculus AB
- o AP Calculus BC

- IB Mathematical Studies Standard Level
- IB Mathematics Standard Level
- IB Mathematics Higher Level
- IB Further Mathematics Standard Level
- Mathematical Models with Applications
- Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 6-8
- Implementation of Texas Essential Knowledge and Skills for Mathematics, Grades 9-12
- Implementation of TEKS for Mathematics, Other High School Mathematics Courses
- Independent Study in Mathematics
- Other (please specify) ________________

6. Which other subject area(s) have you taught or do you currently teach? (Select all that apply)

- Not Applicable
- English language arts (ELA)
- Reading
- Science
- Social studies
- Other (please specify): __________________________

7. How many mathematics class sections do you currently teach? [select number from drop down menu]

8. Approximately how many students have you taught mathematics to during the 2008-2009 academic year?

9. With what special population(s) of students, if any, do you work? (Select all that apply)

- Students at-risk for dropping out
- English as a second language (ESL) students
- English language learners (ELLs)
- Special education students
- Economically disadvantaged students (e.g., students receiving free or reduced lunch)
- None
- Other (please specify) ______________________________________

10. How were you selected to receive coaching in your MIC program? (Select all that apply)

- I was referred by my principal
- I volunteered
- I was selected based upon my students' academic records
- I was selected based upon my students' Texas Assessment of Knowledge and Skills (TAKS) scores
- I don't know
- Other (please specify) ______________________________________

Part II: Implementation of the MIC Program

1. What barriers, if any, do you feel your school and/or school district has faced while implementing the MIC program? If you were able to overcome some of these barriers, how did you do so?

2. What factors, if any, do you feel have helped facilitate the implementation of your school and/or school district's MIC program?

3. Is there anything else you would like to add about the MIC program at your school or school district? If so, please explain below.

Part III: Perceptions of the Quality of MIC Program Activities

Please respond to the following questions about your experiences with the various MIC program activities (such as coaching and/or professional development) in which you participated.

Please answer the following questions using the scale that ranges from "Very Poor" to "Excellent".

Question	Very Poor	Below Average	Average	Above Average	Excellent
1. How would you rate the overall quality of the MIC program activities you received?	○	○	○	○	○
2. How would you rate the overall effectiveness of the coaches?	○	○	○	○	○
3. How would you rate the overall quality of the materials you received?	○	○	○	○	○

Please answer the following questions using the scale that ranges from "Not at All Effective" to "Extremely Effective".

Question	Not at All Effective	Slightly Effective	Moderately Effective	Very Effective	Extremely Effective
4. To what extent were the MIC activities effective in meeting your learning needs?	○	○	○	○	○
5. To what extent were school administrators (e.g., principal) effective in supporting teachers participation in the MIC program activities?	○	○	○	○	○

Statement	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
6. The MIC program activities in which I participated provided me with the requisite knowledge and skills I needed at this point in my career as a mathematics teacher.	○	○	○	○	○

7. What would you definitely not want to change, if anything, about the MIC program activities you received?

8. What aspects of the MIC program activities, if any, could have been improved? Any suggestions for ways to make these improvements?

9. Please use this space to describe anything else you would like to add about your participation in the MIC program.

Part IV: Perceptions of the Effectiveness of the MIC Program

Please indicate ***your opinion*** on the following questions about what impact your participation in the MIC program had on you, as well as on the students you taught during the 2008-2009 academic year.

To what extent do you believe the MIC program activities in which you have participated thus far…	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1.… improved your beliefs about teaching mathematics?	○	○	○	○	○	○
2.… improved your sense that you can make a difference in your students' learning of mathematics?	○	○	○	○	○	○
3.… improved your mathematics content knowledge?	○	○	○	○	○	○
4.… improved your effectiveness as a teacher?	○	○	○	○	○	○
5.… improved teacher effectiveness among other mathematics teachers at your school?	○	○	○	○	○	○

6. What advantages do you feel you have over other mathematics teachers who are not participating in the MIC program?

7. What were two of the most important things you learned from your participation in the MIC program?

8. Have you implemented any new techniques that you have learned through the MIC program? If so, what?

To what extent do you believe the MIC program activities in which you have participated thus far...	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
9. …increased **student achievement in mathematics** among your students?	○	○	○	○	○	○
10. …increased **student achievement overall** among your students?	○	○	○	○	○	○
11. …lowered **dropout rates** among your students?	○	○	○	○	○	○
12. … increased **graduation rates** among your students?	○	○	○	○	○	○
13. …increased (grade) **promotion rates** among your students?	○	○	○	○	○	○
14. …increased **mathematics course completion rates** among your students?	○	○	○	○	○	○
15. …increased **course completion rates overall** among your students?	○	○	○	○	○	○
16. … increased **SAT/ACT mathematics scores** among your students?	○	○	○	○	○	○
17. … increased **SAT/ACT scores overall** among your students?	○	○	○	○	○	○

To what extent do you believe that, as a result of the MIC program activities you participated in, students in your mathematics classes are…	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
18. …turning in more of the homework assignments you give them?	○	○	○	○	○	○
19. …passing more of the classroom tests/quizzes you give them?	○	○	○	○	○	○
20. …attending your class more often?	○	○	○	○	○	○

Part V: Satisfaction with Teaching

The following items are designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below.

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1. How much can you do to control disruptive behavior in the classroom?	○	○	○	○	○	○
2. How much can you do to motivate students who show low interest in school work?	○	○	○	○	○	○
3. How much can you do to get students to believe they can do well in school work?	○	○	○	○	○	○
4. How much can you do to help students value learning?	○	○	○	○	○	○
5. To what extent can you craft good questions for your students?	○	○	○	○	○	○
6. How much can you do to get students to follow classroom rules?	○	○	○	○	○	○
7. How much can you do to calm a student who is disruptive or noisy?	○	○	○	○	○	○
8. How well can you establish a classroom management system with each group of students?	○	○	○	○	○	○
9. How much can you use a variety of assessment strategies?	○	○	○	○	○	○
10. To what extent can you provide an alternative explanation or example when students are confused?	○	○	○	○	○	○
11. How much can you assist families in helping their children do well in school?	○	○	○	○	○	○
12. How well can you implement alternative strategies in your classroom?	○	○	○	○	○	○

Part VI: Coaching and Professional Development Activities Other Than MIC

Now please think about your participation in coaching and professional development activities besides the MIC program and answer the following questions so that we can better understand your participation in these types of activities overall.

1. Which of the following applies to you: (Select all that apply)

- o I have taught mathematics at a 2-year college
- o I have taught mathematics at a 4-year college/university
- o I majored in mathematics
- o I minored in mathematics
- o I have an advanced degree (e.g. Masters/Ph.D.) in a STEM*-related field (*STEM stands for Science, Technology, Engineering, and Mathematics)
- o None of the above

2. Other than the coaching and professional development activities you receive through the MIC program, which of the following have you done, at least once, during the past 5 years? (Select all that apply)

a. Attended a **national** professional conference on mathematics education
b. Attended a **regional** or **local** professional conference on mathematics education
c. Attended a professional workshop or seminar on mathematics education
d. Presented at a professional conference, workshop, or seminar on mathematics education
e. Participated in the planning, organization, and/or offering of a conference or workshop on mathematics education
f. Participated in formal learning sessions with colleagues on mathematics education
g. Served as the mathematics department chair at my campus
h. Served on a district or campus committee on mathematics education
i. Served on a professional committee outside the district or campus
j. None of the above

3. By which of the following **methods of delivery** have you received professional development in the past 5 years? (Select all that apply)

a. In-person lecture
b. Hands-on workshop
c. Instructor-led online course
d. Self-paced on-line course or tutorial
e. Hybrid (partly in-person, partly on-line)
f. On-line discussion forum
g. Online chat
h. Web-seminar
i. Self-directed study
j. None of the above

4. When you participate in other professional development activities, what are your reasons for attending? (Select all that apply)

a. I am interested in the topic
b. I want to learn a new skill
c. I want to improve my existing skills
d. I want to network with peers in my discipline or functional area
e. I belong to the organization hosting the activity
f. My principal encouraged me to attend
g. My colleagues encouraged me to attend
h. It is mandatory
i. Professional development activities are part of my yearly performance evaluation

Thank you for your time!

Appendix G: 2010 MIC ASP Survey

MIC Pilot Program Year 2 ASP Representative Survey

Consent Statement

ICF International, in conjunction with the Texas Education Agency, requests your participation in the evaluation of the Mathematics Instructional Coaches (MIC) pilot program. As an Approved Service Provider (ASP) partner with the MIC program during the 2009-2010 school year, you are being asked to respond to a series of survey items related to the following topics:

- Your role in the MIC program,
- General information about the MIC program,
- The implementation of your MIC program(s), and
- Your perceptions of the quality and effectiveness of the MIC program.

We are conducting surveys with at least one ASP representative from each of the 62 MIC Cycle 1 and Cycle 2 grantees. Findings from this survey and others like it will help us to learn about the ways that the MIC program is effective and alert evaluators and program managers to areas for possible program improvements.

In the paragraphs below, we summarize the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved in participating in this evaluation.

Procedures: TEA has partnered with ICF International to conduct the MIC evaluation. This survey should take approximately 15 minutes to complete. By participating in the survey, you are giving permission for ICF International to use your information for evaluation purposes. ICF may ask you to complete other surveys like this one up to two additional times between March 2009 and May 2011.

Confidentiality: Participation in this survey is completely voluntary for you and you may choose to skip any questions you do not want to answer or to terminate your participation at any time, without consequence. While TEA is aware that ASP Representatives are participating in this survey, the information gathered from this survey is strictly confidential and will be used for the purposes of this evaluation only. The data collected from this survey, and others like it, will be entered into a database, analyzed, and used in reports on the effectiveness of the MIC program.

Any identifying information that you provide will not appear in any databases or reports associated with this evaluation. Specifically, any quotations you provide to open-ended questions that are used in reporting will be de-identified so that you or other individuals will not be able to be singled out based on the information that you provide.

Risks and Benefits: Because this survey includes questions about your experiences with the MIC pilot program and not personal information, there are minimal risks posed to you for participating in this survey. While there are no direct benefits to you, as a participant in the evaluation, you can benefit from knowing that your contributions will help the evaluation of the MIC pilot program.

If you have any questions about this evaluation, please contact Thomas J. Horwood (ICF Evaluation Manager) by e-mail at THorwood@icfi.com or by telephone at 703-225-2276. If you have questions about the project or TEA, please contact Candace Macken(TEA Project Manager) by e-mail at ProgramEval@tea.state.tx.us or by telephone at 512-463-7814. If you have questions about your rights as a participant, please contact Laurie May (ICF Institutional Review Board Chair) by e-mail LMay@icfi.com or by telephone at 800-532-4783.

Thank you in advance for your participation.

MIC Pilot Program Year 2 ASP Representative Survey

*** 1. Consent statement:**

I have read the preceding information describing this evaluation and the purpose of this survey. I freely consent to participate. I understand that my privacy will be protected and any information I provide here today will be used for evaluation purposes only. I understand that I am free to skip questions or stop the survey at any time. Finally, I can contact Mr. Thomas J. Horwood (Evaluation Manager) or Dr. Laurie May (IRB Chair) at ICF should I have questions or concerns about this survey or my rights as a participant, respectively.

◯ I Accept

◯ I Do Not Accept

MIC Pilot Program Year 2 ASP Representative Survey

Part I: General Information about Your MIC Program(s)

The following items pertain to information about the MIC program(s) with which you are associated.

1. To what extent do you feel there is sufficient support for the MIC program(s) in your district(s) from each of the following stakeholders?

	Not Supportive	Somewhat Supportive	Neutral Supportive	Very Supportive	No Basis for Judgment
District Superintendent	○	○	○	○	○
Campus Principals	○	○	○	○	○
Approved Service Provider Staff	○	○	○	○	○
Teachers	○	○	○	○	○
Other	○	○	○	○	○

Other (please specify)

MIC Pilot Program Year 2 ASP Representative Survey

As part of their participation in the MIC program, to what extent did teachers receive the following?

	Not at All	Very Little	Some	Quite a Bit	A Great Deal
2. Training or coaching on analyzing student data	○	○	○	○	○
3. Training on the usage of student data specifically to revise instructional practices	○	○	○	○	○
4. Training on the collection of assessment data	○	○	○	○	○
5. Training on identifying areas of student weakness and strength	○	○	○	○	○
6. Observations of them teaching a lesson conducted by a coach	○	○	○	○	○
7. Observations of them teaching a lesson conducted by a campus administrator	○	○	○	○	○
8. Feedback from a coach on their strengths and weaknesses	○	○	○	○	○
9. Feedback from a campus administrator on their strengths and weaknesses	○	○	○	○	○
10. Training in instructional techniques from a coach	○	○	○	○	○
11. Training in instructional techniques from a campus administrator	○	○	○	○	○
12. Content area instruction from a coach	○	○	○	○	○
13. Content area instruction from a campus administrator	○	○	○	○	○

14. How was math content taught to teachers in your program? Please include information about the tools used, such as curricula, summer institutes, seminars, etc.

MIC Pilot Program Year 2 ASP Representative Survey

Part II: Implementation of Your MIC Program(s)

1. How would you characterize the structure of your MIC grant program(s)? (Please select all that apply to best describe your program(s))

☐ **Approved Service Provider (ASP)-to-District Expert Coaches Model:** The ASP provides coaches to the district, and these coaches visit the campus(es), meet with the teachers, observe the teachers, and model effective teaching strategies.

☐ **District-to-Teachers Expert Coaches Model:** Involves district personnel who already serve as coaches or were hired as mathematics instructional coaches. These coaches are trained by the ASP on coaching methods, and then the coaches work with the teachers.

☐ **Peer-to-Peer Teacher Coaches Model:** A peer-to-peer coaching approach where veteran teachers are selected to coach struggling or novice teachers. The peer teacher coaches are trained in coaching practices through professional development from the ASP.

☐ Other (please specify)

2. Coaching activities are generally one-to-one or one-to-two person activities in which a coach observes teachers in the classroom, offers each one personalized/individualized teaching methods/strategies, and/or provides individualized on-going support via phone or email. How would you describe the targeted teachers' attendance/participation in <u>coaching</u> activities related to the MIC pilot program(s)?

◯ A few of the targeted teachers attended/participated

◯ Many but not most of the targeted teachers attended/participated

◯ Most of the targeted teachers attended/participated

◯ All of the targeted teachers attended/participated

2a. Which answer below do you think best explains the targeted teachers' participation behavior in <u>MIC coaching</u> activities?

◯ Targeted teachers are required to participate, and they do participate.

◯ Targeted teachers are required to participate, but they do not participate.

◯ Targeted teachers are not required to participate, but they do participate.

◯ Targeted teachers are not required to participate, and they do not participate.

MIC Pilot Program Year 2 ASP Representative Survey

2b. How invested are targeted teachers in participating in <u>MIC coaching</u> activities?

- ○ Not at all invested
- ○ Slightly invested
- ○ Moderately invested
- ○ Very much invested
- ○ Totally invested

*** 3. Professional development activities are instructional training courses that teachers participated in, usually as a group in addition to regular coaching activities. The focus is usually on a specific topic. If your MIC program(s) offered professional development activities to the teachers participating in the MIC program(s), how would you describe the targeted teachers' attendance/participation in these professional development activities related to the MIC pilot program?**

- ○ Professional development was not offered as part of our MIC program
- ○ A few of the targeted teachers attended/participated
- ○ Many but not most of the targeted teachers attended/participated
- ○ Most of the targeted teachers attended/participated
- ○ All of the targeted teachers attended/participated

MIC Pilot Program Year 2 ASP Representative Survey

Part II: Implementation of Your MIC Program(s) continued

3a. Which of the following do you think best explains the targeted teachers' participation behavior in <u>MIC professional development</u> activities?

- ◯ Targeted teachers are required to participate, and they do participate
- ◯ Targeted teachers are required to participate, but they do not participate
- ◯ Targeted teachers are not required to participate, but they do participate.
- ◯ Targeted teachers are not required to participate, and they do not participate.

3b. How invested are targeted teachers in participating in <u>MIC professional development</u> activities?

- ◯ Not at all invested
- ◯ Slightly invested
- ◯ Moderately invested
- ◯ Very much invested
- ◯ Totally invested

MIC Pilot Program Year 2 ASP Representative Survey

Part II: Implementation of Your MIC Program(s) continued

*** 4. In the second year (of your current Cycle 2 grant) for your MIC pilot program(s) do you…**

◯ Plan to continue with your action plan(s)?

◯ Revise your action plan(s)?

MIC Pilot Program Year 2 ASP Representative Survey

Part II: Implementation of Your MIC Program(s) continued

5. What revisions do you currently plan to make with regards to your MIC professional development and/or coaching activities?

MIC Pilot Program Year 2 ASP Representative Survey

Part II: Implementation of Your MIC Program(s) continued

*** 6. Do any district or campus administrators participate in any of the MIC program activities?**

- ◯ No
- ◯ Yes

MIC Pilot Program Year 2 ASP Representative Survey

Part II: Implementation of Your MIC Program continued

6a. To what extent has it been helpful in facilitating the implementation of the MIC grant to have district/campus administrators participate in the MIC activities?

- ◯ Not at all helpful
- ◯ Somewhat helpful
- ◯ Neutral
- ◯ Helpful
- ◯ Very helpful

6b. Please explain.

6c. Please indicate the level of development/ implementation of the following policies and practices for administrators at the campus(es) in your district.

	Not Planned	In Development	Partially Implemented	Fully Implemented
Needs survey of campus administrators	◯	◯	◯	◯
Training of administrators in effective math classroom practices	◯	◯	◯	◯
Training on conducting math classroom observations	◯	◯	◯	◯
Provision of coaching and feedback to participating administrators	◯	◯	◯	◯

MIC Pilot Program Year 2 ASP Representative Survey

Part III: Perceptions of the Quality and Effectiveness of the MIC Program(s...

Please indicate **your opinion** on the following questions about teachers participating in the MIC program activities, as well as students served by these teachers participating in the MIC program in your school district(s):

To what extent were the following topics addressed in the coaching and/ or professional development activities you provided as part of the MIC program?

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal
1. Understanding national standards for mathematics	○	○	○	○	○
2. Understanding the Mathematics TEKS	○	○	○	○	○
3. Understanding the specific content addressed in the MIC program	○	○	○	○	○
4. Aligning classroom instruction to the Mathematics TEKS	○	○	○	○	○
5. Aligning classroom assessments to the Mathematics TEKS	○	○	○	○	○
6. Presenting the specific content addressed by MIC in engaging, meaningful ways to students	○	○	○	○	○
7. Preparing students for TAKS	○	○	○	○	○
8. Collecting classroom assessment data	○	○	○	○	○
9. Collecting useable and actionable data on student progress	○	○	○	○	○
10. Analyzing student coursework and assessment data	○	○	○	○	○
11. Using student data to evaluate instructional plans	○	○	○	○	○

MIC Pilot Program Year 2 ASP Representative Survey

Based on observations, feedback, or other interactions with MIC participants, to what extent has participating in MIC program activities increased teacher use (or improvement) in the following instructional strategies?

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal	No Basis for Judgment
12. Introduce mathematics content through formal presentations.	○	○	○	○	○	○
13. Identifying student needs (i.e., strengths and weaknesses)	○	○	○	○	○	○
14. Have students make connections between mathematics and the real world.	○	○	○	○	○	○
15.Ask students to explain their reasoning when giving an answer.	○	○	○	○	○	○
16. Ask students to consider alternative methods for solutions.	○	○	○	○	○	○
17. Ask students to consider alternative methods for solutions.	○	○	○	○	○	○
18. Ask students to use multiple representations (e.g., numeric, graphic, symbolic) when solving problems.	○	○	○	○	○	○
19. Ask students to explain concepts to one another.	○	○	○	○	○	○
20. Differentiate classroom instruction to meet students learning needs in mathematics.	○	○	○	○	○	○
21. Allow students to work at their own pace.	○	○	○	○	○	○
22. Provide students with concrete experience before abstract concepts.	○	○	○	○	○	○
23. Develop students' conceptual understanding of mathematics.	○	○	○	○	○	○
24. Take students' prior understanding into account when planning lessons.	○	○	○	○	○	○
25. Have students practice computational skills.	○	○	○	○	○	○
26. Engage students in problem-solving.	○	○	○	○	○	○
27. Have students use appropriate educational technology (e.g., calculator, computer) to learn	○	○	○	○	○	○

MIC Pilot Program Year 2 ASP Representative Survey

mathematics.						
28. Have students use mathematics instruction materials (e.g., manipulatives) to do mathematics.	◯	◯	◯	◯	◯	◯

To what extent do you believe the MIC program activities in which the mathematics teachers have participated thus far...

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
29. ...improved their beliefs about teaching mathematics?	◯	◯	◯	◯	◯	◯
30.. ...improved their sense that they can make a difference in their students' learning of mathematics?	◯	◯	◯	◯	◯	◯
31. ...improved their mathematics content knowledge?	◯	◯	◯	◯	◯	◯
32. ...improved their effectiveness?	◯	◯	◯	◯	◯	◯
33. ...increased student achievement in mathematics in your school district(s)?	◯	◯	◯	◯	◯	◯
34. ...increased student achievement overall in your school district(s)?	◯	◯	◯	◯	◯	◯
35. ...lowered dropout rates in your school district(s)?	◯	◯	◯	◯	◯	◯
36. ...increased graduation rates in your school district (s)?	◯	◯	◯	◯	◯	◯
37. ...increased (grade) promotion rates in your school district(s)?	◯	◯	◯	◯	◯	◯
38. ...increased mathematics course completion rates in your school district(s)?	◯	◯	◯	◯	◯	◯
39. ...increased course completion rates overall in your school district(s)?	◯	◯	◯	◯	◯	◯
40. ...increased SAT/ACT mathematics scores in your school	◯	◯	◯	◯	◯	◯
district(s)?	◯	◯	◯	◯	◯	◯
41. ...increased SAT/ACT scores overall in your school district(s)?	◯	◯	◯	◯	◯	◯

MIC Pilot Program Year 2 ASP Representative Survey

42. What barriers, if any, do you feel the school district(s) faced while implementing the MIC program? If you were able to overcome some of these barriers, how did you do so?

43. What factors, if any, do you feel have helped facilitate the implementation of the district's MIC program?

44. What is the single most important result of this program that you would like to see? What evidence, if any have you seen of this result?

45. Do you believe the MIC program had positive effects? If so, what were they? If not, why not?

MIC Pilot Program Year 2 ASP Representative Survey

46. Is there anything else you would like to add about the implementation of the MIC program in your school district(s)? If so, please explain below.

MIC Pilot Program Year 2 ASP Representative Survey

Thank You.

Thank you for your time and effort in completing this survey.

Please be sure to click Submit or your responses will not be saved.

Appendix H: 2010 MIC Coach Surveys

MIC Pilot Program Year 2 Coach Survey

Please enter your code below

*** 1. Please enter the 6-digit passcode that was sent to you in your email invitation to this survey.**

Copy and paste OR type the numbers exactly as they appear. This is your personal identification passcode for the survey. DO NOT share this passcode with others and DO NOT enter someone else's passcode.

Page 1

MIC Pilot Program Year 2 Coach Survey

Consent Statement

Evaluation of the Mathematics Instructional Coaches (MIC) Pilot Program
Coach Survey

ICF International, in conjunction with the Texas Education Agency, requests your participation in the evaluation of the Mathematics Instructional Coaches (MIC) pilot program. As a coach who is providing support to teachers as part of the MIC program during the 2009-2010 school year, you are being asked to respond to a series of survey items related to the following topics:

- Your professional background and role in the MIC program
- MIC program activities
- Perceptions of training of coaches (if you received any)
- Impact of the MIC program
- Implementation of the MIC program

We are conducting surveys with all coaches from each of the 29 MIC Cycle 1 grantees and 34 MIC Cycle 2 grantees. Findings from this survey and others like it will help us to learn about the ways that the MIC program is effective and alert evaluators and program managers to areas for possible program improvements.

In the paragraphs below, we summarize the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved in participating in this evaluation.

Procedures: TEA has partnered with ICF International to conduct the MIC evaluation. This survey should take approximately 15 minutes to complete. By participating in the survey, you are giving permission for ICF International to use your information for evaluation purposes. ICF may ask you to complete another survey like this one, one additional time between May 2010 and May 2011.

Confidentiality: Your participation in this survey is completely voluntary and you may choose to skip any questions you do not want to answer or to terminate your participation at any time, without consequence. While TEA is aware that you are participating in this survey, the information gathered from this survey is strictly confidential and will be used for the purposes of this evaluation only. The data collected from this survey, and others like it, will be entered into a database (with your ID number), analyzed, and used in reports on the effectiveness of MIC program.

ICF will develop a name-to-ID-number database to track your data over the course of the evaluation. Upon completion of the evaluation, ICF will destroy this name-to-ID database. ICF will submit a database to TEA for record-keeping purposes, but your name and any other identifying information will not appear in any databases or reports associated with this evaluation. Specifically, any quotations you provide to open-ended questions that are used in reporting will be de-identified so that you or other individuals will not be able to be singled out based on the information that you provide.

Risks and Benefits: Because this survey includes questions about your experiences with the MIC pilot program and not personal information, there are minimal risks posed to you for participating in this survey. While there are no direct benefits to you, as a participant in the evaluation, you can benefit from knowing that your contributions will help the evaluation of the MIC pilot program.

If you have any questions about this evaluation, please contact Thomas J. Horwood (ICF Evaluation Manager) by e-mail at THorwood@icfi.com or by telephone at 866-924-7728. If you have questions about the project or TEA, please contact John Kucsera (TEA Project Manager) by e-mail at ProgramEval@tea.state.tx.us or by telephone at 512-463-9057. If you have questions about your rights as a participant, please contact Laurie May (ICF Institutional Review Board Chair) by e-mail LMay@icfi.com or by telephone at 800-532-4783.

Thank you in advance for your participation.

MIC Pilot Program Year 2 Coach Survey

*** 1. Consent statement:**

I have read the preceding information describing this evaluation and the purpose of this survey. I freely consent to participate. I understand that my privacy will be protected and any information I provide here today will be used for evaluation purposes only. I understand that I am free to skip questions or stop the survey at any time. Finally, I can contact Mr. Thomas J. Horwood (Evaluation Manager) or Dr. Laurie May (IRB Chair) at ICF should I have questions or concerns about this survey or my rights as a participant, respectively.

- ◯ I Accept
- ◯ I Do Not Accept

MIC Pilot Program Year 2 Coach Survey

Part I: Background Information and MIC Role

We would like to obtain some background information about you and your current role in the MIC program. Please answer the following questions.

1. What is your current role in the MIC program?

◯ Coach (provide support such as coaching mathematics teachers and/or teaching workshops/trainings to mathematics teachers)

◯ Coach in Training (you are a teacher/school administrator/other staff member being trained to become a coach and you provide/will provide support such as coaching to mathematics teachers in your school and/or district)

MIC Pilot Program Year 2 Coach Survey

2. What is the name of the district(s) where you provide coaching or other MIC related activities? (Select all that apply from the list of all participating districts)

- [ ] Abilene ISD
- [ ] Alice ISD
- [ ] America CAN!
- [ ] Athens ISD
- [ ] Beeville ISD
- [ ] Ben Bolt-Palito Blanco ISD
- [ ] Chapel Hill ISD
- [ ] Clarksville ISD
- [ ] Corsicana ISD
- [ ] Cosmos Foundation Inc
- [ ] Covington ISD
- [ ] Crosbyton ISD
- [ ] Dawson ISD
- [ ] Del Valle ISD
- [ ] Diboll ISD
- [ ] East Central ISD
- [ ] El Paso ISD
- [ ] Elgin ISD
- [ ] Everman ISD
- [ ] Evolution Academy Charter School
- [ ] Galena Park ISD
- [ ] Galveston ISD
- [ ] Gladewater ISD
- [ ] Goose Creek CISD
- [ ] Hearne ISD
- [ ] Hidalgo ISD
- [ ] Hillsboro ISD
- [ ] Houston ISD

Page 5

MIC Pilot Program Year 2 Coach Survey

- [ ] Idea Academy Inc
- [ ] Irving ISD
- [ ] Kingsville ISD
- [ ] Kopperl ISD
- [ ] La Feria ISD
- [ ] La Joya ISD
- [ ] La Vega ISD
- [ ] La Villa ISD
- [ ] Laredo ISD
- [ ] Longview ISD
- [ ] Malone ISD
- [ ] Manor ISD
- [ ] Marlin ISD
- [ ] Marshall ISD
- [ ] McAllen ISD
- [ ] McGregor ISD
- [ ] Mercedes ISD
- [ ] Motley County ISD
- [ ] Mt. Pleasant ISD
- [ ] Pasadena ISD
- [ ] Patton Springs ISD
- [ ] Pharr-San Juan-Alamo ISD
- [ ] Plainview ISD
- [ ] Rallis ISD
- [ ] Runge ISD
- [ ] San Antonio ISD
- [ ] San Benito CISD
- [ ] San Felipe-Del Rio CISD
- [ ] School of Excellence in Education
- [ ]

MIC Pilot Program Year 2 Coach Survey

- [ ] Snook ISD
- [ ] Somerville ISD
- [ ] Star ISD
- [ ] Tyler ISD
- [ ] Valley View ISD
- [ ] Waco ISD
- [ ] Weslaco ISD
- [ ] West Oso ISD
- [ ] West Sabine ISD
- [ ] Winfree Academy Charter School
- [ ] Youth Empowerment Services Inc. (Higgs, Carter, King Gifted & Talented Academy)

3. If you are not from this district or school, what is the name of your organization where you work?

*** 4. What level(s) of mathematics have you taught?**

- ◯ I have never taught mathematics.
- ◯ I have taught mathematics, but only to grade 5 or below.
- ◯ I have taught mathematics to grades 6-12.
- ◯ I have taught mathematics both to grades 6-12 and to grades 5 and under.

MIC Pilot Program Year 2 Coach Survey

Part I: Background Information and MIC Role continued

5. You indicated that you have taught mathematics to grades 6-12. Which specific grades have you taught? (Select all that apply)

- [ ] 6th grade
- [ ] 7th grade
- [ ] 8th grade
- [ ] 9th grade
- [ ] 10th grade
- [ ] 11th grade
- [ ] 12th grade

6. How many years of experience have you had teaching mathematics to students in grades 6-12?

- ○ Less than 1 year
- ○ 1-3 years
- ○ 4-10 years
- ○ More than 10 years

7. What types of mathematics courses have you ever taught for students in grades 6-12? (Select all that apply)

- [ ] Mathematics, Grade 6
- [ ] Mathematics, Grade 7
- [ ] Mathematics, Grade 8
- [ ] Algebra I
- [ ] Algebra II
- [ ] Geometry
- [ ] Precalculus
- [ ] Advanced Placement (AP)
- [ ] International Baccalaureate (IB)
- [ ] Mathematical Models with Applications
- [ ] Implementation of Texas Essential Knowledge and Skills for Mathematics

MIC Pilot Program Year 2 Coach Survey

MIC Pilot Program Year 2 Coach Survey

Part I: Background Information and MIC Role continued

8. To your knowledge, which grade level(s) do the teachers you coach teach? (Select all that apply)

- [ ] 6th grade
- [ ] 7th grade
- [ ] 8th grade
- [ ] 9th grade
- [ ] 10th grade
- [ ] 11th grade
- [ ] 12th grade

8b. To your knowledge, what type of math courses do the teachers you coach teach? (Select all that apply)

- [ ] Mathematics, Grade 6
- [ ] Mathematics, Grade 7
- [ ] Mathematics, Grade 8
- [ ] Algebra I
- [ ] Algebra II
- [ ] Geometry
- [ ] Precalculus
- [ ] Advanced Placement (AP)
- [ ] International Baccalaureate (IB)
- [ ] Mathematical Models with Applications
- [ ] Implementation of Texas Essential Knowledge and Skills for Mathematics

9. How many years of experience have you had as a mathematics trainer/coach/mentor to 6th -12th grade teachers?

- ○ Less than 1 year
- ○ 1-3 years
- ○ 4-10 years
- ○ More than 10 years

MIC Pilot Program Year 2 Coach Survey

10. What special population(s) of students are served by teachers with whom you work? (Select all that apply)

- [ ] Students at-risk for dropping out
- [ ] English as a second language (ESL) students
- [ ] English language learners (ELLs)
- [ ] Special education students
- [ ] Economically disadvantaged students (e.g., students receiving free or reduced lunch)
- [ ] None of the above
- [ ] I do not know
- [ ] Other (please specify)

11. With what special population(s) of students do you have specialized training to coach/mentor teachers to work? (Select all that apply)

- [ ] Students at-risk for dropping out
- [ ] English as a second language (ESL) students
- [ ] English language learners (ELLs)
- [ ] Special education students
- [ ] Economically disadvantaged students (e.g., students receiving free or reduced lunch)
- [ ] None of the above
- [ ] I do not know
- [ ] Other (please specify)

MIC Pilot Program Year 2 Coach Survey

12. How did you become involved as a coach as part of the MIC program in your district? (Select all that apply)

- [ ] I am employed/subcontracted by the Approved Service Provider for the district(s) to provide coaching/training.
- [ ] I have been a mathematics coach in this district prior to the MIC program.
- [ ] I was asked by the school district/school administrator to become a coach to my peers because I am one of the "higher performing" mathematics teachers in the school/district.
- [ ] My school principal recommended me.
- [ ] I don't know.
- [ ] Other (please specify)

MIC Pilot Program Year 2 Coach Survey

Part II: MIC Program Activities

1. Which of the following best describes your current level of expertise for each statement?

	Beginner	Intermediate	Advanced	Expert
Understanding the national standards for mathematics	◯	◯	◯	◯
Understanding the Mathematics TEKS	◯	◯	◯	◯
Understanding the specific content addressed by the MIC program at my school	◯	◯	◯	◯
Aligning classroom instruction to the Mathematics TEKS	◯	◯	◯	◯
Aligning classroom assessments to the Mathematics TEKS	◯	◯	◯	◯
Presenting the specific content addressed by MIC in engaging, meaningful ways to students	◯	◯	◯	◯
Preparing students for TAKS	◯	◯	◯	◯
Collecting classroom assessment data	◯	◯	◯	◯
Collect useable and actionable data on student progress	◯	◯	◯	◯
Analyzing student coursework and assessment data	◯	◯	◯	◯
Using student data to evaluate instructional plans	◯	◯	◯	◯

MIC Pilot Program Year 2 Coach Survey

1. What mathematics coaching strategies did you implement while working with the teachers you support as part of the MIC program? (Select all that apply)

- [ ] Pre-teaching conferences
- [ ] In-class demonstrations
- [ ] Observation of classroom lessons
- [ ] Conferences with teachers after observed classroom lessons
- [ ] Modeling
- [ ] Team-teaching/Co-teaching
- [ ] Assisting teachers in how to assess student work
- [ ] Collaborative group work
- [ ] Advising on curriculum and/or classroom procedures
- [ ] Identifying areas of teacher weaknesses and strengths
- [ ] Other (please specify)

MIC Pilot Program Year 2 Coach Survey

3. To what extent did the coaching you provide address the following topics?

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal
Understanding national standards for mathematics	○	○	○	○	○
Understanding the Mathematics TEKS	○	○	○	○	○
Understanding the specific content addressed by the MIC program at my school	○	○	○	○	○
Aligning classroom instruction to the Mathematics TEKS	○	○	○	○	○
Aligning classroom assessments to the Mathematics TEKS	○	○	○	○	○
Presenting the specific content addressed by MIC in engaging, meaningful ways to students	○	○	○	○	○
Preparing students for TAKS	○	○	○	○	○
Collecting classroom assessment data	○	○	○	○	○
Collect useable and actionable data on student progress	○	○	○	○	○
Analyzing student coursework and assessment data	○	○	○	○	○
Using student data to evaluate instructional plans	○	○	○	○	○

4. Please indicate the level of development/ implementation of the following policies and practices at the campus(es) where you work as part of the implementation of MIC.

	Not Planned	In Development	Partially Implemented	Fully Implemented
Provision of a means for collecting student assessment data	○	○	○	○
Creation of math intervention plans	○	○	○	○
Strengthening of core instructional programs	○	○	○	○
Provision of a means for collecting useable and actionable data on student progress	○	○	○	○
Provision of training on analyzing student coursework and assessment data	○	○	○	○
Provision of training on using student data to evaluate instructional plans	○	○	○	○

MIC Pilot Program Year 2 Coach Survey

5. To what extent did your coaching sessions with teachers address the following assessment activities?

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal
Authentic assessments (e.g., extended response problems)	○	○	○	○	○
Demonstrations	○	○	○	○	○
Experiments	○	○	○	○	○
Group projects	○	○	○	○	○
Individual projects	○	○	○	○	○
Pre-post tests	○	○	○	○	○
Progress monitoring	○	○	○	○	○
Quizzes	○	○	○	○	○
Reports	○	○	○	○	○
Student journals	○	○	○	○	○
Tests	○	○	○	○	○

6. In your opinion, to what extent did the teachers you coached increase in their usage of each of the following as a result of their participation in the MIC program?

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal
Authentic assessments (e.g., extended response problems)	○	○	○	○	○
Demonstrations	○	○	○	○	○
Experiments	○	○	○	○	○
Group projects	○	○	○	○	○
Individual projects	○	○	○	○	○
Pre-post tests	○	○	○	○	○
Progress monitoring	○	○	○	○	○
Quizzes	○	○	○	○	○
Reports	○	○	○	○	○
Student journals	○	○	○	○	○
Tests	○	○	○	○	○

MIC Pilot Program Year 2 Coach Survey

7. Approximately how many hours per week do you spend working with <u>individual</u> teachers?

- ◯ 1-2 hours
- ◯ 3-5 hours
- ◯ 6-10 hours
- ◯ 11-15 hours
- ◯ 16-20 hours
- ◯ More than 20 hours
- ◯ None

8. Has the amount of time you have spent working with individual teachers shifted over the course of the MIC grant period?

- ◯ No
- ◯ Yes

8a. If yes, please explain.

9. Approximately how many hours per week do you spend working with <u>groups</u> of teachers?

- ◯ 1-2 hours
- ◯ 3-5 hours
- ◯ 6-8 hours
- ◯ 9-11 hours
- ◯ 12 hours or more
- ◯ None

MIC Pilot Program Year 2 Coach Survey

10. Has the amount of time you have spent working with groups of teachers shifted over the course of the MIC grant period?

- ○ No
- ○ Yes

10a. If yes, please explain.

11. To your knowledge have you coached any school administrators as part of the MIC program?

- ○ Yes
- ○ No

12. What mathematics coaching strategies did you implement while working with the school administrators you support as part of the MIC program? (Select all that apply)

- ☐ Training in knowledge of best practices in mathematics classrooms
- ☐ Training on conducting math classroom observations
- ☐ Conferences providing feedback to participating administrators
- ☐ Identifying areas of teacher weaknesses and strengths
- ☐ Using assessment data to evaluate instructional practices
- ☐ Other (please specify)

*** 13. Have you received any training on coaching practices in mathematics as part of the MIC program?**

- ○ No
- ○ Yes

MIC Pilot Program Year 2 Coach Survey

Part III: Perceptions of Training of Coaches

Some MIC programs provided training to mathematics coaches in mathematics coaching practices. Please respond to the following questions about your experiences with the training of mathematics coaches.

Please provide a brief description of the training you received as part of the MIC program. How was the training structured? What topics did you cover?

Please answer the following questions using the scale that ranges from "Very Poor" to "Excellent".

	Very Poor	Below Average	Average	Above Average	Excellent
1. How would you rate the overall quality of the training you received?	○	○	○	○	○
2. How would you rate the overall effectiveness of the trainers provided by the Approved Service Provider (ASP)?	○	○	○	○	○
3. How would you rate the overall quality of the training content?	○	○	○	○	○

Please answer the following questions using the scale that ranges from "Not at All Effective" to "Extremely Effective".

	Not at All Effective	Slightly Effective	Moderately Effective	Very Effective	Extremely Effective
4. To what extent was the training structure effective in meeting your learning needs?	○	○	○	○	○
5. How effective was the training of mathematics coaches you attended in preparing you for your roles/responsibilities as a mathematics coach?	○	○	○	○	○

MIC Pilot Program Year 2 Coach Survey

Please rate your level of agreement with the following statement using the scale that ranges from "Strongly Disagree" to "Strongly Agree".

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
6. The training of mathematics coaches I attended provided me with the requisite content knowledge to fulfill my responsibilities as a mathematics coach.	○	○	○	○	○
7. The training of mathematics coaches I attended provided me with the requisite skills to fulfill my responsibilities as a mathematics coach.	○	○	○	○	○

7. What would you definitely <u>not</u> want to change about the training you received to be a mathematics coach?

8. What aspects of the training you received to be a mathematics coach could have been improved? Any suggestions for ways to make these improvements?

9. Please use this space to describe anything else you would like to add about your experience in being trained to be a mathematics coach?

Page 20

MIC Pilot Program Year 2 Coach Survey

Part IV: Perceptions of the Effectiveness of the MIC Program

Please indicate **your opinion** on the following questions about teachers participating in MIC program activities, as well as students served by the teachers participating in the MIC program at your school(s)/school district(s):

To what extent do you believe the MIC program activities that you have provided thus far...

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1. . improved participating teachers' beliefs about teaching mathematics?	○	○	○	○	○	○
2. . improved participating teachers' sense that they can make a difference in their students' learning of mathematics?	○	○	○	○	○	○
3... improved participating teachers' mathematics content knowledge?	○	○	○	○	○	○
4. ...improved participating teachers' effectiveness in mathematics instruction?	○	○	○	○	○	○

5. What advantages do you feel mathematics teachers participating in MIC have over other mathematics teachers who did not participate in the program?

6. What do you think were two of the most important things mathematics teachers you coached learned from you?

Page 21

MIC Pilot Program Year 2 Coach Survey

7. Using a scale that ranges from "not at all prepared" to "very well prepared", to what extent do you feel PREPARED TO coach teachers in the following instructional strategies?

	Not At All Prepared	Somewhat Prepared	Fairly Well Prepared	Very Well Prepared
Introduce mathematics content through formal presentations.	○	○	○	○
Have students make connections between mathematics and the real world.	○	○	○	○
Ask students to explain their reasoning when giving an answer.	○	○	○	○
Ask students to consider alternative methods for solutions.	○	○	○	○
Ask students to use multiple representations (e.g., numeric, graphic, symbolic) when solving problems.	○	○	○	○
Ask students to explain concepts to one another.	○	○	○	○
Differentiate classroom instruction to meet students learning needs in mathematics.	○	○	○	○
Allow students to work at their own pace.	○	○	○	○
Provide students with concrete experience before abstract concepts.	○	○	○	○
Develop students' conceptual understanding of mathematics.	○	○	○	○
Take students' prior understanding into account when planning lessons.	○	○	○	○
Have students practice computational skills.	○	○	○	○
Engage students in problem-solving.	○	○	○	○
Have students use appropriate educational technology (e.g., calculator, computer) to learn mathematics.	○	○	○	○
Have students use mathematics instruction materials (e.g., manipulatives) to do mathematics.	○	○	○	○
Identifying student needs (i.e., strengths and	○	○	○	○

MIC Pilot Program Year 2 Coach Survey

weaknesses)

8. Using a scale that ranges from "never" to "frequently", based on your observations or evaluation methods, how frequently have teachers ACTUALLY implemented the following instructional strategies after participating in the MIC program?

	Never	Rarely	Sometimes	Occasionally	Frequently	Not Raised in Training
Introduce mathematics content through formal presentations.	○	○	○	○	○	○
Have students make connections between mathematics and the real world.	○	○	○	○	○	○
Ask students to explain their reasoning when giving an answer.	○	○	○	○	○	○
Ask students to consider alternative methods for solutions.	○	○	○	○	○	○
Ask students to use multiple representations (e.g., numeric, graphic, symbolic) when solving problems.	○	○	○	○	○	○
Ask students to explain concepts to one another.	○	○	○	○	○	○
Differentiate classroom instruction to meet students learning needs in mathematics.	○	○	○	○	○	○
Allow students to work at their own pace.	○	○	○	○	○	○
Provide students with concrete experience before abstract concepts.	○	○	○	○	○	○
Develop students' conceptual understanding of mathematics.	○	○	○	○	○	○
Take students' prior understanding into account when planning lessons.	○	○	○	○	○	○
Have students practice computational skills.	○	○	○	○	○	○
Engage students in problem-solving.	○	○	○	○	○	○
Have students use appropriate educational technology (e.g., calculator, computer) to learn mathematics.	○	○	○	○	○	○
Have students use mathematics instruction materials (e.g., manipulatives) to do	○	○	○	○	○	○

MIC Pilot Program Year 2 Coach Survey

mathematics. Identifying student needs (i.e., strengths and weaknesses)	○	○	○	○	○	○

9. Have the teachers you coached implemented any new techniques that were not included in the lists above? If so, what?

10. To what extent do you believe the MIC program activities that you have provided thus far...

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgement
Increased student achievement in mathematics among students with MIC teachers?	○	○	○	○	○	○
Increased student achievement overall among students with MIC teachers?	○	○	○	○	○	○
Lowered dropout rates among students with MIC teachers?	○	○	○	○	○	○
Increased graduation rates among students with MIC teachers?	○	○	○	○	○	○
Increased (grade) promotion rates among students with MIC teachers?	○	○	○	○	○	○
Increased mathematics course completion rates among students with MIC teachers?	○	○	○	○	○	○
Increased course completion rates overall among students with MIC teachers?	○	○	○	○	○	○
Increased SAT/ACT mathematics scores among students with MIC teachers?	○	○	○	○	○	○
Increased SAT/ACT scores overall among students with MIC teachers?	○	○	○	○	○	○

MIC Pilot Program Year 2 Coach Survey

11. To what extent do you believe that, as a result of the MIC program activities you provided, students in the mathematics classes with MIC teachers are...

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
...turning in more of their mathematics homework assignments?	○	○	○	○	○	○
...passing more of their mathematics classroom tests/quizzes?	○	○	○	○	○	○
	○	○	○	○	○	○
...attending mathematics class more often?	○	○	○	○	○	○

12. How was math content taught to teachers in your program? Please include information about the tools used, such as curricula, summer institutes, seminars, etc.

MIC Pilot Program Year 2 Coach Survey

13. In retrospect, how prepared do you think you were to do the following when coaching teachers in mathematics instructional strategies?

	Not At All Prepared	Somewhat Prepared	Fairly Well Prepared	Very Well Prepared
Present MIC activities as outlined in the training materials.	○	○	○	○
Present new mathematics content to teachers.	○	○	○	○
Enhance teachers' knowledge/skills so they can effectively teach students to understand mathematics.	○	○	○	○
Help teachers learn to implement research-based strategies in mathematics instruction.	○	○	○	○
Work with adult learners.	○	○	○	○
Build teachers' skill in linking their mathematics instruction to the Texas Essential Knowledge and Skills (TEKS).	○	○	○	○
Develop teachers' understanding of how to use the Texas Assessment of Knowledge and Skills (TAKS) system to develop and refine mathematical instruction.	○	○	○	○
Differentiate mathematics instruction for various learning styles.	○	○	○	○
Motivate teachers to learn new mathematics instructional strategies.	○	○	○	○
Maintain a positive learning environment with the mathematics teachers with whom I work.	○	○	○	○

MIC Pilot Program Year 2 Coach Survey

Part V: Implementation of the MIC Program

1. What barriers do you feel the school district(s) you have provided coaching to have faced while implementing the MIC program? If you were able to overcome some of the main barriers, how did you do so?

2. What factors do you feel have helped facilitate the implementation of the district(s) MIC program?

3. Is there anything else you would like to add about the implementation of the MIC program at a particular school district or a particular campus in which you provided coaching?

MIC Pilot Program Year 2 Coach Survey

Thank You.

Thank you for your time and effort in completing this survey.

Please be sure to click Submit or your responses will not be saved.

Appendix I: 2010 MIC Teacher Surveys

MIC Pilot Program Year 2 Teacher Survey

Please enter your code below

* 1. Please enter the 6-digit passcode that was sent to you in your email invitation to this survey.

Copy and paste OR type the numbers exactly as they appear. This is your personal identification passcode for the survey. DO NOT share this passcode with others and DO NOT enter someone else's passcode.

Page 1

MIC Pilot Program Year 2 Teacher Survey

Consent Statement

ICF International, in conjunction with the Texas Education Agency, requests your participation in the evaluation of the Mathematics Instructional Coaches (MIC) pilot program. As a teacher who is receiving coaching and professional development support as part of the MIC program during the 2009-10 school year, you are being asked to respond to a series of survey items related to the following topics:

- Your professional background and experience
- Your participation in other coaching and professional development activities
- Impact of the MIC program
- Satisfaction with teaching
- Implementation of the MIC program

We are conducting surveys with all teachers from each of the 29 MIC Cycle 1 grantees and 34 MIC Cycle 2 grantees. Findings from this survey and others like it will help us to learn about the ways that the MIC program is effective and alert evaluators and program managers to areas for possible program improvements.

In the paragraphs below, we summarize the procedures of the evaluation, how we will maintain your confidentiality, and the risks and benefits involved in participating in this evaluation.

Procedures: TEA has partnered with ICF International to conduct the MIC evaluation. This survey should take approximately 15 minutes to complete. By participating in the survey, you are giving permission for ICF International to use your information for evaluation purposes. ICF may ask you to complete another survey like this one, one additional time between May 2010 and May 2011.

Confidentiality: Your participation in this survey is completely voluntary and you may choose to skip any questions you do not want to answer or to terminate your participation at any time, without consequence. While TEA is aware that you are participating in this survey, the information gathered from this survey is strictly confidential and will be used for the purposes of this evaluation only. The data collected from this survey, and others like it, will be entered into a database (with your ID number), analyzed, and used in reports on the effectiveness of MIC program.

ICF will develop a name-to-ID-number database to track your data over the course of the evaluation. Upon completion of the evaluation, ICF will destroy this name-to-ID database. ICF will submit a database to TEA for record-keeping purposes, but your name and any other identifying information will not appear in any databases or reports associated with this evaluation. Specifically, any quotations you provide to open-ended questions that are used in reporting will be de-identified so that you or other individuals will not be able to be singled out based on the information that you provide.

Risks and Benefits: Because this survey includes questions about your experiences with the MIC pilot program and not personal information, there are minimal risks posed to you for participating in this survey. While there are no direct benefits to you, as a participant in the evaluation, you can benefit from knowing that your contributions will help the evaluation of the MIC pilot program.

If you have any questions about this evaluation, please contact Thomas J. Horwood (ICF Evaluation Manager) by e-mail at THorwood@icfi.com or by telephone at 866-924-7728. If you have questions about the project or TEA, please contact John Kucsera (TEA Project Manager) by e-mail at ProgramEval@tea.state.tx.us or by telephone at 512-463-9057. If you have questions about your rights as a participant, please contact Laurie May (ICF Institutional Review Board Chair) by e-mail LMay@icfi.com or by telephone at 800-532-4783.

Thank you in advance for your participation.

MIC Pilot Program Year 2 Teacher Survey

*** 1. Consent statement:**

I have read the preceding information describing this evaluation and the purpose of this survey. I freely consent to participate. I understand that my privacy will be protected and any information I provide here today will be used for evaluation purposes only. I understand that I am free to skip questions or stop the survey at any time. Finally, I can contact Mr. Thomas J. Horwood (Evaluation Manager) or Dr. Laurie May (IRB Chair) at ICF should I have questions or concerns about this survey or my rights as a participant, respectively.

- ◯ I Accept
- ◯ I Do Not Accept

MIC Pilot Program Year 2 Teacher Survey

Part I: Background Information

We would like to obtain some background information about you. Please answer the following questions.

1. What is the name of the school district/charter school where you teach?

2. What is the name of the school/campus where you teach?

3. What grade level(s) do you currently teach mathematics? (Select all that apply)

- ☐ 6th grade
- ☐ 7th grade
- ☐ 8th grade
- ☐ 9th grade
- ☐ 10th grade
- ☐ 11th grade
- ☐ 12th grade

4. How many years of experience have you had teaching mathematics to students in grades 6-12?

- ○ Less than 1 year
- ○ 1-3 years
- ○ 4-10 years
- ○ More than 10 years

Page 4

MIC Pilot Program Year 2 Teacher Survey

5. What types of mathematics courses have you ever taught for students in grades 6-12? (Select all that apply)

	Select all types of courses that you have **ever** taught.	Select all types of courses that you taught in **fall 2009**.
Mathematics, Grade 6	☐	☐
Mathematics, Grade 7	☐	☐
Mathematics, Grade 8	☐	☐
Algebra I	☐	☐
Algebra II	☐	☐
Geometry	☐	☐
Precalculus	☐	☐
Advanced Placement (AP)	☐	☐
International Baccalaureate (IB)	☐	☐
Mathematical Models with Applications	☐	☐
Independent Study in Mathematics	☐	☐

6. How many mathematics class sections have you taught during the 2009 - 2010 school year?

7. Approximately how many students have you taught mathematics to during the 2009-2010 academic year?

8. With what special population(s) of students do you work? (Select all that apply)

☐ Students at-risk for dropping out

☐ English as a second language (ESL) students

☐ English language learners (ELLs)

☐ Special education students

☐ Economically disadvantaged students (e.g., students receiving free or reduced lunch)

☐ None

☐ Other (please specify)

Page 5

MIC Pilot Program Year 2 Teacher Survey

9. How were you selected to receive coaching in your MIC program? (Select all that apply)

- ☐ I was referred by my principal
- ☐ I volunteered
- ☐ I was selected based upon my students' academic records
- ☐ I was selected based upon my students' Texas Assessment of Knowledge and Skills (TAKS) scores
- ☐ All math teachers in my school were selected
- ☐ All math teachers in the grade level that I teach were selected
- ☐ I am a new teacher
- ☐ I don't know
- ☐ Other (please specify)

Page 6

MIC Pilot Program Year 2 Teacher Survey

Part II: Implementation of the MIC Program

1. Please indicate the level of development/implementation of the following policies and practices at the campus where you work as part of the implementation of the MIC program.

	Not Planned	In Development	Partially Implemented	Fully Implemented
Provision of a means for collecting student assessment and/ or coursework data.	○	○	○	○
Creation of math intervention plans	○	○	○	○
Strengthening of core instructional programs	○	○	○	○
Provision of training on analyzing student coursework and/or assessment data	○	○	○	○
Provision of training on using student data to evaluate instructional plans	○	○	○	○

2. What barriers do you feel your school and/or school district has faced while implementing the MIC program? If you were able to overcome some of these barriers, how did you do so?

3. What factors do you feel have helped facilitate the implementation of your school and/or school district's MIC program?

Page 7

MIC Pilot Program Year 2 Teacher Survey

4. Is there anything else you would like to add about the MIC program at your school or school district? If so, please explain below.

MIC Pilot Program Year 2 Teacher Survey

Part III: Perceptions of the Quality of MIC Program Activities

Please respond to the following questions about your experiences with the various MIC program activities (such as coaching and/or professional development) in which you participated.

Please answer the following questions using the scale that ranges from "Very Poor" to "Excellent".

	Very Poor	Below Average	Average	Above Average	Excellent
1. How would you rate the overall quality of the MIC program activities you received?	○	○	○	○	○
2. How would you rate the overall effectiveness of the coaches?	○	○	○	○	○
3. How would you rate the overall quality of the materials you received?	○	○	○	○	○

Please answer the following questions using the scale that ranges from "Not at All Effective" to "Extremely Effective".

	Not at All Effective	Slightly Effective	Moderately Effective	Very Effective	Extremely Effective
4. To what extent were the MIC activities effective in meeting your learning needs?	○	○	○	○	○
5. To what extent were school administrators (e.g., principal) effective in supporting teachers participation in the MIC program activities?	○	○	○	○	○

Please rate your level of agreement with the following statement using the scale that ranges from "Strongly Disagree" to "Strongly Agree".

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
6. The MIC program activities in which I participated increased my math content knowledge.	○	○	○	○	○
7. The MIC program activities in which I participated increased my math teaching knowledge.	○	○	○	○	○
8. The MIC program activities in which I participated increased my instructional skills.	○	○	○	○	○

MIC Pilot Program Year 2 Teacher Survey

9. As part of your participation in the MIC program, to what extent did you receive the following?

	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Training or coaching on analyzing student data	○	○	○	○	○
Training on the usage of student data specifically to revise instructional practices	○	○	○	○	○
Training on the collection of assessment data	○	○	○	○	○
Training on identifying areas of student weakness and strength	○	○	○	○	○
Observations of you teaching a lesson conducted by a coach	○	○	○	○	○
Observations of you teaching a lesson conducted by a campus administrator	○	○	○	○	○
Feedback from a coach on your strengths and weaknesses	○	○	○	○	○
Feedback from a campus administrator on your strengths and weaknesses	○	○	○	○	○
Training in instructional techniques from a coach	○	○	○	○	○
Training in instructional techniques from a campus administrator	○	○	○	○	○
Content area instruction from a coach	○	○	○	○	○
Content area instruction from a campus administrator	○	○	○	○	○

10. How was math content taught to teachers in your program? Please include information about the tools used, such as curricula, summer institutes, seminars, etc.

MIC Pilot Program Year 2 Teacher Survey

11. What would you definitely not want to change about the MIC program activities you received?

12. What aspects of the MIC program activities could have been improved? Any suggestions for ways to make these improvements?

13. Please use this space to describe anything else you would like to add about your participation in the MIC program.

Page 11

MIC Pilot Program Year 2 Teacher Survey

Part IV: Material Learned through Participating in the MIC Program

From the MIC program activities (coaching and/or professional development), to what extent did you increase in…

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal	Not Raised in Training
1. …understanding national standards for mathematics?	◯	◯	◯	◯	◯	◯
2. …understanding the mathematics TEKS?	◯	◯	◯	◯	◯	◯
3. …understanding the specific content addressed by the MIC program at my school?	◯	◯	◯	◯	◯	◯
4. …aligning classroom instruction to the Mathematics TEKS?	◯	◯	◯	◯	◯	◯
5. …aligning classroom assessments to the Mathematics TEKS?	◯	◯	◯	◯	◯	◯
6. …presenting the specific content addressed by MIC in engaging, meaningful ways to students?	◯	◯	◯	◯	◯	◯
7. …preparing students for TAKS?	◯	◯	◯	◯	◯	◯
8. …collecting student coursework and/or assessment data?	◯	◯	◯	◯	◯	◯
9. …analyzing student coursework and/or assessment data?	◯	◯	◯	◯	◯	◯
10. …using student data to evaluate instructional plans?	◯	◯	◯	◯	◯	◯

Page 12

MIC Pilot Program Year 2 Teacher Survey

12. On average, about how often do you engage in the following assessment activities in the math class(es) you teach?

	Never	Once a Month	Once a Week	Two to Three Times a Week
Authentic assessments (e.g., extended response problems)	◯	◯	◯	◯
Demonstrations	◯	◯	◯	◯
Experiments	◯	◯	◯	◯
Group projects	◯	◯	◯	◯
Individual projects	◯	◯	◯	◯
Pre-post tests	◯	◯	◯	◯
Progress monitoring	◯	◯	◯	◯
Quizzes	◯	◯	◯	◯
Reports	◯	◯	◯	◯
Student journals	◯	◯	◯	◯
Tests	◯	◯	◯	◯

13. To what extent do you feel your implementation of the following assessment activities is due to what you learned in the MIC program?

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal	Not Raised in Training
Authentic assessments (e.g., extended response problems)	◯	◯	◯	◯	◯	◯
Demonstrations	◯	◯	◯	◯	◯	◯
Experiments	◯	◯	◯	◯	◯	◯
Group projects	◯	◯	◯	◯	◯	◯
Individual projects	◯	◯	◯	◯	◯	◯
Pre-post tests	◯	◯	◯	◯	◯	◯
Progress monitoring	◯	◯	◯	◯	◯	◯
Quizzes	◯	◯	◯	◯	◯	◯
Reports	◯	◯	◯	◯	◯	◯
Student journals	◯	◯	◯	◯	◯	◯
Tests	◯	◯	◯	◯	◯	◯

MIC Pilot Program Year 2 Teacher Survey

14. What are the various ways you revised or re-evaluated your instructional practices based on the data collected?

15. To what extent has participating in MIC program activities increased your use of the following instructional strategies?

	Not at All	Very Little	To Some Extent	Quite a Bit	A Great Deal	Not Raised in Training
Introduce mathematics content through formal presentations.						
Have students make connections between mathematics and the real world.						
Ask students to explain their reasoning when giving an answer.						
Ask students to consider alternative methods for solutions.						
Ask students to use multiple representations (e.g., numeric, graphic, symbolic) when solving problems.						
Ask students to explain concepts to one another.						
Differentiate classroom instruction to meet students' learning needs in mathematics.						
Allow students to work at their own pace.						
Provide students with concrete experience before abstract concepts.						
Develop students' conceptual understanding of mathematics.						
Take students' prior understanding into account when planning lessons.						
Have students practice computational skills.						
Engage students in problem-solving.						

Page 14

MIC Pilot Program Year 2 Teacher Survey

Have students use appropriate educational technology (e.g., calculator, computer) to learn mathematics.	◯	◯	◯	◯	◯	◯
Have students use mathematics instruction materials (e.g., manipulatives) to do mathematics.	◯	◯	◯	◯	◯	◯
Identifying student needs (e.g., strengths and weaknesses).	◯	◯	◯	◯	◯	◯

16. Are there other techniques you learned through the MIC program and have subsequently implemented that were not mentioned on this survey? If so, please list them here.

MIC Pilot Program Year 2 Teacher Survey

Part V: Perceptions of the Effectiveness of the MIC Program

Please indicate your opinion on the following questions about what impact your participation in the MIC program had on you, as well as on the students you taught during the 2009-2010 academic year (if your district participated in the MIC program in 2008-2009 also, please think about the impact from both years).

To what extent do you believe the MIC program activities in which you have participated thus far...

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1. ... improved your beliefs about teaching mathematics?	○	○	○	○	○	○
2. ... improved your sense that you can make a difference in your students' learning of mathematics?	○	○	○	○	○	○
3. ... improved your mathematics content knowledge?	○	○	○	○	○	○
4. ... improved your ability to teach math?	○	○	○	○	○	○
5. ... improved your effectiveness as a teacher?	○	○	○	○	○	○
6. ... improved teacher effectiveness among other mathematics teachers at your school?	○	○	○	○	○	○

7. What advantages do you feel you have over other mathematics teachers who are not participating in the MIC program?

8. What were two of the most important things you learned from your participation in the MIC program?

MIC Pilot Program Year 2 Teacher Survey

To what extent do you believe the MIC program activities in which you have participated thus far...

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
9. ...increased student achievement in mathematics among your students?	○	○	○	○	○	○
10. ...increased student achievement overall among your students?	○	○	○	○	○	○
11. ...lowered dropout rates among your students?	○	○	○	○	○	○
12. ... increased graduation rates among your students?	○	○	○	○	○	○
13. ...increased (grade) promotion rates among your students?	○	○	○	○	○	○
14. ...increased mathematics course completion rates among your students?	○	○	○	○	○	○
15. ...increased course completion rates overall among your students?	○	○	○	○	○	○
16. ... increased SAT/ACT mathematics scores among your students?	○	○	○	○	○	○
17. ... increased SAT/ACT scores overall among your students?	○	○	○	○	○	○

MIC Pilot Program Year 2 Teacher Survey

Part VI: Satisfaction with Teaching

The following items are designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below.

	Not at All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
1. How much can you do to control disruptive behavior in the classroom?	○	○	○	○	○	○
2. How much can you do to motivate students who show low interest in school work?	○	○	○	○	○	○
3. How much can you do to get students to believe they can do well in school work?	○	○	○	○	○	○
4. How much can you do to help students value learning?	○	○	○	○	○	○
5. To what extent can you craft good questions for your students?	○	○	○	○	○	○
6. How much can you do to get students to follow classroom rules?	○	○	○	○	○	○
7. How much can you do to calm a student who is disruptive or noisy?	○	○	○	○	○	○
8. How well can you establish a classroom management system?	○	○	○	○	○	○
9. How much can you use a variety of assessment strategies?	○	○	○	○	○	○
10. To what extent can you provide an alternative explanation or example when students are confused?	○	○	○	○	○	○
11. How much can you assist families in helping their children do well in school?	○	○	○	○	○	○
12. How well can you implement alternative strategies in your classroom?	○	○	○	○	○	○

MIC Pilot Program Year 2 Teacher Survey

Thank You

Thank you for your time and effort in completing this survey.

Please be sure to click Submit or your responses will not be saved.

Page 19

Appendix J: 2010 MIC Cycle 1 and Cycle 2 Progress Report

MIC Pilot Program Progress Report

1. Instructions

Mathematics Instructional Coaches Pilot Program (MIC) grantees are required to submit periodic progress reports to provide information on program implementation, progress, and effectiveness. Please use the following online survey to submit information related to activities supported by grant funds in your school district. TEA staff may request additional documentation of program activities and expenditures.

The reporting period for this progress report for MIC Cycle 1 and Cycle 2 grantees is 08/31/2009 to 12/31/2009.

Please contact Dale Fowler, TEA Program Manager, at Dale.Fowler@tea.state.tx.us or (512) 463-3282 for assistance or if you have any questions regarding this report. For technical support in completing the online progress report, please contact Jackie Schmidt at ICF at JSchmidt@icfi.com or (703) 385-3200.

Please complete this survey/progress report **no later than January 29, 2010.**

MIC Pilot Program Progress Report

2. Contact Information

1. Please provide the following contact information.

School District Name:

Name and Title of Primary District Grant Contact Person:

Primary Contact Telephone Number

Primary Contact Email Address:

Name of Person Completing This Progress Report *(if different from above)*:

Telephone Number of Person Completing This Progress Report:

Email Address of Person Completing This Progress Report:

2. List the campus(es) served by the program.

Campus 1:

Campus 2:

Campus 3:

Campus 4:

Campus 5:

Other(s):

Other(s):

Other(s):

Other(s):

Other(s):

MIC Pilot Program Progress Report

3. Participants

3. Please indicate the number of teachers, coaches, and administrative staff participating in the program between 8/31/09 and 12/31/09. Of the total number for each type of participant, please indicate how many work in Middle, Junior, or High Schools.

Teachers

Middle Schools:

Junior High Schools:

High Schools:

Total:

Coaches

Middle Schools:

Junior High Schools:

High Schools:

Total:

Administrative Staff

Middle Schools:

Junior High Schools:

High Schools:

Total:

MIC Pilot Program Progress Report

4. MIC Program Implementation

In the following sections, you will answer questions and provide information about the implementation of your program, your work with your ASP and performance measures. When answering these questions please refer to the period between 8/1/09 and 12/31/09.

1. Briefly, in a few sentences, please describe your MIC project. Please include some details of the activities the teachers participate in.

2. Please indicate the level of development/implementation of the following policies and practices for teachers and/or principals at the campus(es) in your district.

	Not Planned	In Development	Partially Implemented	Fully Implemented
Support from administrators	○	○	○	○
Provision of a means for collecting student assessment data	○	○	○	○
Creation of math intervention plans	○	○	○	○
Strengthening of core instructional programs	○	○	○	○
Provision of a means for collecting useable and actionable data on student progress	○	○	○	○
Provision of training on analyzing student coursework and assessment data	○	○	○	○
Provision of training on using student data to evaluate instructional plans	○	○	○	○

3. Please indicate the level of development/implementation of the following policies and practices for administrators at the campus(es) in your district.

	Not Planned	In Development	Partially Implemented	Fully Implemented
Needs survey of campus administrators	○	○	○	○
Training of administrators in effective math classroom practices	○	○	○	○
Training on conducting math classroom observations	○	○	○	○
Provision of coaching and feedback to participating administrators	○	○	○	○

Page 4

MIC Pilot Program Progress Report

5. MIC Program Implementation (Continued)

4. In what ways, if at all, has your MIC project changed from what you originally proposed in your final action plan approved by TEA?

5. What barriers, if any, have you encountered while implementing your MIC project? What challenges have you encountered?

5a. (If applicable) How did you overcome these challenges?

6. What factors, if any, do you believe are helping to facilitate the implementation of your MIC project? What successes have you experienced?

Page 5

MIC Pilot Program Progress Report

6. Teacher Participation

1. What percentage of teachers of the following mathematics courses are participating in the MIC program? Please enter the percentages in the textboxes next to each course. ***If no teachers of a particular subject are participating, please enter a zero into the table.***

Mathematics, Grade 6	
Mathematics, Grade 7	
Mathematics, Grade 8	
Algebra 1	
Algebra 2	
Geometry	
Precalculus	
Advanced Placement/International Baccalaureate	
Mathematics Models with Applications	
Implementation of Texas Essential Knowledge and Skills for Mathematics	
Independent Study in Mathematics	
Other (please specify in textbox)	

2. As part of their participation in the MIC program, to what extent do teachers receive the following?

	Not at All	Very Little	Some	Quite a Bit	A Great Deal
Training or coaching on analyzing student data	○	○	○	○	○
Training on the usage of student data specifically to revise instructional practices	○	○	○	○	○
Training on the collection of assessment data	○	○	○	○	○
Training on identifying areas of student weakness and strength	○	○	○	○	○
Observations of their teaching a lesson conducted by a coach	○	○	○	○	○
Observations of their teaching a lesson conducted by a campus administrator	○	○	○	○	○
Feedback from a coach on their strengths and weaknesses	○	○	○	○	○
Feedback from a campus administrator on their strengths and weaknesses	○	○	○	○	○
Training in instructional techniques from a coach	○	○	○	○	○
Training in instructional techniques from a campus administrator	○	○	○	○	○
Content area instruction from a coach	○	○	○	○	○
Content area instruction from a campus administrator	○	○	○	○	○

MIC Pilot Program Progress Report

3. What methods of training were used to teach math content to teachers in your program? (Please select all that apply)

- [ ] Classes taught at a university or college
- [ ] Online coursework
- [ ] Use of textbooks or other reading materials
- [ ] One-day seminars on a topic
- [ ] Expert lectures, not as part of a formal class
- [ ] Summer institutes
- [ ] Other (please specify)

MIC Pilot Program Progress Report

7. Performance Measures

1. In what ways, if any, are you monitoring change in teacher content knowledge before and after program implementation?

* **2. To date have you observed a change in the content knowledge among a majority of teachers?**

- Yes
- No

Page 8

MIC Pilot Program Progress Report

8. Change in Content Knowledge Among Teachers

2a. What percentage of teachers have demonstrated a change in their content knowledge?

- ◯ Less than 10%
- ◯ 10-30%
- ◯ 30-50%
- ◯ 50-70%
- ◯ 70-100%

MIC Pilot Program Progress Report

9. Performance Measures (Continued)

3. As a whole, the participating math teachers successfully implemented a mathematics content-related lesson or series of lessons requiring a high level of critical thinking on the part of students.

○ strongly disagree ○ disagree ○ agree ○ strongly agree

3a. Please explain your answer to the question above:

4. Students in the participating math teachers' classrooms, taken as a whole, were able to demonstrate successful learning of a mathematics concept targeted by the district's action plan during a reasonable time period.

○ strongly disagree ○ disagree ○ agree ○ strongly agree

4a. Please explain your answer to the question above:

Page 10

MIC Pilot Program Progress Report

10. District Partnership with an Approved Service Provider

1. Who is your Approved Service Provider (ASP)?

2. What types of activities/services are being provided by the ASP? (Please select all that apply).

- [ ] Focused professional development sessions
- [ ] Online courses/sessions
- [ ] Classroom observations
- [ ] Classroom coaching
- [ ] Model teaching
- [ ] Training of trainers
- [ ] Sessions for administrators on best math classroom practices
- [ ] Training on use of technology
- [ ] Peer coaching
- [ ] Work on math curriculum development/alignment
- [ ] Study groups for teachers
- [ ] Lesson planning assistance
- [ ] Lesson study groups
- [ ] Professional learning communities
- [ ] Examination of student work
- [ ] Data analysis training
- [ ] On-site college course
- [ ] Training for administrators in conducting math classroom observations
- [ ] Other (please specify)

MIC Pilot Program Progress Report

11. District Partnership with an Approved Service Provider (Continued)

3. Please identify and describe any facilitators to working effectively with your ASP.

4. Please identify and describe any barriers to working effectively with you ASP.

5. Please rate your ASP in the following categories.

	Strongly Disagree	Disagree	Agree	Strongly Agree
The ASP has had a positive impact on student achievement as assessed by district benchmarks or state assessments	○	○	○	○
The ASP has highly qualified and skilled staff in the area of teaching secondary mathematics	○	○	○	○
The ASP offers adequate and appropriate training for adult learners	○	○	○	○
The ASP provides accurate, relevant, and research-based information about secondary mathematics content and instructional strategies	○	○	○	○
The ASP provides quality technical assistance, such as model teaching, coaching, and content focused professional development sessions	○	○	○	○

6. As a result of the work of the ASP, has participating math teachers' content knowledge increased?

○ Yes

○ No

Page 12

MIC Pilot Program Progress Report

6a. Please explain your answer to the question above:

MIC Pilot Program Progress Report

12. District Partnership with an Approved Service Provider (Continued)

7. As a result of the work of the ASP, has participating math teachers' instructional expertise increased?

- ◯ Yes
- ◯ No

7a. Please explain your answer to the question above:

8. Please rate the district/campus contribution to the implementation of the grant program.

◯ None or almost none ◯ Low ◯ Medium ◯ High ◯ Very high

8a. Please explain your answer to the question above:

9. Which party has had more to do with the implementation of the grant program to this point?

- ◯ ASP mostly, district/campus less
- ◯ District/campus mostly, ASP less
- ◯ About 50/50
- ◯ Other/NA

MIC Pilot Program Progress Report

9a. Please explain your answer to the question above:

Page 15

MIC Pilot Program Progress Report

13. Funding and Sustainability

1. How did your district plan to spend the grant funds?

1a. Have you, or are you planning to, make any changes to how you spend your funding? If so, what are the changes?

Page 16

MIC Pilot Program Progress Report

14. Funding and Sustainability (Continued)

*** 2. Do you envision continuing the MIC program once funding ends?**

- ◯ Yes
- ◯ No

If no, what are the reasons for not continuing it?

MIC Pilot Program Progress Report

15. Funding and Sustainability (Continued)

2a. How will you continue to run the program (in other words, where will funding come from)?

2b. What changes would you make to the program?

MIC Pilot Program Progress Report

16. Overall Comments

1. Please include any additional information you feel is important regarding your experience with the MIC program.

Congratulations! You have completed the survey. If you have any questions regarding this survey, please contact Dale Fowler, TEA Program Manager, at Dale.Fowler@tea.state.tx.us or (512) 463-3282.

Please click the "Done" button below to submit your responses.

Appendix K: MIC Cycle 1 & Cycle 2 Grantee Characteristics

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Abilene ISD	3	.	.	1	.	.	0	0	41	41	0	0	1	1	0	0	4	4	Education Service Center Region 4	Abilene ISD has a primary goal of helping our high school mathematics teachers integrate new teaching strategies that focus on student engagements. It is our belief that students learn better when they are engaged in activities or lessons, thus our hope is that our students leave our schools better prepared to experience success after they graduate, be it in an institution of higher education or as a member of the workforce. The teachers participate in job-embedded coaching and professional development with the Math Instructional Coach. Our students are assessed regularly as part of this grant, giving our teachers a better grasp on student achievement. Through benchmarking, our students give our teachers a clear picture of their collective and individual strengths and weaknesses, allowing our teachers to customize instruction in order to fill in instructional gaps.
Alice ISD	1	1	.	.	.	.	10	0	12	22	1	0	1	2	2	0	2	4	Education Service Center Region 2	In Alice ISD, we use math coaches from the Education Service Center, Region 2 to assist our math teachers with the implementation of the CSCOPE curriculum. Each six weeks the math teachers receive a packet of the curriculum, time for questioning/discussion of the materials, modeling/discussion on use of manipulatives for teaching the curriculum, demonstration of graphing technology, and support with data disaggregation.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Athens ISD	1	1	.	.	.	.	11	0	7	18	1	0	0	1	4	0	4	8	Education Service Center Region 7	The Athens Middle School project is a three-pronged approach, consisting of an (1) AMS Teaching Academy, (2) instructional Coach/Teacher Mentor Implementation, and (3) Accountability Plan. The Teaching Academy is research-based integrating theory and practice. Training is designed to improve instructional teaching methods in support of objective 6 of the P-16 College Readiness Plan and prepare teachers to assist students in meeting college readiness and skilled workforce standards. The second prong includes collaborative planning, in class support for classroom teachers through demonstration lessons, co-teaching and observation, debriefing, and self-reflection by both the teacher and coach. The third prong, the Accountability Plan, helps the coach, teachers, and supervisors to better monitor with whom time is spent as well as monitoring the distribution of time on various coaching model components. Teachers have participated in the following activities: 6 - 12 TAKS Data Analysis, Pre-Assessment for Teachers, Engaging Lessons 5E Model, and MSTAR training.
Beeville ISD	2	1	.	.	.	.	13	0	11	24	1	0	1	2	2	0	3	5	Education Service Center Region 2	Beeville ISD uses the CSCOPE curriculum for mathematics. In order to assist our teachers in the implementation of CSCOPE, we use math coaches from education service center region 2 as our coaches. They are extremely familiar with the curriculum and our teachers. They work once per six weeks with the teachers to go over the next six weeks' curriculum. They discuss the activities and content, as well as do some of the activities involved. In addition, the math coaches observe the teachers as they implement the curriculum. They do this approximately one day per six weeks. The coaches also meet with the campus and district administrators to discuss the progress of implementation.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Ben Bolt-Palito Blanco ISD	1	1	.	.	.	.	1	1	2	4	0	1	1	1	0	1	1	2	Education Service Center Region 2	The MIC project is a collaborative mentorship providing participating math teachers the opportunity to share instructional strategies to improve student success. Activities in this project include professional staff development by ASP, collaborative planning between Middle School and High School staff as well as curriculum alignment and lesson plan writing.
Chapel Hill ISD	1	1	.	.	.	.	9	0	9	18	1	0	1	2	1	0	1	2	Education Service Center Region 7	The teaching staff is constantly involved with the coach provided by Region VII Education Service Center. She visits, record her observations and returns the following week to discuss these in the math PLCs. Guidance is given in best instructional strategies and how to better the curriculum. The coach gives them approximately 5-7 weeks to work on the new strategies and then makes the visit again. The teachers and coach repeat the process. Teachers are also working outside the school day on improving curriculum based on data.
Clarksville ISD	1	1	.	.	.	.	3	0	4	7	1	0	1	2	1	0	1	2	Education Service Center Region 20	Cheatham Middle School coach works with 3 teachers to provide them instructional support. Math teachers participate in instructional planning, data analysis, student engagement, and drill down activities. Clarksville High School Math Coach observes and critiques teaching effectiveness and provides feedback to teachers. Coaches provide staff development in weak areas. The plan lessons, review data, provide assistance with the Clarksville Curriculum and 5E Model.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Corsicana ISD	1	1	.	.	.	.	0	9	13	22	0	0	0	0	0	1	1	2	Education Service Center Region 12	The MIC program is designed to provide teachers with professional development that will assist teachers with instructional strategies, data disaggregation, student management, and student engagement. As of January 29, 2010, year one of cycle 2, 22 teachers have participated in 4 days of staff development that have included strategies on math journaling, effective communication, cooperative learning, formative and summative evaluations, as well as identifying and creating high cognitive tasks. Teachers also participate in an online book study of "Mathematics Worksheets Don't Grow Dendrites". As part of the program all 22 teachers have had 2 observations from outside consultants. The consultants conferenced individually with each teacher with their findings and suggestions for improvements. This summer, 2010, 4 teachers from the middle school and 4 teachers from the high school will participate in a 5 day math coaching academy.
Cosmos Foundation Harmony Science Academy-Houston	.	.	.	.	3	.	2	5	4	11	1	0	1	2	3	0	3	6	Education Service Center Region 4	Math coaches from Region 4 ESC help our middle and high school math teachers. These coaches come to our campuses and spend time with our teachers, mentoring them and helping them to gain the skills which they lack and to refine their existing skills so that they may meet the growing needs of their students. Besides the training and instructional coaching provided by Region 4, our math participating teachers had another PD on Dec 4 and Dec 5 about the usage of technology in classroom setting.
Covington ISD	.	.	.	.	1	.	1	1	1	3	1	1	1	3	2	2	2	6	Education Service Center Region 12	Implementation of a research-based Mathematics Instructional Coaches Program for three mathematics teachers who teach students in grades 6-12. We have contracted with ESC-12 to provide assistance in developing the content knowledge and instructional expertise of our teachers. The teachers have successfully completed the Master Math institute, attended several trainings, and have participated in observations with the Math Coaches provided by ESC-12. Administrators have attended trainings geared towards developing skills and knowledge in mathematics instruction.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Dawson ISD an SSA with Kopperl and Malone ISDs	1	1	1	.	1	2	4	3	4	11	0	0	0	0	2	0	4	6	Education Service Center Region 12	Our goal is to improve student performance and meet broader student needs by enhancing the knowledge and instructional skills of our teachers. We hoped to gain additional content expertise, presentation improvements by using technology and awareness of instructional techniques used successfully by a network of teachers involved in the grant. Our teachers have attended four of twelve scheduled training sessions and have had on campus coaching all provided by our ASP. They are implementing the use of technology into their lessons, are using journaling, and are developing teacher web pages. A coaching academy and master math teacher training are scheduled nest summer for some participants.
Del Valle ISD	1	2	.	1	.	.	14	11	35	60	3	3	7	13	2	0	5	7	Texas State University	DVISD works closely with Texas State University (ASP) on a monthly basis. Webcam sessions are provided twice a month by the ASP for 14 math coaches where pre-planned topic and assignments are discussed. District and ASP work diligently to organize and plan semester topics on the professional development needs/desires of the district coaches.
Diboll ISD	1	.	1	.	.	.	0	8	7	15	0	2	2	4	0	2	2	4	Education Service Center Region 7	Teachers are implementing instructional strategies, questioning strategies and content knowledge acquired through staff development last year in the classroom. This is monitored by campus walkthroughs and through ASP coaching meetings.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
East Central ISD	1	1	.	.	.	.	12	0	26	38	4	8	5	17	2	0	2	4	Education Service Center Region 20	Focus has been on building teacher capacity by addressing deficiencies in instructional and learning practices as well as providing empowering opportunities for teachers through engaging levels of diversified Professional Development opportunities. Cooperative learning, data analysis, math standards, development of a common /systematic languages, descriptive reviews, and other varied reflective practices have been consistently and thematically expanded through the 5 months. Teachers have participated or received such growth experiences through: full and 1/2 day trainings, in-classroom observations, model teaching, 1 to 1 coaching, instructional growth plans, classroom timers, and professional resources.
El Paso ISD	12	16	.	1	.	.	230	0	203	433	16	0	14	30	16	0	13	29	Texas A&M University - College Station	Our MIC project's goals include to increase the capacity of our current coaches in the areas of coaching and content knowledge, as well as to build the capacity of teachers so that they may also become leaders of the math teams on their campuses. We are accomplishing this through online and in-person content staff development with our ASP, coaching and curriculum consultants, and through our PLC common planning time, which already exists on the campuses. Some activities that teachers have participated in are Vertical Meetings to align TEKS and instruction based on concepts that students are struggling with at the high school, horizontal district meetings for common lesson planning and analyzing student work, and a new teacher boot camp to help new teachers with content and strategies for student engagement and understanding.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Elgin ISD	1	1	.	.	.	.	9	0	11	20	1	0	1	2	2	0	4	6	Education Service Center Region 13	The instructional math coaches observe, co-teach, plan, and de-brief with the middle school and high school 2 or 3 days each week. The high school instructional coach has worked with teachers to raise the level of student engagement in lessons. Teachers have worked with promethium boards and student response systems. Student materials, textbooks, curriculum are also reviewed by the coach weekly. At Elgin Middle School the instructional coach is co-teaching, modeling lessons with small group instruction. Teachers are using learning stations and paraprofessionals to manage small group instruction.
Everman ISD	1	.	1	.	.	1	5	12	17	34	1	1	1	3	2	3	3	8	Education Service Center Region 4	The Everman ISD MIC project includes classroom observations and feedback from the math coach to the teachers. It also includes weekly meetings to review student data and plan instruction. The teachers and coach participate in professional development activities provided by ESC Region IV, our approved service provider. The coach conducts mini and full day professional development opportunities for teachers in instructional strategies including the use of manipulatives.
Evolution Academy	1	.	.	.	.	.	0	0	6	6	0	0	1	1	0	0	3	3	Education Service Center Region 5	Teachers and administrators completed coaches training by Region IV ESC.
Galena Park ISD	3	4	.	.	.	.	50	0	44	94	9	0	12	21	8	0	6	14	Rice University Mathe-matics Depart-ment	Our MIC Project provides our secondary campuses with a teacher that is trained to be an instructional coach for mathematics at each grade level. The coaches participate in staff development to further their expertise in mathematical content as well as their skills as a coach. The coaches provide a variety of activities for their teachers on their campuses such as lesson planning, modeling lessons, and providing them with resources.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Galveston ISD	2	2	.	.	.	.	20	0	13	33	5	0	5	10	2	0	1	3	Rice University Mathematics Department	We designed this project to prepare teachers to be coaches -- through a train the trainer model. Additionally, in addition to the IHE coaches, we named 1 coach for 1 to 2 cadre teachers. The IHE observed the coaches both years and also went with the coaches to observe their cadre teachers. Pre and Post conferences were held with the coaches and the teachers. Coaches also meet regularly with their cadre teachers to discuss curriculum, good teaching strategies, CBA creation, lesson planning, etc. A coach's clinic is held each summer, as well as a cadre clinic. Additionally, 3 days are held annually to which all secondary teachers are invited. These days are presented by the IHE.
Gladewater ISD	1	1	.	.	.	.	9	0	8	17	1	0	1	1	2	0	2	4	Texas A&M University - College Station	The primary goal of the Mathematics Instructional Grant was to hire full-time instructional support for math teachers on a daily basis. The Math Instructional Coach (MIC) meets weekly with the Middle School teachers and High School teachers. Discussions regarding appropriate assessments and addressing student needs are discussed. The MIC has visited at least one class for each teacher (16 total) participating in the grant and has modeled numerous lessons for Algebra I and Algebra II. She has also visited TAKS math classes and provided feedback. The Math Coach has met with each teacher at least once one-on-one and discussed the positive aspects of what was observed and offered suggestions in areas where there was an opportunity for growth. The Algebra I teachers are a young and inexperienced group, so the MIC has taken the lead on developing a viable curriculum for them as well as providing invaluable materials and lessons for use in their classroom. The Math Coach coaches these teachers through these lessons to provide some continuity and to increase their knowledge and understanding. In addition to the services provided by the MIC, teachers have also received hours of quality professional development from Texas A&M.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Goose Creek CISD	3	.	.	1	.	.	0	0	23	23	0	0	2	2	0	0	7	7	Education Service Center Region 4	The district is training 23 Algebra I and Math Models teachers at 4 secondary campuses in order to improve their content knowledge and instructional strategies. The ASP, Region IV, is providing a large percentage of the training and the training materials.
Hidalgo ISD	1	.	1	1	.	.	0	10	10	20	0	2	2	4	0	1	1	2	Education Service Center Region 1	Almost all the teachers attend professional development in innovative teaching strategies, data driven instruction, book study through video conference, and lesson development. Our secondary master coach and campus coaches provide coaching through lesson modeling, observing, and providing feedback.
Higgs, Carter, King Gifted and Talented Charter Academy	.	.	.	.	1	.	2	0	0	2	2	0	0	2	0	0	1	1	Education Service Center Region 20	Our MIC project has included significant interaction with our ASP including guidance, direction, as well as training and professional development opportunities. Our teachers, mentors, and coaches have worked closely with teachers to improve teacher effectiveness in the area of math which has led to improved student achievement. The professional development training has been the most helpful in helping us to improve math instruction.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Hillsboro ISD	1	.	1	.	.	.	0	3	6	9	0	1	1	2	0	2	2	4	Education Service Center Region 12	Teachers participate in six trainings per year provided by ESC12. These are followed by classroom visits/observations by the ESC Math Specialist who debriefs with teachers. The specialist also models instruction on occasion. Teachers have received Smart Technology Response Clicker Systems for their classrooms and support training from ESC 12 on their use. The onsite math coach visits classrooms weekly (and is some cases daily) to observe and assist classroom teachers. She also plans instruction with teachers and provides direction on scheduling and needs of students. The district assistant superintendent for curriculum and instruction has provided training for teachers on data analysis and the use of data to plan instruction. Teachers and coach have a common planning period that is used for collaboration.
HOUSTON CAN! ACADEMY CHARTER	.	.	.	2	.	.	0	0	8	8	0	0	4	4	0	0	0	0	Education Service Center Region 4	Teachers were taught how to use manipulatives in the math classes. The Service provider has begun observing for coaching.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Houston Independent School District	.	1	.	.	.	.	3	0	18	21	1	0	1	2	1	0	4	5	Milby HS: Rice University Mathe-matics Depart-ment; Excellence Academy MS: Education Service Center Region 4	Milby HS: The Rice University School Mathematics Program Coach is hired to work 50 school days to support the mathematics teachers at Milby High School.; Excellence Academy MS: The MIC project at Energized for Excellence Committee has supported teachers in developing new strategies and methodologies to increase student achievement. Previous activities have included review of data, assessment of basic teacher competencies; and in-classroom observation modeling and demonstration.
IDEA Public Schools	.	3	.	.	3	.	15	0	15	30	4	0	2	6	0	0	6	6	Education Service Center Region 4	The math coaching team is comprised of the Secondary Math Coordinator, one Campus-based full-time Math Coach, and a math content coach from each of the secondary campus. The primary role of the Secondary Math Coordinator is to oversee math instruction and coaching at all schools and to facilitate the coaching team. The primary role of the full-time campus-based Math Coach is to conduct both individual and joint observations and meetings with teachers, providing extra support to struggling teachers and focusing on our campuses with the lowest scores. Both the Secondary Math Coordinator and the full-time campus-based coach also order, organize, and maintain a resource library for district teachers. They focus on instructional and TAKS support materials for teachers at all grade levels and will create an online inventory of resources. Teachers will continue to request material and either receive it at their monthly check-in with the Secondary Math Coordinator or pick it up at the central district office. The part-time campus-based coaches continue to devote, on average, 25% of their time to the project. The coaching team has received training in coaching and key elements of instruction by the service provider, Regional Education Service Center Four (4). They also meet up to

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
																				twice a month as a math team. The math coaching team collectively takes responsibility of overseeing all of the needs of the mathematics program at IDEA. This includes assessing the needs of the math program, designing and implementing the math curriculum, and designing and implementing the professional development plan for the math teachers. The individual coaches continue to implement the plans at each of their campuses, the math teams, and the math team leaders.
Irving ISD	4	7	.	1	.	.	108	0	84	192	3	0	6	9	14	0	10	24	Education Service Center Region 4	
Kingsville ISD	1	1	.	.	.	.	8	0	9	17	0	0	0	0	2	0	3	5	Education Service Center Region 2	•Staff development on 5E Model and active teaching strategies within the 5E model •Individualized staff development by content area where the teachers delved into their curriculum for the upcoming six weeks (ongoing each six weeks). This gives them not only a chance to see what is coming up but a chance to share best practices and what has worked instructionally in the past (especially great for teachers new to their subject area this year). •Staff development workshop titled 'Collaboration-Differentiation-Student Motivation' where teachers were actively engaged in studying the seven learning styles and developing a plan of how to interact and attract each learning styles attention inside the classroom. Teachers assessed their own learning style and as a group we discussed all the different learning styles in the room and approached differentiation of the curriculum through the eyes of the different learning styles of the students.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
La Feria ISD	1	.	1	.	.	.	0	4	4	8	0	1	1	1	0	2	2	4	Education Service Center Region 1	Our project is founded on the principle of staff development with the intent to increase teacher knowledge and instructional expertise. Using as a foundation the professional development standards of the National Staff Development Council (NSDC), we are focusing on peer coaching and collaboration and professional communities. As a result, our mathematics staff have attended on average six to eight days of professional development. Teachers have expressed that more collaborative meetings have occurred and sharing of ideas and instructional strategies have taken place during such meetings.
La Joya ISD	3	.	.	3	.	.	0	0	22	22	0	0	1	1	0	0	0	0	Education Service Center Region 1	Texas Education Agency awarded La Joya ISD the Mathematics Instructional Coaches Pilot Program Grant that began July 1, 2008 and will conclude May 31, 2010. The purpose of this grant is to provide assistance in developing the content knowledge and instructional expertise of teachers who instruct students in Mathematics at the middle school, junior high school, or high school levels. Goal: The Math Instructional Coach provides leadership, assistance, and support for the High School Mathematics teachers that are participating in the grant. Assistance and instruction is provided to become more knowledgeable in content, comfortable with the use of manipulatives in the classroom, and to become skilled in their subject areas. A book study throughout the year and various subject area trainings is offered throughout the year for the participants to take advantage of and to help them develop into outstanding teachers.
La Vega ISD	1	.	1	.	.	1	3	6	7	16	3	2	2	7	1	1	1	3	Education Service Center Region 12	Teachers receive a coaching session every six weeks. During the coaching session, a pre-observation conference is held to discuss the lesson; the lesson is observed; a follow up meeting is then held between the coach and the teacher.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
La Villa ISD	1	1	.	.	.	.	2	0	5	7	2	0	5	7	1	0	0	1	Education Service Center Region 1	Our MIC project is designed to engage our secondary teachers in professional development programs to improve their content knowledge and how the instruction is delivered. Through coaching and collaboration, teachers enhance each other's expertise in mathematics to improve the academic performance of their students. Teachers attend professional development sessions with the ASP, participate in book studies, and collaborate with one another through planning sessions/meetings, observations, and modeling.
Laredo Independent School District	3	4	.	.	.	.	12	0	12	24	12	0	12	24	0	0	0	0	Education Service Center Region 1	The main goal of the MIC project is to provide a group of teaches focused professional development in the instruction of mathematics. LISD will work with Region One to provide and deliver these sessions. From 8/1/09 through 12/231/09 the selected group of teachers participated in two sessions: Moving Beyond Minimal expectations: A closer look at assessment and Measurement: Explaining the World Through Numbers. Other professional development sessions have been already scheduled.
Longview ISD	1	3	.	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0	Education Service Center Region 7	We were to hire a district secondary math coach--but we have been unable to hire a coach as there have not been applicants. Teachers are attending various staff development.
Manor ISD	1	2	.	.	.	.	16	0	10	26	1	0	1	2	2	0	1	3	Education Service Center Region 13	Teachers have participated in coaching activities including mentoring, lesson planning, and lesson observations cycles with the Region 13 coach assigned to the campus.
Marlin Independent School District	1	.	.	.	.	.	0	0	4	4	0	0	1	1	0	0	1	1	Education Service Center Region 12	The teachers at the high school are participating in the Math Collaborative at our Region Service Center (ESC12). We meet six times per year at our ESC12 with other schools that are participating in the MIC project.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Marshall Independent School District	1	.	.	5	.	.	0	0	23	23	0	0	1	1	0	0	3	3	Education Service Center Region 7	From 8/1/2009 to 12/31/2009, teachers received technology training (2 days for Agilemind and 1 day for Smartboard). The focus was on how to use technology effectively to teach mathematics. Teachers started reviewing content in Agilemind. Teachers worked on using varied instructional strategies in the math lab with our math lab coach. Teachers would bring their students to the lab, the coach modeled instruction the first couple of periods and then let the teacher take over the rest of the day. At the end of the day the coach and teacher spent time reflecting on the instruction and activities for the day. The math department chair, academic dean for math and science, principal, and the assistant principal assigned to the math department conducted walkthroughs and provided feedback to teachers.
McAllen ISD	3	4	.	2	.	.	8	0	15	23	1	0	0	1	0	0	0	0	Education Service Center Region 1	Our Instructional Coaches Pilot Program Teachers have participated in the Coaches Academy and professional development activities. Participating teachers are required to take the training back to their colleagues and mathematics department teachers.
McGregor ISD	1	.	1	.	.	.	0	4	6	10	0	0	0	0	0	1	1	2	Education Service Center Region 12	In the very beginning, all 10 of our Math teachers met together at the Region 12 Service Center, our service provider. However, they soon moved into school level specific meetings, with the Jr. High teachers meeting separately from the High School teachers. The best part of these meetings, in my opinion, is that our teachers get to meet with all the other Math teachers from the rest of the schools in Region 12 that are in receipt of the MIC grant. I believe that to be a very valuable networking tool. In addition to the teacher meetings, the two Principals in our district have met a couple of times with the other administrators from Region 12 who are participating in this grant.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Mercedes ISD	1	.	1	1	.	.	0	9	12	21	0	2	2	4	0	0	0	0	Education Service Center Region 1	The MIC project in Mercedes ISD is being implemented in collaboration with Region One ESC. The activities being implemented are focused on improving the content, strategies, and planning of our secondary mathematics teachers. Primarily, the teachers are participating in professional development provided by Region One ESC. Also, the teachers utilize time back at school to collaborate and plan effective practices.
Motley County ISD	9	5	.	.	1	.	12	0	25	37	0	0	1	1	0	0	0	0	Education Service Center Region 17	Teachers in ten small, rural school districts participate in this collaborative grant project. Teachers meet approximately once each month for professional development opportunities offered by the approved vendor, ESC 17, as required by the grant application. In addition, they are encouraged to participate in other activities offered by ESC 17. The coach, who is the math specialist at ESC 17, visits the districts for on-site coaching and support.
Mount Pleasant ISD	1	.	1	.	.	.	0	11	18	29	0	0	0	0	0	1	1	2	Education Service Center Region 8	Math coaches, working through Educational Service Center 8, work with junior high and high school math teachers about every 2 weeks. Coaches are observing teaching / offering feedback, teaching demo lessons, helping to evaluate lessons, collaboratively planning with teams and collaborating with administration as needed.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Pasadena ISD	5	10	.	.	.	.	0	20	20	40	0	2	2	4	0	10	5	15	Rice University Mathe-matics Depart-ment	We began our program in August, 2009 with a dialogue between our providers, Rice University Mathematics Department. Our teachers and administrators from our five high schools and ten intermediate schools met with Dr. Anne Papakonstantinou and her staff to discuss the "current state of mathematics" instruction in our district. Information was collected and a report formulated based on the responses from the campuses. Dr. Papakonstantinou and her staff conducted an audit of our 8th grade, Algebra I and Geometry curriculum/scope and sequences and made recommendations for improvement in all three. They then began classroom observations and coaching sessions with the 40 teachers in the program. Each of our ten intermediate schools has 2 eighth grade math teachers in the program and each of our five high schools has 2 algebra and 2 geometry teachers in the program. Dr. Papakonstantinou and her staff spent a full day on each of the campuses observing in the teachers' classrooms, attending dept. planning meetings, and providing feedback and coaching to the teachers. On January 18, our 40 teachers spent a full day of training with the Rice University staff receiving training in mathematics instruction. During the spring, the Rice University staff will observe in classrooms again and provide feedback and coaching. We are currently in the process of rewriting our algebra I scope and sequence with the help of Dr. Papakonstantinou and we have a Rice University Algebra I Institute planned for summer 2010.
Patton Springs ISD	2	2	.	.	1	.	5	0	10	15	0	0	1	1	0	0	1	1	Lubbock Christian University	Teachers have participated in Middle School TMT3 training (high school is scheduled in April).

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Pharr-San Juan-Alamo, ISD	3	.	.	.	.	.	0	0	66	66	0	0	15	15	0	0	0	0	Education Service Center Region 1	The overall goal of PSJA ISD's Mathematics Instruction Coaches Pilot Program is to engage secondary math teachers in professional development activities resulting in improved instruction and student performance. Specifically, math teachers will utilize learning models, such as, the 5-E (engage, explore, explain, elaborate, and evaluate) and the cooperative learning models. The program design will utilize math teachers as “team leaders” in their campuses as they will serve as instructional math coaches in order to accomplish the objectives of the proposed project. The 12 math coaches, 4 per high school campus, will train all math teachers, approximately 60 teachers, as part of staff development activities. The math coaches will also provide training to teachers having 1-3 years experience. The project objectives can be summarized as follows: 1) To enhance teacher understanding of mathematical knowledge according to the Texas Essential Knowledge and Skills; 2) To increase teacher understanding of important math concepts and better understand student thinking about those concepts; and 3) To assist teachers in utilizing appropriate instructional strategies and developing techniques to support all students. This project will address the needs of teachers who teach at-risk students by connecting teachers with a combination of professional development services and activities that reflect teacher needs identified in the needs assessment.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Plainview ISD	1	.	.	1	.	.	0	0	16	16	0	0	2	2	0	0	3	3	Education Service Center Region 17	PISD contracted with ESC17 math specialist for the ASP. Prior to the start of school she assisted with student data analysis and staff development. (GeoGebra, SimCal, TMSDS). During the referenced period of time the ASP has been on campus six times with a focus on classroom evaluations using 360 Degree Walk through, assisting individual teachers, meeting with the instructional coaches, and working with campus administrators. She has participated in vertical alignment meetings and contributed instructional strategies. The 16 teachers received training on the use of interwrite boards (mimios) they received which has resulted in increased student engagement. The coaches received training in 360 Degree Walk through and also do observations. They work closely with teachers to provide support with software and programs. They provide a needed "follow-through" with expectations and suggestions for the math teachers.
Runge ISD	1	.	.	.	.	.	0	0	2	2	0	0	0	0	0	0	1	1	Education Service Center Region 3	The MIC Program has provided the 2 math teachers with staff development. Trainings were held on campus and well as at Region 3 ESC. The Approved Service Providers were able to conduct model teaching, teacher observations, and data analysis with the classroom teachers. Teachers began using CSCOPE curriculum for all grade levels 7-12 this school year to align curriculum. Teachers have also had training in interactive technology and have implemented technology within the curriculum.
San Antonio Independent School District	5	1	.	.	.	.	2	0	7	9	2	0	5	7	0	0	0	0	Texas State University	The MIC project is a program to improve the effectiveness of the Math teachers in this district through the use of coaches. The coaches have received intense training in both Math and Science content along with Instructional Strategies. They have also received monthly professional development via the ASP. Each year they have attended professional conferences to increase their professional growth. The coaches have met with the teachers weekly to increase teacher effectiveness through observation and debriefing.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
San Benito CISD	1	.	1	.	.	.	0	0	27	27	0	0	2	2	0	0	2	2	Education Service Center Region 1	Teachers were introduced to the MIC project at the beginning of the academic year with a one day workshop. Since then, 9th grade teachers have been meeting on a weekly basis to discuss curriculum content and learning/ teaching strategies. The 10th-12th grade teachers meet every other week to participate in the same activities. Coaches provide and manage resources, mentor, analyze and report data, and review assessments.
San Felipe Del Rio CISD	.	2	.	.	.	.	28	0	0	28	3	0	0	3	4	0	0	4	Education Service Center Region 15	The district has created positions for three instructional coaches within the district. There is a coach for each grade level (6-7-8). With the addition of personnel, the teachers have received more individual assistance. There are also more opportunities for teachers to meet in vertical teams to plan and discuss the implementation of lessons. The district also changed the class periods to 75 minutes to provide more time for instruction. The addition of time to the class schedule provides more opportunities for all students to receive a higher level of instruction.
School of Excellence in Education	1	.	1	1	.	2	0	11	8	19	0	0	0	0	0	4	1	5	Education Service Center Region 20	Teachers have participated in the summer institute which included mathematics content in problem solving, algebraic thinking, and geometry with a heavy use of technology. They have also attended 5 Saturday workshops that addressed data analysis, TEKS connections, vertical alignment, Mathematics for English Language Learners, and Assessment training. Participating teachers attend C-Scope curriculum training every 6 weeks and collaborate with peers on upcoming lessons, activities, and assessments.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Snook ISD	3	1	2	.	.	.	2	8	8	18	1	1	1	1	1	2	3	6	Education Service Center Region 13	Currently, Snook, Somerville, and Hearne ISD partner with Region 13 for provision of an external math coach. The coach is working with all five campuses and the teachers on those campuses on a rotating basis. Teachers participated in a three day summer institute in August 2009. Teachers have taken a content pre-test. Teachers will have the opportunity for three additional days of professional development plus costs to defray their attendance at CAMT are being provided. Dr. Gerri Maxwell assisted in facilitating the professional learning community component at the August institute and continues to facilitate the community among the participants, administrators, and external coach.
Star ISD	.	.	.	.	1	.	2	0	1	3	0	0	0	0	0	0	1	1	Education Service Center Region 12	Teachers have attended 2 math program trainings at the ESC 12.
Tyler ISD	2	6	.	2	.	.	8	0	27	35	2	0	5	7	6	0	3	9	East Texas STEM Center (University of Texas at Tyler)	Tyler ISD's focus in on our Algebra I instruction in the classrooms. The teachers are participating in staff development opportunities provided by the grant and a core of math leaders from each campus are participating in a math coaching academy held throughout the year.
Valley View ISD	1	.	.	.	.	.	0	0	10	10	0	0	0	0	0	0	0	0	Education Service Center Region 1	HS Math teachers were project participants for MIC. They received staff development at the Region ESC. Teachers were visited by trainers and provided feedback. Teachers also participated in book studies.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
Waco ISD	.	5	.	.	.	.	11	0	0	11	2	0	0	2	5	0	0	5	Education Service Center Region 12	WISD partnered with Region 12 ESC to provide staff development and coaching to 7th and 8th grade math teachers. Teachers receive training in math content, math instructional strategies, and technology integration. Region 12 math content and instructional specialists periodically observe and conference with these teachers about their instruction. They are modeling the coaching strategies which the teachers will receive from them. Teachers will receive five days of raining through the Region 12 Math Coaching Camp in the summer of 2010.
Weslaco ISD	2	.	.	.	.	.	0	0	40	40	0	0	3	3	0	0	4	4	Rice University Mathematics Department	Teachers have continued to receive extensive training from Rice University that includes, but is not limited to observations, continuous progress monitoring feedback from Rice staff and teachers at both high schools. Our mathematics coaches at each campus this second year are being trained by Rice staff to continue following the observational protocol so that they can conduct the same sort of observations with math teachers once our grant funding is over. Teachers have implemented new curriculum recommendations from Rice staff, and some have successfully changed their classrooms to reflect more student-centered learning in their classrooms. Both our math coaches have taken over creating benchmarks for the district which is the progress monitoring tool they utilize for student performance.
West Oso ISD	1	.	1	.	.	.	0	5	6	11	0	2	2	4	0	2	2	4	Texas A&M University - Corpus Christi	Staff development, coaching by Texas A&M University Faculty, tutoring for students, math camps for students, selection of math software.

Table K.1
MIC Cycle 1 and Cycle 2 Grantee Characteristics

School District Name	Number of High Schools	Number of Middle Schools	Number of Junior High Schools	Alternative Schools	K-12 Schools	Elementary Schools	# of Participating Middle School Teachers	# of Participating Junior High School Teachers	# of Participating High School Teachers	Total Number of Participating Teachers	Number of Participating Middle School Coaches	Number of Participating Junior High School Coaches	Number of Participating High School Coaches	Total Number of Participating Coaches	Number of Participating Middle School Admin Staff	Number of Junior High School Staff	Number of High School Staff	Total Number of Admin Staff	Approved Service Provider	Program Description from Each Grantee
West Sabine ISD	1	.	.	.	.	.	0	2	3	5	0	0	0	0	0	0	1	1	Texas A&M University - College Station	Increase math teacher effectiveness through staff development. Teachers working with Texas A&M math Department in TAKS analysis, curriculum, and content.
Winfree Academy Charter Schools	6	.	.	.	.	.	0	0	14	14	0	0	12	12	0	0	9	9	Education Service Center Region 20	The MIC project implemented at Winfree Academy Charter Schools provides mathematics instruction and coaching to all math teachers, all campus principals, and selected administrative staff through our ASP, Region 20. Kimberly Faircloth, Mathematics Coordinator, Region 20 ESC, has provided two 3-day campus visits during this reporting period. During those visits, Ms. Faircloth, along with Brandy Schott, MIC Project Manager, evaluate teachers on selected campuses delivering feedback and coaching, as well as an identified professional development session on the last day with the entire math department included. Ed Vara and Tori Austin, Region 20 ESC, provide administrative coaching training, and have visited once during the reporting period.

Table K.2. Number of MIC Cycle 1 Grantee Participating Schools by School Type

Grantee	# Middle Schools	# High Schools	# Other Schools	Total # of Schools
ALICE ISD	1	1	0	**2**
BEEVILLE ISD	1	2	0	**3**
CLARKSVILLE ISD	1	1	0	**2**
COVINGTON ISD	0	0	1	**1**
DIBOLL ISD	1	0	1	**2**
EL PASO ISD	16	13	1	**30**
EVOLUTION ACADEMY	0	1	0	**1**
GALENA PARK ISD	5	2	0	**7**
GALVESTON ISD	2	1	1	**4**
HIDALGO ISD	1	2	0	**3**
HIGGS CARTER KING	0	0	1	**1**
HOUSTON ISD	1	1	0	**2**
IRVING INDEPENDENT SCHOOL DISTRICT	7	5	0	**12**
LA FERIA ISD	1	1	1	**3**
LA JOYA ISD	0	3	0	**3**
LA VEGA ISD	1	1	1	**3**
LA VILLA ISD	1	1	0	**2**
MANOR ISD	1	1	1	**3**
MARLIN INDEPENDENT SCHOOL DISTRICT	0	1	0	**1**
MOTLEY COUNTY	0	7	2	**9**
PHARR SAN JUAN ALAMO ISD	0	3	0	**3**
RUNGE ISD	0	1	0	**1**
SAN ANTONIO ISD	1	6	0	**7**
SAN FELIPE DEL RIO CISD	2	0	0	**2**
STAR ISD	0	0	1	**1**
VALLEY VIEW ISD	0	1	0	**1**
WESLACO ISD	0	2	0	**2**
WEST OSO ISD	1	1	0	**2**
WINFREE ACADEMY CHARTER SCHOOL	0	6	0	**6**
Total	**44**	**64**	**11**	**119**

Source: MIC Cycle 1 Grant Applications; Implementation Interviews
*Motley County ISD formed a Shared Services Agreement (SSA) with the following districts for their grant: Motley ISD, **Floydada ISD, Littlefield ISD, Lorenzo ISD, Morton ISD, O'Donnell ISD, Olton ISD, Paducah ISD, Seagraves ISD, and Roosevelt ISD.**

Table K.3. Number of MIC Cycle 2 Grantee Participating Schools by School Type

Grantee	# Middle Schools	# High Schools	# Other Schools	Total # of Schools
ABILENE ISD	0	4	1	5
ATHENS ISD	1	1	0	2
BEN BOLT-PALITO BLANCO ISD	1	1	0	2
CHAPEL HILL ISD	1	1	0	2
CORSICANA ISD	1	1	0	2
DAWSON ISD[a]	0	1	3	4
DEL VALLE ISD	2	1	1	4
EAST CENTRAL ISD	1	1	0	2
ELGIN ISD	1	1	0	2
EVERMAN ISD	2	1	0	3
GLADEWATER ISD	1	1	0	2
GOOSE CREEK CISD	0	3	0	3
HARMONY SCIENCE ACADEMY	0	0	3	3
HILLSBORO ISD	1	1	0	2
HOUSTON CAN ACADEMY CHARTER SCHOOL	0	2	0	2
IDEA PUBLIC SCHOOLS	2	0	4	6
KINGSVILLE ISD	1	1	0	2
LAREDO ISD	4	3	0	7
MARSHALL ISD	0	1	0	1
MCALLEN ISD	5	4	1	10
MCGREGOR ISD	1	1	0	2
MERCEDES ISD	1	1	1	3
MOUNT PLEASANT ISD	1	1	0	2
PASADENA ISD	10	5	0	15
PATTON SPRINGS[b]	2	2	1	5
PLAINVIEW ISD	0	2	0	2
SAN BENITO CISD	0	2	0	2
SCHOOL OF EXCELLENCE IN EDUCATION	1	2	2	5
SNOOK ISD[c]	1	1	1	3
SOMERVILLE ISD	1	1	0	2
TYLER ISD	6	2	0	8
WACO ISD	5	0	1	6
WEST SABINE ISD	0	1	0	1
Total	**53**	**50**	**19**	**122**

[a] Dawson ISD formed a Shared Services Agreement (SSA) with the following districts for their grant: Kopperl ISD and Malone ISD
[b] Patton Springs ISD formed a Shared Services Agreement (SSA) with the following districts for their grant: Crosbyton ISD and Ralls ISD
[c] Snook ISD formed a Shared Services Agreement (SSA) with Hearne ISD for their grant.

Table K.4. Number of MIC Cycle 1 Grantee Schools per ESC by School Type

ESC	# Middle Schools	# High Schools	# Other Schools	Total # of Schools	% of All Schools
ESC 1	3	13	1	17	14%
ESC 2	3	4	0	7	6%
ESC 3	0	1	0	1	1%
ESC 4	8	4	0	12	10%
ESC 5	0	0	0	0	0%
ESC 6	0	1	0	1	1%
ESC 7	1	0	1	2	2%
ESC 8	1	1	0	2	2%
ESC 9	0	0	0	0	0%
ESC 10	7	12	0	19	16%
ESC 11	0	0	0	0	0%
ESC 12	1	2	3	6	5%
ESC 13	2	1	0	3	3%
ESC 14	0	0	0	0	0%
ESC 15	2	1	0	3	3%
ESC 16	0	0	0	0	0%
ESC 17	0	6	2	8	7%
ESC 18	0	0	0	0	0%
ESC 19	16	13	1	30	25%
ESC 20	1	6	1	8	7%
Total	**45**	**65**	**9**	**119**	**100%**

Source: Public Education Information Management Systems (PEIMS), 2007–08

Table K.5. Number of MIC Cycle 2 Grantee Schools per ESC Region by School Type

ESC	# Middle Schools	# High Schools	# Other Schools	Total # of Schools	% of All Schools
ESC 1	12	11	5	28	23%
ESC 2	2	2	0	4	3%
ESC 3	0	0	0	0	0%
ESC 4	10	10	3	23	19%
ESC 5	0	0	0	0	0%
ESC 6	2	3	0	5	4%
ESC 7	9	7	0	16	13%
ESC 8	1	1	0	2	2%
ESC 9	0	0	0	0	0%
ESC 10	0	0	0	0	0%
ESC 11	2	1	0	3	2%
ESC 12	8	4	4	16	13%
ESC 13	3	2	1	6	5%
ESC 14	0	4	1	5	4%
ESC 15	0	0	0	0	0%
ESC 16	0	0	0	0	0%
ESC 17	2	4	1	7	6%
ESC 18	0	0	0	0	0%
ESC 19	0	0	0	0	0%
ESC 20	2	3	2	7	6%
Total	**53**	**52**	**17**	**122**	**100%**

Source: Public Education Information Management Systems (PEIMS), 2008–09

Table K.6.Professional Titles of Non-Teacher MIC Participants in Cycle 1 and Cycle 2 Schools, 2009–10

			Non-Teacher Campus Role											
			ASSISTANT PRINCIPAL	COUNSELOR	DIST INSTR PGM DIR OR EXC DIR	LIBRARIAN	OTHER CAMP PROF PERSONNEL	OTHER NON-CAMP PROF PERSONNEL	OTHR NON-INSTR DISTRICT	PRINCIPAL	TEACHER	TEACHER FACILITATOR	TEACHER SUPERVISOR	Total
CYCLES	CYCLE1	Count	3	0	1	0	69	0	6	0	3	4	0	86
		% within Cycle 1	3.5%	.0%	1.2%	.0%	80.2%	.0%	7.0%	.0%	3.5%	4.7%	.0%	100.0%
		% within Descriptive Label for Role code	100.0%	.0%	11.1%	.0%	94.5%	.0%	46.2%	.0%	60.0%	50.0%	.0%	68.3%
		% of Total	2.4%	.0%	.8%	.0%	54.8%	.0%	4.8%	.0%	2.4%	3.2%	.0%	68.3%
	CYCLE2	Count	0	1	8	1	4	4	7	6	2	4	3	40
		% within Cycle 2	.0%	2.5%	20.0%	2.5%	10.0%	10.0%	17.5%	15.0%	5.0%	10.0%	7.5%	100.0%
		% within Descriptive Label for Role code	.0%	100.0%	88.9%	100.0%	5.5%	100.0%	53.8%	100.0%	40.0%	50.0%	100.0%	31.7%
		% of Total	.0%	.8%	6.3%	.8%	3.2%	3.2%	5.6%	4.8%	1.6%	3.2%	2.4%	31.7%
Total		Count	3	1	9	1	73	4	13	6	5	8	3	126
		% within Cycles	2.4%	.8%	7.1%	.8%	57.9%	3.2%	10.3%	4.8%	4.0%	6.3%	2.4%	100.0%
		% within Descriptive Label for Role code	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	2.4%	.8%	7.1%	.8%	57.9%	3.2%	10.3%	4.8%	4.0%	6.3%	2.4%	100.0%

Table K.7.Percentages of Non-Teacher MIC Participants in Cycle 1 and Cycle 2 Schools, 2009–10

			Role in MIC							Total
				ASSISTANT DIRECTOR, H.S. MATHEMATICS	BOTH	COACH	PROVIDING COACHING	RECEIVING COACHING	SPECIALIST	
CYCLES	CYCLE1	Count	56	1	2	21	1	2	3	86
		% within Cycle 1	65.1%	1.2%	2.3%	24.4%	1.2%	2.3%	3.5%	100.0%
		% within Role in MIC	96.6%	100.0%	9.5%	100.0%	14.3%	13.3%	100.0%	68.3%
		% of Total	44.4%	.8%	1.6%	16.7%	.8%	1.6%	2.4%	68.3%
	CYCLE2	Count	2	0	19	0	6	13	0	40
		% within Cycle 2	5.0%	.0%	47.5%	.0%	15.0%	32.5%	.0%	100.0%
		% within Role in MIC	3.4%	.0%	90.5%	.0%	85.7%	86.7%	.0%	31.7%
		% of Total	1.6%	.0%	15.1%	.0%	4.8%	10.3%	.0%	31.7%
Total		Count	58	1	21	21	7	15	3	126
		% within Cycles	46.0%	.8%	16.7%	16.7%	5.6%	11.9%	2.4%	100.0%
		% within Role in MIC	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	46.0%	.8%	16.7%	16.7%	5.6%	11.9%	2.4%	100.0%

Appendix L: Additional Detailed Information on MIC Implementation

Table L.1

Baseline Characteristics of MIC Cycle 1 Grantee Districts/Charter Schools, 2007–08

District Baseline Characteristics	Middle Schools	High Schools	Multi-Grade Schools
At-Risk	55%	71%	61%
Economically Disadvantaged	74%	66%	73%
White	13%	18%	38%
African American	12%	10%	9%
Hispanic	73%	71%	51%
Enrolled in Limited English Proficiency	18%	14%	10%
Enrolled in Career & Technology Education	21%	66%	30%
Mobility	18%	32%	35%
Annual Dropout Rate (Grades 9-12)	N/A [a]	5%	1 %
Completion Rate (High School or Other School Graduates)	N/A [a]	65%	95%
Met TAKS Standard in Reading	89%	82%	88%
Met TAKS Standard in Math	77%	55%	72%
Met TAKS Standard in Science	60%	59%	57%

Source: Public Education Information Management Systems (PEIMS), 2007–08
[a] Data not applicable to this subgroup

Table L.2

Baseline Characteristics of MIC Cycle 2 Grantee Districts/Charter Schools, 2008–09

District Baseline Characteristics	Middle Schools	High Schools	Multi-Grade Schools
At-Risk	55%	62%	40%
Economically Disadvantaged	76%	64%	62%
White	16%	25 %	26%
African American	16%	17%	10%
Hispanic	66%	57%	58%
Enrolled in Limited English Proficiency	16%	8%	8%
Enrolled in Career & Technology Education	16%	67%	13%
Mobility	19%	27%	34%
Annual Dropout Rate (Grades 9-12)	N/A [a]	4%	1%
Completion Rate (High School or Other School Graduates)	N/A [a]	86%	66%
Met TAKS Standard in Reading	87%	88%	85%
Met TAKS Standard in Math	77%	65%	67%
Met TAKS Standard in Science	62%	63%	67%

Source: Public Education Information Management Systems (PEIMS), 2008–09
[a] Data not applicable to this subgroup

Characteristics of Cycle 1 teachers served through MIC

Table L.3 provides an overview of the total number of hours participating Cycle 1 teachers spent in PD activities and coaching activities as part of the MIC program during the fall and spring semesters of the 2008–09 school year.

Table L.3

Number of Hours Cycle 1 Teachers Spent in MIC Professional Development and MIC Coaching Activities

Hours	N Hours of MIC Professional Development	% Hours of MIC Professional Development	N Hours of MIC Coaching	% Hours of MIC Coaching
0 hours	39	5.8%	31	4.6%
1-10 hours	49	7.3%	308	45.8%
11-20 hours	75	11.2%	160	23.8%
21-30 hours	128	19.0%	103	15.3%
31-40 hours	75	11.2%	15	2.2%
41-50 hours	91	13.5%	11	1.7%
51+ hours	215	32.0%	44	6.6%
Total	672	100.0%	672	100.0%

Source: Teacher Participant Data from Grantee Uploads, Cycle 1, Fall 2008/Spring 2009

NOTE: Teachers had to have hours in either MIC PD or MIC coaching to be considered an MIC participant. There were no instances where teachers had participated in zero hours of MIC PD and zero hours of MIC coaching.

Table L.4
Other Barriers to Implementation

Barrier	N
Administration barriers	5
Data analysis	4
Lack of necessary staff	4
Challenges associated with being a first year teacher or coach	2
Delays in receiving data	2
Difficulty translating the training activities to the classroom	2
District scope and sequence were too fast-paced	2
Hurricane Ike	2
Personal/family needs	2
Too much emphasis on TAKS	2
Addition of another class period is stressful for students	1
Assessment measures not related to classroom instruction	1
Being the only math teacher on campus is isolating	1
Campus is isolated from other campuses	1
Change in math coach	1
Changes in the district	1
Coach has no authority over teachers	1
Communicating the unique needs of the student population	1
Communication between home campus and alternative setting	1
Curriculum too advanced for students	1
Difficulties with a former business manager	1
Difficulty finding substitutes to cover classes while in meetings	1
Frequent changes to program implementation	1
Inconsistent implementation across the district	1
Language barriers	1
Math department does not have a shared vision	1
Math teachers have different ideas and teaching philosophies	1
More accountability of teachers using student assessment data	1
Needed more classroom observations	1
Needed more training hours	1
Not all teachers held to the same requirements	1
Not all teachers participated	1
Reduced class time	1
Required unnecessary work from teachers	1
Teacher turn-over necessitates repetition of training	1
Training topics were not useful	1
Training would have been more effective if instructional strategies were practiced with students during training	1
Unsupportive math coach	1
Working in vertical teams	1
TOTAL	**55**

Source: MIC Teacher Survey, 2009–10

Appendix M: Additional Tables & Figures for MIC Teacher Analyses

2010 Teacher and Coach Survey Response Rates

Based on the fall 2009 upload data, 1909 MIC participants were identified as either receiving coaching, providing coaching or both. Participants identified as only receiving coaching were administered the Teacher survey, while those identified as only providing coaching were administered the Coach survey. Due the variability in the types of MIC programs that the grantees could implement, some participants could both provide and receive coaching. These participants were identified as being "both" teachers and coaches, and were offered both the teacher and coach surveys with instructions to complete the one that they felt were most appropriate. Due to this complexity response rates were calculated for each group and are presented in Table M-1.

Table M.1

2010 Teacher and Coach Survey Response Rates

Response Rates
• Rate of Identified Receivers who Took Teacher Survey – 44.3%
• Rate of Identified Coaches who Took Coach Survey – 55.2%
• Rate of "Both" who Took Teacher Survey – 22.1%
• Rate of "Both" who Took Coach Survey – 16.9%

Source: 2009–10 MIC Teacher and Coach Surveys, Fall 2009 Cycle 1 and Cycle 2 Uploads

Cycle 1 Teachers Perceptions of the Effect of the MIC Program, 2008–09

Perceived Effects of MIC on Teacher Effectiveness, 2008–09

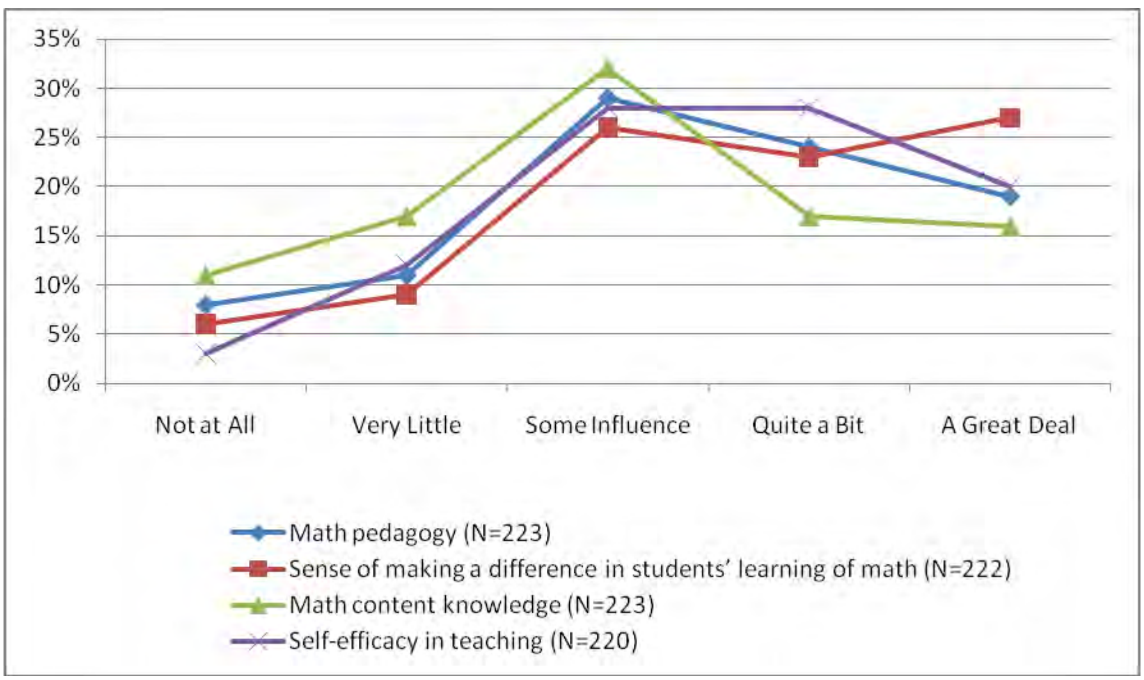
Table M.2.

Perceived Effects of MIC Program Activities on Teacher Effectiveness Characteristics

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment
Math pedagogy (N=223)	8%	11%	29%	24%	19%	9%
Sense of making a difference in students' learning of math (N=222)	6%	9%	26%	23%	27%	10%
Math content knowledge (N=223)	11%	17%	32%	17%	16%	8%
Self-efficacy in teaching (N=220)	3%	12%	28%	28%	20%	10%

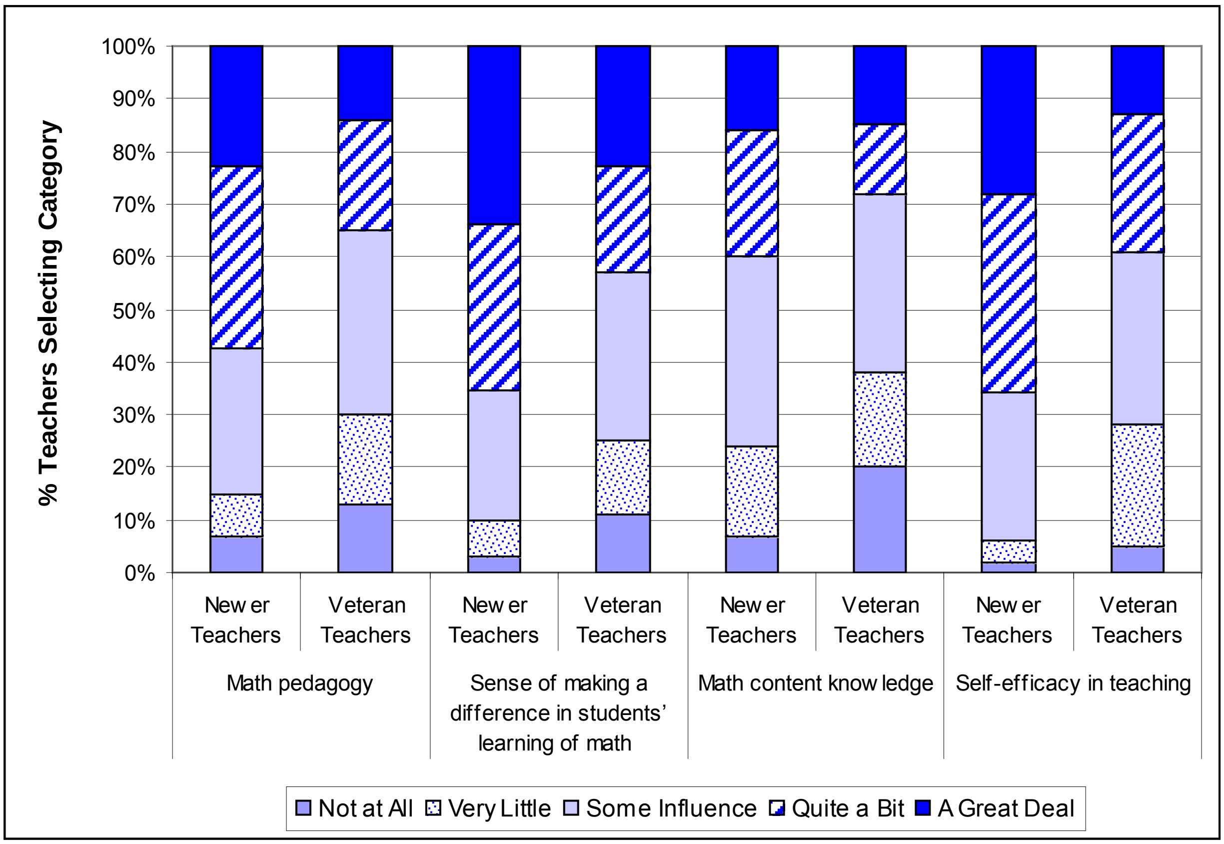
Source: MIC Teacher Participant Survey, 2008–09

Figure M.1. Cycle 1 Teacher Participants' Rating of MIC Program Influence on Teacher Effectiveness Characteristics, 2008–09



Source: MIC Cycle 1 Teacher Participant Survey;

Figure M.2: Cycle 1 Newer and Veteran Teacher Perceptions of the MIC Program on Teacher Effectiveness, 2008–09



Source: MIC Cycle 1 Teacher Participant Survey; PEIMS

Relationship between Teacher Background, Participation in MIC Professional Development Activities, and Teacher Perceptions, 2008–09

The relationship between teacher background characteristics and participation in MIC activities, and how that participation was associated with teachers' feelings about their pedagogical approaches and abilities, was investigated. Correlations were calculated among the teacher background characteristics (years of teaching experience, highest degree attained, and math certification), teacher participation in MIC activities (PD and coaching), and perceptions of teacher effectiveness (math pedagogy, sense of making a difference in students' learning of math, math content knowledge, and self-efficacy in teaching).

Relationship between Teacher Background and Hours of Participation in MIC Professional Development Activities, 2008–09

The relationship between three teacher background variables—highest degree attained, years of teaching experience, and math certification—and the number of hours of professional development were explored. Results included only one statistically significant relationship. Teachers with graduate degrees (master's degree or higher) tended to participate in more hours of MIC PD than teachers with bachelor degrees or below (r=.154, $p < .05$). Of the teachers with graduate degrees, 55% had 51 or more hours of PD, compared to 36% of teachers without graduate degrees. This could be due to the use of peer-to-peer coaching models where district coaches who were both receiving and providing MIC program services had higher levels of education. Neither of the other two teacher background characteristics—whether teachers were certified in mathematics nor their number of years' experience—were significantly related to level of participation in PD.

Relationship between Teacher Background and Hours of Participation in MIC Coaching, 2008–09

The relationship between the three teacher background variables and the number of hours of MIC coaching was examined. There were no significant relationships between years of teaching experience, highest degree attained, certification in math, and hours of MIC coaching. This is probably because coaching seemed to be provided more uniformly to teachers regardless of their background characteristics. In addition, the teachers participating in peer-to-peer coaching would also be providing and receiving coaching at about the same levels.

Relationship between Teacher Hours of Participation in MIC Professional Development and Coaching Activities and Teacher Perceptions, 2008–09

The relationships between teachers' perceptions of the program's influence on their teaching effectiveness (math pedagogy, sense that they could make a difference in students' learning of math, math content knowledge, and self-efficacy in teaching) and amount of time spent in MIC grant activities (PD and coaching) were investigated.

For time spent in coaching activities, results indicate that teachers who spent more time in coaching activities tended to rate that the program positively influenced their effectiveness in math pedagogy, or math instructional practices (r=.200, p<.01). This is likely due to the fact that math instructional practices were a focus of most coaching activities. Teachers who participated in more MIC coaching hours also tended to perceive that the program improved their beliefs about their teaching ability (self-efficacy) (r=.196, p<.01), math content knowledge (r=.277, p<.01), and their sense that they could make a difference in students' learning of math (r=.190, p<.05). Overall, this is not surprising to find a positive relationship between the number of hours teachers spent in coaching activities and their ratings of how influential the MIC program had on their teaching effectiveness. The one surprise might be the positive relationship between hours of coaching and math content knowledge, because this was not a stated focus of the coaching activities according to grant coordinators.

In contrast to the relationship between coaching and teacher effectiveness, teachers who spent more time in PD activities were less likely to feel that the program improved their self-efficacy in mathematics instruction (r=-.212, p<.01). This relationship between PD hours and self-efficacy could be due to the content of the PD activities, where the focus was on content knowledge and developing teachers ability to create lessons that are more engaging for students. Teachers who spent more time in PD activities may have been exposed to some ideas that made them feel less effective in the classroom. This is worth exploring further in future analyses. There were no statistically significant relationships between spending more time in PD activities and perceptions of the program's influence on other teacher effectiveness characteristics.

Cycle 1 Teachers Perceptions of the Effect of MIC on Student Outcomes, 2009–10

Table M.3

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Increased Student Achievement in Mathematics Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	17 (7%)	32 (13%)	101 (40%)	59 (23%)	32 (13%)	11 (4%)	252 (100%)
Years of Math Teaching Experience							
New Teacher	2 (5%)	3 (7%)	13 (30%)	17 (40%)	7 (16%)	1 (2%)	43 (100%)
Veteran Teacher	5 (9%)	11 (21%)	21 (40%)	9 (17%)	6 (11%)	1 (2%)	53 (100%)
Degree							
Bachelor's or below	13 (7%)	25 (13%)	77 (41%)	42 (22%)	22 (12%)	10 (5%)	189 (100%)
Master's or higher	4 (7%)	7 (12%)	23 (38%)	16 (26%)	10 (16%)	1 (2%)	61 (100%)
Years of Participation in the MIC Program							
1 year	8 (8%)	10 (10%)	39 (37%)	27 (26%)	16 (15%)	4 (4%)	104 (100%)
2 years	8 (6%)	22 (16%)	59 (42%)	30 (21%)	16 (11%)	6 (4%)	141 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.4

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Increased Student Achievement Overall Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	19 (8%)	35 (14%)	96 (38%)	54 (22%)	33 (13%)	14 (6%)	251 (100%)
Years of Math Teaching Experience							
New Teacher	2 (5%)	4 (9%)	14 (33%)	13 (30%)	8 (19%)	2 (5%)	43 (100%)
Veteran Teacher	6 (11%)	12 (23%)	18 (34%)	9 (17%)	6 (11%)	2 (4%)	53 (100%)
Degree							
Bachelor's or below	15 (8%)	26 (14%)	70 (37%)	41 (22%)	23 (12%)	13 (7%)	188 (100%)
Master's or higher	4 (7%)	9 (15%)	25 (41%)	12 (20%)	10 (16%)	1 (2%)	61 (100%)
Years of Participation in the MIC Program							
1 year	7 (7%)	10 (10%)	41 (40%)	20 (19%)	19 (18%)	6 (6%)	103 (100%)
2 years	11 (8%)	25 (18%)	52 (37%)	32 (23%)	14 (10%)	7 (5%)	141 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009 – 2010

Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.5

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Lowered Dropout Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	36 (14%)	35 (14%)	67 (27%)	34 (14%)	26 (10%)	54 (21%)	252 (100%)
Years of Math Teaching Experience							
New Teacher	6 (14%)	3 (7%)	9 (21%)	9 (21%)	5 (11%)	12 (27%)	44 (100%)
Veteran Teacher	10 (19%)	11 (21%)	10 (19%)	6 (11%)	5 (9%)	11 (21%)	53 (100%)
Degree							
Bachelor's or below	29 (15%)	27 (14%)	51 (27%)	23 (12%)	18 (10%)	41 (22%)	189 (100%)
Master's or higher	7 (12%)	8 (13%)	15 (25%)	10 (16%)	8 (13%)	13 (21%)	61 (100%)
Years of Participation in the MIC Program							
1 year	14 (14%)	11 (11%)	28 (27%)	18 (17%)	13 (13%)	20 (19%)	104 (100%)
2 years	21 (15%)	33 (14%)	66 (27%)	33 (14%)	26 (11%)	52 (21%)	245 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.6

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Lowered Dropout Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	33 (13%)	33 (13%)	66 (27%)	28 (11%)	28 (11%)	61 (25%)	249 (100%)
Years of Math Teaching Experience							
New Teacher	4 (9%)	4 (9%)	10 (23%)	10 (23%)	5 (11%)	11 (25%)	44 (100%)
Veteran Teacher	10 (19%)	9 (17%)	11 (21%)	5 (9%)	6 (11%)	12 (23%)	53 (100%)
Degree							
Bachelor's or below	26 (14%)	25 (13%)	50 (27%)	21 (11%)	19 (10%)	46 (25%)	187 (100%)
Master's or higher	7 (12%)	8 (13%)	15 (25%)	6 (10%)	9 (15%)	15 (25%)	60 (100%)
Years of Participation in the MIC Program							
1 year	12 (12%)	10 (10%)	28 (27%)	12 (12%)	15 (15%)	25 (24%)	102 (100%)
2 years	20 (14%)	21 (15%)	37 (26%)	15 (11%)	13 (9%)	34 (24%)	140 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.7

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Increased Grade Promotion Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	29 (12%)	30 (12%)	84 (34%)	48 (19%)	29 (12%)	31 (12%)	251 (100%)
Years of Math Teaching Experience							
New Teacher	3 (7%)	5 (11%)	10 (23%)	12 (27%)	6 (14%)	8 (18%)	44 (100%)
Veteran Teacher	10 (19%)	7 (14%)	15 (29%)	9 (17%)	6 (12%)	5 (10%)	52 (100%)
Degree							
Bachelor's or below	24 (13%)	24 (13%)	55 (29%)	38 (20%)	20 (11%)	27 (14%)	188 (100%)
Master's or higher	5 (8%)	6 (10%)	28 (46%)	9 (15%)	9 (15%)	4 (7%)	61 (100%)
Years of Participation in the MIC Program							
1 year	11 (11%)	10 (10%)	34 (33%)	20 (19%)	15 (14%)	14 (13%)	104 (100%)
2 years	17 (12%)	18 (13%)	49 (35%)	27 (19%)	14 (10%)	15 (11%)	140 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.8

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Increased Mathematics Course Completion Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	24 (10%)	34 (14%)	79 (32%)	49 (20%)	31 (12%)	34 (14%)	251 (100%)
Years of Math Teaching Experience							
New Teacher	2 (5%)	4 (9%)	13 (30%)	11 (26%)	7 (16%)	6 (14%)	43 (100%)
Veteran Teacher	8 (15%)	12 (23%)	10 (19%)	8 (15%)	7 (13%)	8 (15%)	53 (100%)
Degree							
Bachelor's or below	19 (10%)	27 (14%)	56 (30%)	40 (21%)	21 (11%)	25 (13%)	188 (100%)
Master's or higher	5 (8%)	7 (12%)	22 (36%)	8 (13%)	10 (16%)	9 (15%)	61 (100%)
Years of Participation in the MIC Program							
1 year	8 (8%)	13 (13%)	34 (33%)	21 (20%)	15 (15%)	12 (12%)	103 (100%)
2 years	15 (11%)	19 (14%)	44 (31%)	27 (19%)	16 (11%)	20 (14%)	141 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.9

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Increased Course Completion Rates Overall Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	25 (10%)	32 (13%)	71 (29%)	47 (19%)	30 (12%)	44 (18%)	249 (100%)
Years of Math Teaching Experience							
New Teacher	3 (7%)	5 (11%)	10 (23%)	11 (25%)	6 (14%)	9 (21%)	44 (100%)
Veteran Teacher	8 (15%)	10 (19%)	8 (15%)	11 (21%)	6 (11%)	10 (19%)	53 (100%)
Degree							
Bachelor's or below	20 (11%)	25 (13%)	53 (29%)	34 (18%)	21 (11%)	33 (18%)	186 (100%)
Master's or higher	5 (8%)	7 (12%)	17 (28%)	12 (20%)	9 (15%)	11 (18%)	61 (100%)
Years of Participation in the MIC Program							
1 year	9 (9%)	11 (11%)	30 (29%)	20 (20%)	15 (15%)	17 (17%)	102 (100%)
2 years	15 (11%)	19 (14%)	40 (29%)	26 (19%)	15 (11%)	25 (18%)	140 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.10

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Increased SAT/ACT Mathematics Scores Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	32 (13%)	33 (13%)	56 (22%)	25 (10%)	19 (8%)	85 (34%)	250 (100%)
Years of Math Teaching Experience							
New Teacher	5 (12%)	4 (9%)	8 (19%)	5 (12%)	5 (12%)	16 (37%)	43 (100%)
Veteran Teacher	8 (15%)	8 (15%)	9 (17%)	6 (12%)	4 (8%)	17 (33%)	52 (100%)
Degree							
Bachelor's or below	23 (12%)	27 (14%)	44 (24%)	16 (9%)	13 (7%)	64 (34%)	187 (100%)
Master's or higher	9 (15%)	6 (10%)	11 (18%)	8 (13%)	6 (10%)	21 (34%)	61 (100%)
Years of Participation in the MIC Program							
1 year	12 (12%)	9 (9%)	29 (28%)	8 (8%)	11 (11%)	34 (33%)	103 (100%)
2 years	19 (14%)	22 (16%)	26 (19%)	16 (11%)	8 (6%)	49 (35%)	140 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.11

Teacher Ratings of the Extent to which MIC Program Participation Increased SAT/ACT Overall Scores Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	32 (13%)	36 (15%)	52 (21%)	23 (9%)	23 (9%)	81 (33%)	247 (100%)
Years of Math Teaching Experience							
New Teacher	5 (12%)	5 (12%)	7 (16%)	4 (9%)	6 (14%)	16 (37%)	43 (100%)
Veteran Teacher	8 (16%)	8 (16%)	9 (18%)	6 (12%)	4 (8%)	16 (31%)	51 (100%)
Degree							
Bachelor's or below	24 (13%)	29 (16%)	40 (22%)	14 (8%)	17 (9%)	61 (33%)	185 (100%)
Master's or higher	8 (13%)	7 (12%)	11 (18%)	8 (13%)	6 (10%)	20 (33%)	60 (100%)
Years of Participation in the MIC Program							
1 year	11 (11%)	11 (11%)	27 (26%)	6 (6%)	14 (14%)	34 (33%)	103 (100%)
2 years	20 (15%)	23 (17%)	24 (18%)	16 (12%)	9 (7%)	45 (33%)	137 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Note: Newer teachers were those with 1 year or less of math teaching experience. Veteran teachers were those with 13 years or more of math experience.

Table M.12

Cycle 1 Percentage of Teachers Ratings by Extent to which MIC Program Participation Improved Their Beliefs about Teaching Mathematics, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	30 (12%)	30 (12%)	85 (34%)	42 (17%)	48 (19%)	15 (6%)	250 (100%)
Years of Math Teaching Experience[a]							
New Teacher	5 (12%)	4 (9%)	14 (33%)	8 (19%)	10 (23%)	2 (5%)	43 (100%)
Mid-Career Teacher	16 (11%)	16 (11%)	52 (34%)	27 (18%)	30 (20%)	10 (7%)	151 (100%)
Veteran Teacher	8 (15%)	9 (17%)	18 (35%)	6 (12%)	8 (15%)	3 (6%)	52 (100%)
Degree							
Bachelor's or below	22 (12%)	24 (13%)	62 (33%)	32 (17%)	33 (18%)	14 (8%)	187 (100%)
Master's or higher	8 (13%)	6 (10%)	22 (36%)	10 (16%)	14 (23%)	1 (2%)	61 (100%)
Years of Participation in the MIC Program							
1 year	11 (11%)	12 (12%)	41 (39%)	13 (13%)	23 (22%)	4 (4%)	104 (100%)
2 years	18 (13%)	17 (12%)	42 (30%)	27 (19%)	25 (18%)	10 (7%)	139 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.13

Cycle 1 Percentage of Teachers Ratings of the Extent to which MIC Program Participation Improved Their Sense that They Can Make a Difference in Their Students' Learning of Mathematics, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	26 (10%)	31 (12%)	70 (28%)	59 (24%)	53 (21%)	11 (4%)	250 (100%)
Years of Math Teaching Experience							
New Teacher	3 (7%)	6 (14%)	9 (21%)	12 (28%)	12 (28%)	1 (2%)	43 (100%)
Mid-Career Teacher	15 (10%)	15 (10%)	47 (31%)	35 (23%)	30 (20%)	9 (6%)	151 (100%)
Veteran Teacher	7 (14%)	9 (17%)	13 (25%)	11 (21%)	11 (21%)	1 (2%)	52 (100%)
Degree							
Bachelor's or below	19 (10%)	25 (13%)	48 (26%)	48 (26%)	37 (20%)	10 (5%)	187 (100%)
Master's or higher	7 (12%)	6 (10%)	21 (34%)	10 (16%)	16 (26%)	1 (2%)	61 (100%)
Years of Participation in the MIC Program							
1 year	8 (8%)	17 (16%)	26 (25%)	24 (23%)	25 (24%)	4 (4%)	104 (100%)
2 years	17 (12%)	13 (9%)	42 (30%)	33 (24%)	28 (20%)	6 (4%)	139 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.14

Cycle 1 Percentage of Teachers Ratings of the Extent to which MIC Program Participation Improved Their Mathematics Content Knowledge, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	35 (14%)	40 (16%)	78 (31%)	47 (19%)	37 (15%)	12 (5%)	249 (100%)
Years of Math Teaching Experience							
New Teacher	6 (14%)	6 (14%)	9 (21%)	13 (30%)	8 (19%)	1 (2%)	43 (100%)
Mid-Career Teacher	17 (11%)	22 (15%)	55 (37%)	25 (17%)	21 (14%)	10 (7%)	150 (100%)
Veteran Teacher	11 (21%)	11 (21%)	13 (25%)	8 (15%)	8 (15%)	1 (2%)	52 (100%)
Degree							
Bachelor's or below	26 (14%)	28 (15%)	58 (31%)	36 (19%)	27 (15%)	11 (6%)	186 (100%)
Master's or higher	9 (15%)	12 (20%)	19 (31%)	10 (16%)	10 (16%)	1 (2%)	61 (100%)
Years of Participation in the MIC Program							
1 year	15 (14%)	18 (17%)	32 (31%)	14 (14%)	21 (20%)	4 (4%)	104 (100%)
2 years	19 (14%)	21 (15%)	44 (32%)	31 (23%)	16 (12%)	7 (5%)	138 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.15

Cycle 1 Percentage of Teachers Ratings of the Extent to which MIC Program Participation Improved Their Ability to Teach Math, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	26 (10%)	26 (10%)	80 (32%)	55 (22%)	52 (21%)	11 (5%)	250 (100%)
Years of Math Teaching Experience							
New Teacher	3 (7%)	1 (2%)	13 (30%)	14 (33%)	11 (26%)	1 (2%)	43 (100%)
Mid-Career Teacher	14 9%	16 11%	53 35%	27 (18%)	32 (21%)	9 (6%)	151 (100%)
Veteran Teacher	8 (15%)	8 (15%)	13 (25%)	13 (25%)	9 (17%)	1 (2%)	52 (100%)
Degree							
Bachelor's or below	18 (10%)	22 (12%)	58 (31%)	43 (23%)	36 (19%)	10 (5%)	187 (100%)
Master's or higher	8 (13%)	4 (7%)	21 (34%)	12 (20%)	15 (25%)	1 (2%)	61 (100%)
Years of Participation in the MIC Program							
1 year	12 (12%)	7 (7%)	35 (34%)	20 (19%)	26 (35%)	4 (4%)	104 (100%)
2 years	13 (9%)	18 (13%)	43 (31%)	33 (24%)	26 (19%)	6 (4%)	139 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.16

Cycle 1 Percentage of Teachers Ratings of the Extent to which MIC Program Participation Improved Their Effectiveness as a Teacher, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	25 (10%)	26 (10%)	82 (33%)	56 (23%)	48 (19%)	12 (5%)	249 (100%)
Years of Math Teaching Experience							
New Teacher	3 (7%)	2 (5%)	10 (23%)	15 (35%)	11 (26%)	2 (5%)	43 (100%)
Mid-Career Teacher	14 (9%)	14 (9%)	55 (36%)	31 (21%)	28 (19%)	9 (6%)	151 (100%)
Veteran Teacher	7 (14%)	9 (18%)	16 (31%)	9 (18%)	9 (18%)	1 (2%)	51 (100%)
Degree							
Bachelor's or below	18 (10%)	21 (11%)	59 (32%)	43 (23%)	34 (18%)	11 (6%)	186 (100%)
Master's or higher	7 (12%)	5 (8%)	22 (36%)	13 (21%)	13 (21%)	1 (2%)	61 (100%)
Years of Participation in the MIC Program							
1 year	12 (12%)	7 (7%)	33 (32%)	21 (20%)	26 (25%)	5 (5%)	104 (100%)
2 years	12 (9%)	18 (13%)	47 (34%)	33 (24%)	22 (16%)	6 (4%)	138 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009 – 10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.17

Cycle 1 Teacher Ratings of the Extent to which MIC Program Participation Improved Teacher Effectiveness Among Other Mathematics Teachers at the School, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 1 Respondents	25 (10%)	26 (10%)	82 (33%)	56 (23%)	48 (19%)	12 (5%)	249 (100%)
Years of Math Teaching Experience							
New Teacher	4 (10%)	1 (2%)	13 (31%)	9 (21%)	13 (31%)	2 (5%)	42 (100%)
Mid-Career Teacher	15 (10%)	13 (8%)	50 (34%)	33 (22%)	25 (17%)	12 (8%)	148 (100%)
Veteran Teacher	6 (12%)	6 (12%)	17 (33%)	10 (19%)	9 (17%)	4 (8%)	52 (100%)
Degree							
Bachelor's or below	19 (10%)	15 (8%)	58 (32%)	41 (22%)	34 (19%)	16 (9%)	183 (100%)
Master's or higher	7 (12%)	6 (10%)	22 (36%)	12 (20%)	12 (20%)	2 (3%)	61 (100%)
Years of Participation in the MIC Program							
1 year	11 (11%)	9 (9%)	34 (33%)	21 (20%)	22 (21%)	6 (6%)	103 (100%)
2 years	14 (10%)	11 (8%)	45 (33%)	31 (23%)	25 (18%)	11 (8%)	137 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.18

Cycle 1 Teacher Ratings of the Extent to which They Agreed That MIC Program Activities Increased Their Math Teaching Knowledge, 2009–10

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Total
All Cycle 1 Respondents	12 (4%)	13 (5%)	79 (29%)	114 (42%)	54 (20%)	272 (100%)
Years of Math Teaching Experience						
New Teacher	0 (0%)	4 (9%)	9 (19%)	20 (43%)	14 (30%)	47 (100%)
Mid-Career Teacher	7 (4%)	3 (2%)	53 (33%)	68 (43%)	28 (18%)	159 (100%)
Veteran Teacher	5 (8%)	5 (8%)	14 (23%)	25 (41%)	12 (20%)	108 (100%)
Degree						
Bachelor's or below	11 (5%)	8 (4%)	60 (29%)	90 (44%)	38 (18%)	207 (100%)
Master's or higher	1 (2%)	5 (8%)	19 (30%)	23 (37%)	15 (24%)	63 (100%)
Years of Participation in the MIC Program						
1 year	4 (4%)	5 (5%)	26 (23%)	53 (47%)	24 (21%)	112 (100%)
2 years	8 (5%)	7 (5%)	49 (32%)	59 (39%)	29 (19%)	152 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.19

Cycle 1 Teacher Ratings of the Extent to which MIC Program Activities Increased Their Instructional Skills, 2009–10

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Total
All Cycle 1 Respondents	12 (4%)	13 (5%)	66 (24%)	122 (45%)	58 (21%)	271 (100%)
Years of Math Teaching Experience						
New Teacher	0 (0%)	4 (9%)	4 (9%)	24 (52%)	14 (30%)	46 (100%)
Mid-Career Teacher	7 (4%)	5 (3%)	45 (28%)	71 (45%)	19 (20%)	159 (100%)
Veteran Teacher	5 (3%)	3 (5%)	14 (23%)	26 (43%)	13 (21%)	61 (100%)
Degree						
Bachelor's or below	12 (6%)	9 (4%)	50 (24%)	94 (46%)	41 (20%)	206 (100%)
Master's or higher	0 (0%)	4 (6%)	16 (25%)	27 (43%)	16 (25%)	63 (100%)
Years of Participation in the MIC Program						
1 year	3 (3%)	6 (5%)	22 (20%)	50 (45%)	30 (27%)	111 (100%)
2 years	9 (6%)	6 (4%)	40 (26%)	70 (46%)	27 (18%)	152 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.20

Cycle 1 Average Perceived Effects of MIC Program Activities on Teacher Assessment Activities, 2009–10

	N	Min	Max	Mean	SD	F	Significance
All Cycle 1 Respondents	256	1	5	2.67	1.12		
Years of Math Teaching Experience							
New Teacher	46	1	5	3.04	1.18	3.00	0.05*
Mid-Career Teacher	149	1	5	2.60	1.07		
Veteran Teacher	56	1	5	2.60	1.17		
Degree							
Bachelor’s or below	193	1	5	2.61	1.11	2.01	0.16
Master’s or higher	61	1	5	2.85	1.17		
Years of Participation in the MIC Program							
1 year	107	1	5	2.86	1.18	4.71	0.03*
2 years	141	1	5	2.55	1.05		

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
*Mean differences are significant at the alpha=0.05 level.

Table M.21

Cycle 1 Average Perceived Effects of MIC Program Activities on Teacher Instructional Strategies, 2009–10

	N	Min	Max	Mean	SD	F	Significance
All Cycle 1 Respondents	254	1	5	3.29	1.14		
Years of Math Teaching Experience							
New Teacher	46	1	5	3.68	1.00	3.21	0.04*
Mid-Career Teacher	150	1	5	3.23	1.13		
Veteran Teacher	54	1	5	3.17	1.20		
Degree							
Bachelors or below	191	1	5	3.29	1.13	0.02	0.88
Masters or higher	61	1	5	3.31	1.19		
Years of Participation in the MIC Program							
1 year	105	1	5	3.45	1.09	3.34	0.07
2 years	142	1	5	3.19	1.14		

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

[b] Response options included Not At All (1), Very Little (2), To Some Extent (3), Quite a Bit (4), A Great Deal (5), and Not Raised in Training (recoded as 1 for mean calculations)

*Mean differences are significant at the alpha=0.05 level.

Table M.22

Cycle 1 Teacher Ratings of the Extent to which MIC Program Activities Increased Their Content Knowledge, 2009–10

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Total
All Cycle 1 Respondents	18 (7%)	35 (13%)	77 (28%)	98 (36%)	44 (16%)	272 (100%)
Years of Math Teaching Experience						
New Teacher	3 (6%)	8 (17%)	12 (26%)	14 (30%)	10 (21%)	47 (100%)
Mid-Career Teacher	7 (4%)	17 (11%)	51 (32%)	60 (38%)	24 (15%)	159 (100%)
Veteran Teacher	8 (13%)	8 (13%)	12 (20%)	23 (38%)	10 (16%)	61 (100%)
Degree						
Bachelor's or below	15 (7%)	26 (13%)	65 (31%)	69 (33%)	32 (16%)	207 (100%)
Master's or higher	3 (5%)	9 (14%)	12 (19%)	28 (44%)	11 (18%)	63 (100%)
Years of Participation in the MIC Program						
1 year	7 (6%)	14 (12%)	30 (27%)	41 (36%)	21 (19%)	113 (100%)
2 years	11 (7%)	19 (13%)	44 (29%)	55 (36%)	22 (15%)	151 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.23

Cycle 1 Average Perceived Effects of MIC Program Activities on Teacher Content Knowledge, 2009–10

	N	Min	Max	Mean	SD	F	Significance
All Cycle 1 Respondents	258	1	5	3.50	1.06		
Years of Math Teaching Experience							
New Teacher	46	1	5	3.92	0.91	4.23	0.02*
Mid-Career Teacher	151	1	5	3.42	1.02		
Veteran Teacher	56	1	5	3.43	1.14		
Degree							
Bachelors or below	194	1	5	3.50	1.03	0.00	0.99
Masters or higher	62	1	5	3.50	1.15		
Years of Participation in the MIC Program							
1 year	107	1	5	3.64	1.02	2.72	0.10
2 years	143	1	5	3.42	1.06		

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
*Mean differences are significant at the alpha=0.05 level.

Table M.24

Cycle 1 Teachers' Relationship between Years of Math Teaching Experience and Hours Spent in PD and MIC Coaching Activities, 2009–10

	Hours in PD	Hours in MIC
Years Math Experience	-0.13	0.02
N	345	356

Source: PEIMS 2009–10

Table M.25

Cycle 1 Teachers' Average Number of Hours Spent in PD Activities by Subgroup

	N	Min	Max	Mean	SD	F	Significance
	Years of Math Teaching Experience						
New Teacher	57	5.50	91.00	50.71	24.55	4.08	0.02*
Mid-Career Teacher	202	5.50	101.00	51.18	24.45		
Veteran Teacher	86	5.50	91.00	42.48	23.49		
	Degree						
Bachelor's or below	264	5.50	101.00	48.40	24.26	0.82	0.37
Master's or higher	79	5.50	91.00	51.23	25.07		
	Years of Participation in the MIC Program						
1 year	157	5.50	91.00	42.90	21.56	19.51	0.00*
2 years	186	5.50	101.00	54.28	25.48		

Source: PEIMS 2009–10, MIC Grantee Uploads 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.26

Cycle 1 Teachers' Average Number of Hours Spent in MIC Coaching Activities by Subgroup

	N	Min	Max	Mean	SD	F	Significance
	Years of Math Teaching Experience						
New Teacher	61	5.50	55.50	19.51	14.06	0.77	0.47
Mid-Career Teacher	209	5.50	81.00	22.25	18.34		
Veteran Teacher	86	5.50	81.00	20.45	15.72		
	Degree						
Bachelor's or below	277	5.50	81.00	21.12	1.01	0.03	0.86
Master's or higher	77	5.50	81.00	21.50	1.95		
	Years of Participation in the MIC Program						
1 year	157	5.50	91.00	42.90	21.56	19.51	0.00*
2 years	186	5.50	101.00	54.28	25.48		

Source: PEIMS 2009–10, MIC Grantee Uploads 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

*Mean differences are significant at the alpha=0.05 level.

Table M.27

Items Composing the Teacher Effectiveness Self-Report Scales

Assessment Activities	Instructional Strategies	Content Knowledge
To what extent do you feel your implementation of the following assessment activities is due to what you learned in the MIC program:	**To what extent has participating in MIC program activities increased your use of the following instructional strategies:**	**From the MIC program activities, to what extent did you increase in:**
Authentic assessments	Introduce mathematics content through formal presentations	Understanding national standards for mathematics
Demonstrations	Have students make connections between mathematics and the real world	Understanding the mathematics TEKS
Experiments	Ask students to explain their reasoning when giving an answer	Understanding the specific content addressed by the MIC program at your school
Group projects	Ask students to consider alternative methods for solutions	Aligning classroom instruction to the mathematics TEKS
Individual projects	Ask students to use multiple representations when solving problems	Aligning classroom assessments to the mathematics TEKS
Pre-post tests	Ask students to explain concepts to one another	Presenting specific content addressed by MIC in engaging, meaningful ways to students
Progress monitoring	Differentiate classroom instruction to meet students learning needs in mathematics	Preparing students for TAKS
Quizzes	Allow students to work at their own pace	Collecting student coursework and/or assessment data
Reports	Provide students with concrete experience before abstract concepts	Analyzing student coursework and/or assessment data
Student journals	Develop students conceptual understanding of mathematics	Using student data to evaluate instructional plans
Tests	Take students prior understanding into account when planning	
	Have students practice computational skills	
	Engage students in problem solving	
	Have students use appropriate educational technology to learn mathematics	
	Have students use mathematics instruction materials to do mathematics	
	Identifying student needs (strengths and weaknesses)	

Source: MIC 2010 Teacher Participant Survey

Table M.28
Inter-Item Reliability for Teacher Effectiveness Self-Report Scales

Scale	Number of Items	Cronbach's Alpha
Assessment Activities	11	.96
Instructional Strategies	16	.98
Content Knowledge	10	.97

Source: MIC 2010 Teacher Participant Survey; PEIMS 2009–10; Grantee Participant Uploads 2009–10

Cycle 1 Correlations between Hours Spent in PD and Coaching in 2009–10 and Teacher Perceptions of the Effects of the MIC Program

Table M.29. Correlations between Cycle 1 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching

		Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
Perceptions that Content Knowledge Increased due to MIC Program	Pearson Correlation	-.149*	.122
	Sig. (2-tailed)	.020	.055
	N	243	248
Perceptions that Usage of New Assessment strategies increased due to MIC Program	Pearson Correlation	-.067	.092
	Sig. (2-tailed)	.297	.149
	N	241	246
Perceptions of Increased Usage of MIC Instructional Strategies	Pearson Correlation	-.217**	.104
	Sig. (2-tailed)	.001	.105
	N	240	245

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution.

Table M.30. Correlations between Cycle 1 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching, by years of teacher experience

			Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
New teacher: 0 to 1 years of experience	Perceptions that Content Knowledge Increased due to MIC Program	Pearson Correlation	-.007	.182
		Sig. (2-tailed)	.963	.238
		N	42	44
	Perceptions that Usage of New Assessment strategies increased due to MIC Program	Pearson Correlation	.288	.020
		Sig. (2-tailed)	.064	.895
		N	42	44
	Perceptions of Increased Usage of MIC Instructional Strategies	Pearson Correlation	-.049	-.129
		Sig. (2-tailed)	.757	.403
		N	42	44
Veteran teacher: 13 or more years of experience	Perceptions that Content Knowledge Increased due to MIC Program	Pearson Correlation	-.235	-.146
		Sig. (2-tailed)	.081	.287
		N	56	55
	Perceptions that Usage of New Assessment strategies increased due to MIC Program	Pearson Correlation	-.178	-.045
		Sig. (2-tailed)	.190	.746
		N	56	55
	Perceptions of Increased Usage of MIC Instructional Strategies	Pearson Correlation	-.348**	.018
		Sig. (2-tailed)	.010	.899
		N	54	53

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution.

Table M.31. Item-by-Item Correlations between Cycle 1 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching.

		Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
To what extent has MIC program participation- Improved your beliefs about teaching mathematics	Pearson Correlation	-.114	.076
	Sig. (2-tailed)	.079	.239
	N	237	241
To what extent has MIC program participation- Improved your sense that you can make a difference in your students learning of mathematics	Pearson Correlation	-.118	.086
	Sig. (2-tailed)	.071	.185
	N	237	241
To what extent has MIC program participation- Improved your mathematics content knowledge	Pearson Correlation	.016	.077
	Sig. (2-tailed)	.809	.234
	N	237	240
To what extent has MIC program participation- Improved your ability to teach math	Pearson Correlation	-.106	.086
	Sig. (2-tailed)	.104	.181
	N	237	241
To what extent has MIC program participation- Improved your effectiveness as a teacher	Pearson Correlation	-.030	.105
	Sig. (2-tailed)	.651	.105
	N	236	240
To what extent has MIC program participation- Improved teacher effectiveness among other mathematics teachers at your school	Pearson Correlation	-.039	.089
	Sig. (2-tailed)	.556	.171
	N	234	238
To what extent has MIC program participation- Increased student achievement in mathematics among your students	Pearson Correlation	-.108	.093
	Sig. (2-tailed)	.095	.146
	N	238	243
To what extent has MIC program participation- Increased student achievement overall among your students	Pearson Correlation	-.089	.099
	Sig. (2-tailed)	.170	.124
	N	238	242
To what extent has MIC program participation- Lowered dropout rates among your students	Pearson Correlation	-.077	.137*
	Sig. (2-tailed)	.236	.033
	N	238	243

(CONTINUED)

Table M.31. Item-by-Item Correlations between Cycle 1 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching (continued)

		Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
To what extent has MIC program participation-Increased graduation rates among your students	Pearson Correlation	-.097	.167**
	Sig. (2-tailed)	.138	.009
	N	235	240
To what extent has MIC program participation-Increased grade promotion rates among your students	Pearson Correlation	-.111	.139*
	Sig. (2-tailed)	.089	.031
	N	237	242
To what extent has MIC program participation-Increased mathematics course completion rates among your students	Pearson Correlation	-.073	.074
	Sig. (2-tailed)	.265	.249
	N	237	242
To what extent has MIC program participation-Increased course completion rates overall among your students	Pearson Correlation	-.079	.160*
	Sig. (2-tailed)	.225	.013
	N	235	240
To what extent has MIC program participation-Increased SAT/ACT mathematics scores among your students	Pearson Correlation	-.081	.100
	Sig. (2-tailed)	.214	.120
	N	237	241
To what extent has MIC program participation-Increased SAT/ACT scores overall among your students	Pearson Correlation	-.080	.100
	Sig. (2-tailed)	.226	.123
	N	234	238

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution.

Table M.32. Item-by-Item Correlations between Cycle 1 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching, by Years of Experience

Teacher Experience Level	Item	Statistic	Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
New teacher: 0 to 1 years of experience	To what extent has MIC program participation-Improved your beliefs about teaching mathematics	Pearson Correlation	0.007	-0.007
		Sig. (2-tailed)	0.965	0.964
		N	40	41
	To what extent has MIC program participation-Improved your sense that you can make a difference in your students learning of mathematics	Pearson Correlation	-0.027	0.031
		Sig. (2-tailed)	0.867	0.845
		N	40	41
	To what extent has MIC program participation-Improved your mathematics content knowledge	Pearson Correlation	0.143	-0.016
		Sig. (2-tailed)	0.378	0.921
		N	40	41
	To what extent has MIC program participation-Improved your ability to teach math	Pearson Correlation	0.03	0
		Sig. (2-tailed)	0.854	0.999
		N	40	41
	To what extent has MIC program participation-Improved your effectiveness as a teacher	Pearson Correlation	0.215	0.18
		Sig. (2-tailed)	0.184	0.261
		N	40	41
	To what extent has MIC program participation-Improved teacher effectiveness among other mathematics teachers at your school	Pearson Correlation	-0.017	0.124
		Sig. (2-tailed)	0.919	0.44
		N	39	41
	To what extent has MIC program participation-Increased student achievement in mathematics among your students	Pearson Correlation	-0.024	0.097
		Sig. (2-tailed)	0.884	0.545
		N	39	41
	To what extent has MIC program participation-Increased student achievement overall among your students	Pearson Correlation	0.036	0.107
		Sig. (2-tailed)	0.828	0.506
		N	40	41
	To what extent has MIC program participation-Lowered dropout rates among your students	Pearson Correlation	-0.139	0.061
		Sig. (2-tailed)	0.394	0.702
		N	40	42
	To what extent has MIC program participation-Increased graduation rates among your students	Pearson Correlation	-0.143	0.132
		Sig. (2-tailed)	0.377	0.405
		N	40	42
	To what extent has MIC program participation-Increased grade promotion rates among your students	Pearson Correlation	-0.025	0.047
		Sig. (2-tailed)	0.879	0.767
		N	40	42
	To what extent has MIC program participation-Increased mathematics course completion rates among your students	Pearson Correlation	-0.001	-0.014
		Sig. (2-tailed)	0.995	0.932
		N	39	41
	To what extent has MIC program participation-Increased course completion rates overall among your students	Pearson Correlation	-0.079	0.07
		Sig. (2-tailed)	0.63	0.659
		N	40	42
	To what extent has MIC program participation-Increased SAT/ACT mathematics scores among your students	Pearson Correlation	-0.106	0.042
		Sig. (2-tailed)	0.516	0.792
		N	40	41
	To what extent has MIC program participation-Increased SAT/ACT scores overall among your students	Pearson Correlation	-0.122	0.016
		Sig. (2-tailed)	0.454	0.92
		N	40	41

(CONTINUED)

Table M.32. Item-by-Item Correlations between Cycle 1 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching, by Years of Experience (continued)

Teacher Experience Level	Item	Statistic	Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
Veteran teacher: 13 or more years of experience	To what extent has MIC program participation-Improved your beliefs about teaching mathematics	Pearson Correlation	-0.107	0.051
		Sig. (2-tailed)	0.452	0.72
		N	52	51
	To what extent has MIC program participation-Improved your sense that you can make a difference in your students learning of mathematics	Pearson Correlation	-0.059	0.038
		Sig. (2-tailed)	0.68	0.789
		N	52	51
	To what extent has MIC program participation-Improved your mathematics content knowledge	Pearson Correlation	0.007	-0.077
		Sig. (2-tailed)	0.96	0.592
		N	52	51
	To what extent has MIC program participation-Improved your ability to teach math	Pearson Correlation	-0.124	0.057
		Sig. (2-tailed)	0.379	0.691
		N	52	51
	To what extent has MIC program participation-Improved your effectiveness as a teacher	Pearson Correlation	-0.066	0.04
		Sig. (2-tailed)	0.646	0.785
		N	51	50
	To what extent has MIC program participation-Improved teacher effectiveness among other mathematics teachers at your school	Pearson Correlation	0.106	0.172
		Sig. (2-tailed)	0.456	0.227
		N	52	51
	To what extent has MIC program participation-Increased student achievement in mathematics among your students	Pearson Correlation	-0.105	-0.019
		Sig. (2-tailed)	0.455	0.894
		N	53	52
	To what extent has MIC program participation-Increased student achievement overall among your students	Pearson Correlation	-0.067	-0.017
		Sig. (2-tailed)	0.632	0.903
		N	53	52
	To what extent has MIC program participation-Lowered dropout rates among your students	Pearson Correlation	0.04	0.245
		Sig. (2-tailed)	0.774	0.08
		N	53	52
	To what extent has MIC program participation-Increased graduation rates among your students	Pearson Correlation	-0.006	0.264
		Sig. (2-tailed)	0.965	0.059
		N	53	52
	To what extent has MIC program participation-Increased grade promotion rates among your students	Pearson Correlation	-0.075	0.255
		Sig. (2-tailed)	0.595	0.071
		N	52	51
	To what extent has MIC program participation-Increased mathematics course completion rates among your students	Pearson Correlation	0.049	0.147
		Sig. (2-tailed)	0.727	0.3
		N	53	52
	To what extent has MIC program participation-Increased course completion rates overall among your students	Pearson Correlation	0.1	.288*
		Sig. (2-tailed)	0.476	0.038
		N	53	52
	To what extent has MIC program participation-Increased SAT/ACT mathematics scores among your students	Pearson Correlation	-0.063	.279*
		Sig. (2-tailed)	0.656	0.047
		N	52	51
	To what extent has MIC program participation-Increased SAT/ACT scores overall among your students	Pearson Correlation	-0.055	.290*
		Sig. (2-tailed)	0.699	0.041
		N	51	50

*. Correlation is significant at the 0.05 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution.

Cycle 2 Teachers' Perceptions of the Effect of the MIC Program on Student Outcomes, 2009–10

Table M.33

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Participation Improved Their Beliefs about Teaching Mathematics, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	29 (12%)	40 (16%)	81 (33%)	46 (19%)	44 (18%)	4 (2%)	244 (100%)
Years of Math Teaching Experience[a]							
New Teacher	6 (12%)	5 (10%)	10 (20%)	12 (24%)	15 (31%)	1 (2%)	49 (100%)
Mid-Career Teacher	12 (9%)	26 (19%)	44 (32%)	28 (21%)	23 (17%)	3 (2%)	136 (100%)
Veteran Teacher	11 (19%)	9 (15%)	27 (46%)	6 (10%)	6 (10%)	0 (0%)	59 (100%)
Degree							
Bachelor's or below	22 (11%)	31 (16%)	63 (32%)	34 (17%)	41 (21%)	4 (2%)	195 (100%)
Master's or higher	7 (16%)	9 (20%)	17 (39%)	9 (20%)	2 (5%)	0 (0%)	44 (100%)

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.34

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Participation Improved Their Sense that They Can Make a Difference in Their Students' Learning of Mathematics, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	27 (11%)	34 (14%)	68 (28%)	56 (23%)	55 (23%)	4 (2%)	244 (100%)
Years of Math Teaching Experience							
New Teacher	5 (10%)	4 (8%)	10 (20%)	10 (20%)	19 (39%)	1 (2%)	49 (100%)
Mid-Career Teacher	12 (9%)	26 (19%)	44 (32%)	28 (21%)	23 (17%)	3 (2%)	136 (100%)
Veteran Teacher	10 (17%)	9 (15%)	22 (37%)	11 (19%)	7 (12%)	0 (0%)	59 (100%)
Degree							
Bachelor's or below	20 (10%)	25 (13%)	56 (29%)	42 (22%)	48 (25%)	4 (2%)	195 (100%)
Master's or higher	7 (16%)	9 (20%)	11 (25%)	12 (27%)	5 (11%)	0 (0%)	44 (100%)

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.35

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Participation Improved Their Mathematics Content Knowledge, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	35 (14%)	48 (20%)	66 (27%)	42 (17%)	50 (20%)	3 (1%)	244 (100%)
Years of Math Teaching Experience							
New Teacher	5 (10%)	7 (14%)	12 (24%)	8 (16%)	17 (35%)	0 (0%)	49 (100%)
Mid-Career Teacher	16 (12%)	29 (21%)	34 (25%)	27 (20%)	27 (20%)	3 (2%)	136 (100%)
Veteran Teacher	14 (24%)	12 (20%)	20 (34%)	7 (12%)	6 (10%)	0 (0%)	59 (100%)
Degree							
Bachelor's or below	27 (14%)	34 (17%)	51 (26%)	37 (19%)	44 (23%)	2 (1%)	195 (100%)
Master's or higher	8 (18%)	14 (32%)	13 (30%)	4 (9%)	4 (9%)	1 (2%)	44 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.36

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Participation Improved Their Ability to Teach Math, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	23 (9%)	39 (16%)	65 (27%)	61 (25%)	51 (21%)	4 (2%)	243 (100%)
Years of Math Teaching Experience							
New Teacher	4 (8%)	4 (8%)	11 (23%)	8 (17%)	20 (42%)	1 (2%)	48 (100%)
Mid-Career Teacher	11 (8%)	23 (17%)	31 (23%)	41 (30%)	27 (20%)	3 (2%)	136 (100%)
Veteran Teacher	8 (14%)	12 (20%)	23 (39%)	12 (20%)	4 (7%)	0 (0%)	59 (100%)
Degree							
Bachelors or below	19 (10%)	25 (13%)	52 (27%)	50 (26%)	44 (23%)	4 (2%)	194 (100%)
Masters or higher	4 (9%)	14 (32%)	12 (27%)	9 (20%)	5 (11%)	0 (0%)	44 (100%)

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.37

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Participation Improved Their Effectiveness as a Teacher, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	20 (8%)	38 (16%)	66 (27%)	62 (25%)	54 (22%)	4 (2%)	244 (100%)
Years of Math Teaching Experience							
New Teacher	4 (8%)	5 (10%)	9 (18%)	9 (18%)	21 (43%)	1 (2%)	49 (100%)
Mid-Career Teacher	8 (6%)	22 (16%)	37 (27%)	38 (28%)	28 (21%)	3 (2%)	136 (100%)
Veteran Teacher	8 (14%)	11 (19%)	20 (34%)	15 (25%)	5 (8%)	0 (0%)	59 (100%)
Degree							
Bachelor's or below	17 (9%)	25 (13%)	51 (26%)	50 (26%)	48 (25%)	4 (2%)	195 (100%)
Master's or higher	3 (7%)	13 (30%)	13 (30%)	11 (25%)	4 (9%)	0 (0%)	44 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.38

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Participation Improved Teacher Effectiveness Among Other Mathematics Teachers at the School, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	24 (10%)	31 (13%)	70 (29%)	58 (24%)	50 (21%)	9 (4%)	242 (100%)
Years of Math Teaching Experience							
New Teacher	4 (8%)	4 (8%)	9 (19%)	14 (29%)	14 (29%)	3 (6%)	48 (100%)
Mid-Career Teacher	8 (6%)	22 (16%)	37 (27%)	38 (28%)	28 (21%)	3 (2%)	136 (100%)
Veteran Teacher	8 (14%)	10 (17%)	18 (31%)	15 (25%)	7 (12%)	1 (2%)	59 (100%)
Degree							
Bachelors or below	20 (10%)	21 (11%)	57 (30%)	41 (21%)	46 (24%)	8 (4%)	193 (100%)
Masters or higher	4 (9%)	10 (23%)	11 (25%)	15 (34%)	3 (7%)	1 (2%)	44 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.39

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Activities Increased Their Math Teaching Knowledge, 2009–10

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Total
All Cycle 2 Respondents	15 (6%)	18 (7%)	61 (23%)	121 (45%)	55 (20%)	270 (100%)
Years of Math Teaching Experience						
New Teacher	2 (4%)	3 (6%)	8 (15%)	20 (38%)	20 (38%)	53 (100%)
Mid-Career Teacher	7 (5%)	9 (6%)	30 (20%)	75 (50%)	28 (19%)	149 (100%)
Veteran Teacher	6 (9%)	6 (9%)	23 (34%)	25 (37%)	7 (10%)	67 (100%)
Degree						
Bachelor's or below	11 (5%)	12 (6%)	49 (22%)	95 (44%)	51 (23%)	218 (100%)
Master's or higher	4 (9%)	6 (13%)	12 (26%)	23 (49%)	2 (4%)	47 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.40

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Activities Increased Their Instructional Skills, 2009–10

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Total
All Cycle 2 Respondents	12 (4%)	18 (7%)	56 (21%)	134 (50%)	49 (18%)	269 (100%)
Years of Math Teaching Experience						
New Teacher	1 (2%)	3 (6%)	10 (19%)	22 (42%)	17 (32%)	53 (100%)
Mid-Career Teacher	6 (4%)	8 (5%)	27 (18%)	81 (54%)	27 (18%)	149 (100%)
Veteran Teacher	5 (8%)	7 (11%)	19 (29%)	30 (45%)	5 (8%)	66 (100%)
Degree						
Bachelor's or below	9 (4%)	13 (6%)	42 (19%)	109 (50%)	45 (21%)	218 (100%)
Master's or higher	3 (7%)	5 (11%)	14 (30%)	22 (48%)	2 (4%)	46 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.41

Cycle 2 Teachers' Average Perceived Effects of MIC Program Activities on Teacher Assessment Activities, 2009–10

	N	Min	Max	Mean	SD	F	Significance
All Cycle 2 Respondents	243	1	5	2.58	1.17		
Years of Math Teaching Experience							
New Teacher	48	1	5	2.98	1.20	5.98	0.00*
Mid-Career Teacher	136	1	5	2.59	1.18		
Veteran Teacher	59	1	5	2.21	1.01		
Degree							
Bachelor's or below	194	1	5	2.64	1.19	5.27	0.02*
Master's or higher	44	1	4	2.20	1.01		

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
*Mean differences are significant at the alpha=0.05 level.

Table M.42

Cycle 2 Teachers' Average Perceived Effects of MIC Program Activities on Teacher Instructional Strategies, 2009–10

	N	Min	Max	Mean	SD	F	Significance
All Cycle 2 Respondents	242	1	5	3.15	1.21		
Years of Math Teaching Experience							
New Teacher	47	1	5	3.44	1.22	2.71	0.07
Mid-Career Teacher	136	1	5	3.16	1.21		
Veteran Teacher	59	1	5	2.90	1.16		
Degree							
Bachelor's or below	193	1	5	3.23	1.21	6.50	0.01*
Master's or higher	44	1	5	2.72	1.15		

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
*Mean differences are significant at the alpha=0.05 level.

Table M.43

Cycle 2 Percentage of Teacher Ratings by Extent to which MIC Program Activities Increased Their Content Knowledge, 2009–10

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Total
All Cycle 1 Respondents	23 (8%)	31 (11%)	81 (30%)	92 (34%)	44 (16%)	271 (100%)
Years of Math Teaching Experience						
New Teacher	2 (4%)	6 (11%)	14 (26%)	19 (36%)	12 (23%)	53 (100%)
Mid-Career Teacher	10 (7%)	18 (12%)	44 (30%)	51 (34%)	26 (17%)	149 (100%)
Veteran Teacher	11 (16%)	7 (10%)	23 (34%)	21 (31%)	6 (9%)	68 (100%)
Degree						
Bachelors or below	15 (7%)	22 (10%)	66 (30%)	75 (34%)	41 (19%)	219 (100%)
Masters or higher	8 (17%)	9 (19%)	15 (32%)	14 (30%)	1 (2%)	47 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

Table M.44

Cycle 2 Teachers' Average Perceived Effects of MIC Program Activities on Content Knowledge

	N	Min	Max	Mean	SD	F	Significance
All Cycle 2 Respondents	250	1	5	3.29	1.15		
Years of Math Teaching Experience							
New Teacher	50	1	5	3.53	1.20	2.46	0.09
Mid-Career Teacher	138	1	5	3.31	1.13		
Veteran Teacher	62	1	5	3.05	1.11		
Degree							
Bachelors or below	200	1	5	3.37	1.12	8.99	0.00*
Masters or higher	45	1	5	2.82	1.16		

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.

[b]Response options included Not At All (1), Very Little (2), To Some Extent (3), Quite a Bit (4), A Great Deal (5), and Not Raised in Training (recoded as 1 for mean calculations)

*Mean differences are significant at the alpha=0.05 level.

Table M.45

Cycle 2 Relationship between Years of Math Teaching Experience and Hours Spent in PD and MIC Coaching Activities, 2009–10

	Hours in PD	Hours in MIC
Years Math Experience	0.01	-0.02
N	315	303

Source: Grantee Uploads, 2008–09

Table M.46

Cycle 2 Teachers' Average Number of Hours Spent in PD Activities by Subgroup, 2009–10

	N	Min	Max	Mean	SD	F	Significance
	Years of Math Teaching Experience						
New Teacher	60	5.50	101.00	40.46	23.83	0.19	0.82
Mid-Career Teacher	176	5.50	101.00	38.26	23.61		
Veteran Teacher	79	5.50	91.00	38.91	23.64		
	Degree						
Bachelor's or below	253	5.50	101.00	38.61	23.60	.08	0.77
Master's or higher	57	5.50	101.00	39.61	24.31		

Source: PEIMS 2009–10, MIC Grantee Uploads 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
*Mean differences are significant at the alpha=0.05 level.

Table M.47

Cycle 2 Teachers' Average Number of Hours Spent in MIC Coaching Activities by Subgroup, 2009–10

	N	Min	Max	Mean	SD	F	Significance
	Years of Math Teaching Experience						
New Teacher	61	5.50	81.00	25.25	21.26	1.14	0.32
Mid-Career Teacher	16 9	5.50	91.00	20.75	19.45		
Veteran Teacher	73	5.50	91.00	22.69	21.42		
	Degree						
Bachelor's or below	24 7	5.50	91.00	22.30	20.42	0.12	0.73
Master's or higher	52	5.50	91.00	21.21	19.94		

Source: PEIMS 2009–10, MIC Grantee Uploads 2009–10
[a] New teachers are those with 0 to 1 years of teaching experience, Mid-Career teachers are those with 2 to 12 years of teaching experience, Veteran teachers are those with 13 or more years of teaching experience.
*Mean differences are significant at the alpha=0.05 level.

Table M.48

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased Student Achievement in Mathematics Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	22 (9%)	33 (14%)	88 (37%)	56 (23%)	30 (13%)	11 (5%)	240 (100%)
Years of Math Teaching Experience							
New Teacher	4 (8%)	6 (13%)	11 (23%)	12 (25%)	13 (27%)	2 (4%)	48 (100%)
Mid-Career Teacher	10 (8%)	19 (14%)	51 (38%)	34 (25%)	13 (10%)	7 (5%)	134 (100%)
Veteran Teacher	8 (14%)	8 (14%)	26 (45%)	10 (17%)	4 (7%)	2 (3%)	58 (100%)
Degree							
Bachelor's or below	18 (9%)	23 (12%)	69 (36%)	45 (23%)	28 (15%)	9 (5%)	192 (100%)
Master's or higher	4 (9%)	10 (23%)	17 (40%)	9 (21%)	1 (2%)	2 (5%)	43 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.49

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased Student Achievement Overall Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	23 (10%)	35 (15%)	87 (36%)	51 (21%)	29 (12%)	16 (7%)	241 (100%)
Years of Math Teaching Experience							
New Teacher	4 (8%)	5 (10%)	14 (29%)	9 (19%)	14 (29%)	2 (4%)	48 (100%)
Mid-Career Teacher	10 (7%)	21 (16%)	48 (36%)	35 (26%)	10 (7%)	11 (8%)	135 (100%)
Veteran Teacher	9 (16%)	9 (16%)	25 (43%)	7 (12%)	5 (9%)	3 (5%)	58 (100%)
Degree							
Bachelor's or below	18 (9%)	26 (13%)	67 (35%)	41 (21%)	28 (15%)	13 (7%)	193 (100%)
Master's or higher	5 (12%)	9 (21%)	18 (42%)	7 (16%)	1 (2%)	3 (7%)	43 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.50

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Lowered Dropout Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	39 (16%)	45 (19%)	65 (27%)	19 (8%)	14 (6%)	59 (24%)	241 (100%)
Years of Math Teaching Experience							
New Teacher	6 (13%)	10 (21%)	11 (23%)	4 (8%)	6 (13%)	11 (23%)	48 (100%)
Mid-Career Teacher	20 (15%)	22 (16%)	39 (29%)	10 (7%)	7 (5%)	37 (27%)	135 (100%)
Veteran Teacher	13 (22%)	13 (22%)	15 (26%)	5 (9%)	1 (2%)	11 (19%)	58 (100%)
Degree							
Bachelor's or below	28 (15%)	36 (19%)	47 (24%)	18 (9%)	13 (7%)	51 (26%)	193 (100%)
Master's or higher	11 (26%)	9 (21%)	13 (30%)	1 (2%)	1 (2%)	8 (19%)	43 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.51

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased Graduation Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	37 (15%)	43 (18%)	59 (25%)	21 (9%)	15 (6%)	65 (27%)	240 (100%)
Years of Math Teaching Experience							
New Teacher	6 (13%)	10 (21%)	9 (19%)	4 (8%)	7 (15%)	12 (25%)	48 (100%)
Mid-Career Teacher	17 (13%)	21 (16%)	36 (27%)	13 (10%)	6 (4%)	42 (31%)	135 (100%)
Veteran Teacher	14 (25%)	12 (21%)	14 (25%)	4 (7%)	2 (4%)	11 (19%)	57 (100%)
Degree							
Bachelor's or below	27 (14%)	32 (17%)	47 (24%)	18 (9%)	14 (7%)	55 (28%)	193 (100%)
Master's or higher	10 (24%)	11 (26%)	9 (21%)	1 (2%)	1 (2%)	10 (24%)	42 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.52

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased Grade Promotion Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	35 (15%)	40 (17%)	70 (29%)	29 (12%)	24 (10%)	42 (18%)	240 (100%)
Years of Math Teaching Experience							
New Teacher	7 (15%)	6 (13%)	13 (27%)	5 (10%)	9 (19%)	8 (17%)	48 (100%)
Mid-Career Teacher	14 (10%)	20 (15%)	41 (30%)	21 (16%)	11 (8%)	28 (21%)	135 (100%)
Veteran Teacher	14 (25%)	14 (25%)	16 (28%)	3 (5%)	4 (7%)	6 (11%)	57 (100%)
Degree							
Bachelor's or below	26 (14%)	29 (15%)	53 (28%)	24 (13%)	22 (11%)	38 (20%)	192 (100%)
Master's or higher	9 (21%)	11 (26%)	14 (33%)	3 (7%)	2 (5%)	4 (9%)	43 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.53

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased Mathematics Course Completion Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	32 (13%)	38 (16%)	70 (29%)	41 (17%)	20 (8%)	39 (16%)	240 (100%)
Years of Math Teaching Experience							
New Teacher	6 (13%)	7 (15%)	9 (19%)	10 (21%)	8 (17%)	8 (17%)	48 (100%)
Mid-Career Teacher	14 (10%)	17 (13%)	45 (33%)	25 (19%)	8 (6%)	26 (19%)	135 (100%)
Veteran Teacher	12 (21%)	14 (25%)	16 (28%)	6 (11%)	4 (7%)	5 (9%)	57 (100%)
Degree							
Bachelors or below	24 (12%)	25 (13%)	57 (30%)	35 (18%)	18 (9%)	34 (18%)	193 (100%)
Masters or higher	8 (19%)	13 (31%)	9 (21%)	5 (12%)	2 (5%)	5 (12%)	42 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS, 2009–10

Table M.54

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased Overall Course Completion Rates Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	32 (13%)	38 (16%)	68 (28%)	40 (17%)	16 (7%)	45 (19%)	239 (100%)
Years of Math Teaching Experience							
New Teacher	6 (13%)	5 (10%)	14 (29%)	6 (13%)	7 (15%)	10 (21%)	48 (100%)
Mid-Career Teacher	14 (10%)	19 (14%)	40 (30%)	25 (19%)	7 (5%)	29 (22%)	134 (100%)
Veteran Teacher	12 (21%)	14 (25%)	14 (25%)	9 (16%)	2 (4%)	6 (11%)	57 (100%)
Degree							
Bachelors or below	24 (13%)	26 (14%)	54 (28%)	33 (17%)	15 (8%)	40 (21%)	192 (100%)
Master's or higher	8 (19%)	12 (29%)	10 (24%)	6 (14%)	1 (2%)	5 (12%)	42 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.55

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased SAT/ACT Mathematics Scores Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	41 (17%)	38 (16%)	55 (23%)	20 (8%)	11 (5%)	42 (30%)	240 (100%)
Years of Math Teaching Experience							
New Teacher	6 (13%)	8 (17%)	10 (21%)	3 (6%)	4 (9%)	16 (34%)	47 (100%)
Mid-Career Teacher	20 (15%)	20 (15%)	34 (25%)	15 (11%)	4 (3%)	42 (31%)	135 (100%)
Veteran Teacher	15 (27%)	10 (18%)	11 (20%)	2 (4%)	3 (5%)	14 (25%)	55 (100%)
Degree							
Bachelor's or below	30 (16%)	27 (14%)	43 (23%)	19 (10%)	10 (5%)	61 (32%)	190 (100%)
Master's or higher	11 (26%)	11 (26%)	8 (19%)	0 (0%)	1 (2%)	11 (26%)	42 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Table M.56

Cycle 2 Teacher Ratings of the Extent to which MIC Program Participation Increased SAT/ACT Overall Scores Among Their Students, 2009–10

	Not At All	Very Little	Some Influence	Quite a Bit	A Great Deal	No Basis for Judgment	Total
All Cycle 2 Respondents	41 (17%)	41 (17%)	56 (23%)	17 (7%)	10 (4%)	75 (31%)	240 (100%)
Years of Math Teaching Experience							
New Teacher	6 (13%)	9 (19%)	10 (21%)	2 (4%)	4 (8%)	17 (35%)	48 (100%)
Mid-Career Teacher	20 (15%)	21 (16%)	35 (26%)	13 (10%)	3 (2%)	43 (32%)	135 (100%)
Veteran Teacher	15 (26%)	11 (19%)	11 (19%)	2 (4%)	3 (5%)	15 (26%)	57 (100%)
Degree							
Bachelor's or below	30 (16%)	29 (15%)	45 (23%)	16 (8%)	9 (5%)	64 (33%)	193 (100%)
Master's or higher	11 (26%)	12 (29%)	7 (17%)	0 (0%)	1 (2%)	11 (26%)	42 (100%)

Source: MIC Teacher Participant Survey, 2009–10; PEIMS 2009–10

Cycle 2 Correlations between Hours Spent in PD and Coaching in 2009–10 and Teacher Perceptions of the Effects of the MIC Program

Table M.57. Correlations between Cycle 2 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching

		Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
Perceptions that Content Knowledge Increased due to MIC Program	Pearson Correlation	.083	.191**
	Sig. (2-tailed)	.202	.003
	N	239	234
Perceptions that Usage of New Assessment strategies increased due to MIC Program	Pearson Correlation	.135*	.184**
	Sig. (2-tailed)	.040	.005
	N	233	229
Perceptions of Increased Usage of MIC Instructional Strategies	Pearson Correlation	.085	.241**
	Sig. (2-tailed)	.195	.000
	N	232	228

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution

Table M.58. Correlations between Cycle 2 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching, by years of teacher experience

Years of Experience-- dichotomized by new and veteran teachers			Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
New teacher: 0 to 1 years of experience	Perceptions that Content Knowledge Increased due to MIC Program	Pearson Correlation	-.104	.119
		Sig. (2-tailed)	.493	.427
		N	46	47
	Perceptions that Usage of New Assessment strategies increased due to MIC Program	Pearson Correlation	.061	.144
		Sig. (2-tailed)	.689	.339
		N	45	46
	Perceptions of Increased Usage of MIC Instructional Strategies	Pearson Correlation	-.076	.275
		Sig. (2-tailed)	.625	.068
		N	44	45
Veteran teacher: 13 or more years of experience	Perceptions that Content Knowledge Increased due to MIC Program	Pearson Correlation	.086	.152
		Sig. (2-tailed)	.508	.251
		N	61	59
	Perceptions that Usage of New Assessment strategies increased due to MIC Program	Pearson Correlation	.010	.298*
		Sig. (2-tailed)	.940	.024
		N	58	57
	Perceptions of Increased Usage of MIC Instructional Strategies	Pearson Correlation	.064	.228
		Sig. (2-tailed)	.635	.088
		N	58	57

*. Correlation is significant at the 0.05 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution

Table M.59. Item-by-Item Correlations between Cycle 2 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching

		Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
To what extent has MIC program participation-Improved your beliefs about teaching mathematics	Pearson Correlation	.073	.217**
	Sig. (2-tailed)	.270	.001
	N	233	230
To what extent has MIC program participation-Improved your sense that you can make a difference in your students learning of mathematics	Pearson Correlation	.078	.233**
	Sig. (2-tailed)	.233	.000
	N	233	230
To what extent has MIC program participation-Improved your mathematics content knowledge	Pearson Correlation	.063	.210**
	Sig. (2-tailed)	.342	.001
	N	233	230
To what extent has MIC program participation-Improved your ability to teach math	Pearson Correlation	.113	.244**
	Sig. (2-tailed)	.085	.000
	N	232	229
To what extent has MIC program participation-Improved your effectiveness as a teacher	Pearson Correlation	.096	.262**
	Sig. (2-tailed)	.142	.000
	N	233	230
To what extent has MIC program participation-Improved teacher effectiveness among other mathematics teachers at your school	Pearson Correlation	.173**	.220**
	Sig. (2-tailed)	.008	.001
	N	232	228
To what extent has MIC program participation-Increased student achievement in mathematics among your students	Pearson Correlation	.048	.221**
	Sig. (2-tailed)	.474	.001
	N	229	226
To what extent has MIC program participation-Increased student achievement overall among your students	Pearson Correlation	.091	.235**
	Sig. (2-tailed)	.171	.000
	N	230	227
To what extent has MIC program participation-Lowered dropout rates among your students	Pearson Correlation	.101	.212**
	Sig. (2-tailed)	.127	.001
	N	230	227
To what extent has MIC program participation-Increased graduation rates among your students	Pearson Correlation	.061	.195**
	Sig. (2-tailed)	.356	.003
	N	229	226
To what extent has MIC program participation-Increased grade promotion rates among your students	Pearson Correlation	.076	.267**
	Sig. (2-tailed)	.253	.000
	N	229	226

(CONTINUED)

Table M.59. Item-by-Item Correlations between Cycle 2 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching (continued)

		Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
To what extent has MIC program participation-Increased mathematics course completion rates among your students	Pearson Correlation	.104	.298**
	Sig. (2-tailed)	.115	.000
	N	229	226
To what extent has MIC program participation-Increased course completion rates overall among your students	Pearson Correlation	.114	.282**
	Sig. (2-tailed)	.086	.000
	N	228	225
To what extent has MIC program participation-Increased SAT/ACT mathematics scores among your students	Pearson Correlation	.070	.161*
	Sig. (2-tailed)	.296	.016
	N	226	223
To what extent has MIC program participation-Increased SAT/ACT scores overall among your students	Pearson Correlation	.055	.162*
	Sig. (2-tailed)	.406	.014
	N	229	226

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution

Table M.60. Item-by-Item Correlations between Cycle 2 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching, by Years of Experience

Years of Experience-- dichotomized by new and veteran teachers			Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
New teacher: 0 to 1 years of experience	To what extent has MIC program participation- Improved your beliefs about teaching mathematics	Pearson Correlation	-0.074	.365*
		Sig. (2-tailed)	0.631	0.013
		N	45	46
	To what extent has MIC program participation- Improved your sense that you can make a difference in your students learning of mathematics	Pearson Correlation	-0.052	.427**
		Sig. (2-tailed)	0.733	0.003
		N	45	46
	To what extent has MIC program participation- Improved your mathematics content knowledge	Pearson Correlation	-0.02	.309*
		Sig. (2-tailed)	0.894	0.037
		N	45	46
	To what extent has MIC program participation- Improved your ability to teach math	Pearson Correlation	-0.03	.449**
		Sig. (2-tailed)	0.847	0.002
		N	44	45
	To what extent has MIC program participation- Improved your effectiveness as a teacher	Pearson Correlation	-0.105	.463**
		Sig. (2-tailed)	0.493	0.001
		N	45	46
	To what extent has MIC program participation- Improved teacher effectiveness among other mathematics teachers at your school	Pearson Correlation	0.033	.312*
		Sig. (2-tailed)	0.83	0.037
		N	45	45
	To what extent has MIC program participation- Increased student achievement in mathematics among your students	Pearson Correlation	0.088	.430**
		Sig. (2-tailed)	0.57	0.003
		N	44	45
	To what extent has MIC program participation- Increased student achievement overall among your students	Pearson Correlation	0.037	.446**
		Sig. (2-tailed)	0.814	0.002
		N	44	45
	To what extent has MIC program participation- Lowered dropout rates among your students	Pearson Correlation	-0.029	0.226
		Sig. (2-tailed)	0.854	0.135
		N	44	45
	To what extent has MIC program participation- Increased graduation rates among your students	Pearson Correlation	-0.082	0.209
		Sig. (2-tailed)	0.597	0.167
		N	44	45
	To what extent has MIC program participation- Increased grade promotion rates among your students	Pearson Correlation	0.036	.458**
		Sig. (2-tailed)	0.818	0.002
		N	44	45
	To what extent has MIC program participation- Increased mathematics course completion rates among your students	Pearson Correlation	0.036	.440**
		Sig. (2-tailed)	0.818	0.003
		N	44	45
	To what extent has MIC program participation- Increased course completion rates overall among your students	Pearson Correlation	0.094	.326*
		Sig. (2-tailed)	0.544	0.029
		N	44	45
	To what extent has MIC program participation- Increased SAT/ACT mathematics scores among your students	Pearson Correlation	-0.137	0.078
		Sig. (2-tailed)	0.381	0.614
		N	43	44
	To what extent has MIC program participation- Increased SAT/ACT scores overall among your students	Pearson Correlation	-0.115	0.095
		Sig. (2-tailed)	0.458	0.536
		N	44	45

(CONTINUED)

Table M.60. Item-by-Item Correlations between Cycle 2 teachers' perceived effects of the MIC program and 2009–10 hours spent in PD and Coaching, by Years of Experience (continued)

Years of Experience-- dichotomized by new and veteran teachers			Total PD Hours, 2009–10	Total Coaching Hours, 2009–10
Veteran teacher: 13 or more years of experience	To what extent has MIC program participation- Improved your beliefs about teaching mathematics	Pearson Correlation	0.137	0.223
		Sig. (2-tailed)	0.304	0.095
		N	58	57
	To what extent has MIC program participation- Improved your sense that you can make a difference in your students learning of mathematics	Pearson Correlation	0.151	.280*
		Sig. (2-tailed)	0.259	0.035
		N	58	57
	To what extent has MIC program participation- Improved your mathematics content knowledge	Pearson Correlation	0.128	.266*
		Sig. (2-tailed)	0.338	0.045
		N	58	57
	To what extent has MIC program participation- Improved your ability to teach math	Pearson Correlation	0.192	.261*
		Sig. (2-tailed)	0.149	0.049
		N	58	57
	To what extent has MIC program participation- Improved your effectiveness as a teacher	Pearson Correlation	0.172	.296*
		Sig. (2-tailed)	0.196	0.025
		N	58	57
	To what extent has MIC program participation- Improved teacher effectiveness among other mathematics teachers at your school	Pearson Correlation	.314*	0.245
		Sig. (2-tailed)	0.017	0.067
		N	58	57
	To what extent has MIC program participation- Increased student achievement in mathematics among your students	Pearson Correlation	0.007	0.132
		Sig. (2-tailed)	0.957	0.331
		N	57	56
	To what extent has MIC program participation- Increased student achievement overall among your students	Pearson Correlation	0.108	0.115
		Sig. (2-tailed)	0.423	0.398
		N	57	56
	To what extent has MIC program participation- Lowered dropout rates among your students	Pearson Correlation	0.117	0.26
		Sig. (2-tailed)	0.387	0.053
		N	57	56
	To what extent has MIC program participation- Increased graduation rates among your students	Pearson Correlation	0.142	0.235
		Sig. (2-tailed)	0.296	0.084
		N	56	55
	To what extent has MIC program participation- Increased grade promotion rates among your students	Pearson Correlation	0.145	.268*
		Sig. (2-tailed)	0.286	0.048
		N	56	55
	To what extent has MIC program participation- Increased mathematics course completion rates among your students	Pearson Correlation	0.222	.362**
		Sig. (2-tailed)	0.1	0.007
		N	56	55
	To what extent has MIC program participation- Increased course completion rates overall among your students	Pearson Correlation	0.191	.395**
		Sig. (2-tailed)	0.159	0.003
		N	56	55
	To what extent has MIC program participation- Increased SAT/ACT mathematics scores among your students	Pearson Correlation	0.18	0.236
		Sig. (2-tailed)	0.193	0.089
		N	54	53
	To what extent has MIC program participation- Increased SAT/ACT scores overall among your students	Pearson Correlation	0.134	0.226
		Sig. (2-tailed)	0.325	0.098
		N	56	55

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Note: There was not a clear distinction between PD and coaching among some of the grantees, so the results should be interpreted with some caution

Response comparisons for dual-year Cycle 1 teachers who completed the teacher survey in both 2009 and 2010

Approximately 100 Cycle 1 teachers both participated in MIC both in 2008–09 and 2009–10 and completed the teacher survey in both years. The 2009 and 2010 teacher surveys shared 31 items, which were isolated to compare the responses given in each year by teachers who completed the survey in both administrations. Table M.61 displays the average item response in Year 1 (2009) and in Year 2 (2010), as well as the average change in item response from Year 1 to Year 2.

Change scores were small and fluctuated in both the positive and negative direction. No consistent pattern emerged from the end of Year 1 to the end of Year 2 for items related to perceptions of teacher effectiveness and the influence of MIC program participation on student achievement outcomes. (I removed the sentence that used to be here since now all these student achievement items are in the appendix) On the other hand, an observable pattern exists among items related to teacher efficacy in dealing with challenges in the classroom, such as managing student behavior, motivating students, and supporting families. Teachers expressed a slight increase in confidence in their ability to handle these challenges.

Table M.61. Average Item Response and Average Amount of Change in Response for Participants Who Responded in Both Year 1 and Year 2

	Year 1 Average		Year 2 Average		Average Change	
Shared Teacher Survey Items, Years 1 and 2	N ≈ 103		N ≈ 94		N ≈ 86	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Rate the overall quality of the MIC program activities you received	3.56	0.93	3.59	0.88	-0.01	0.84
Rate the overall effectiveness of the coaches	3.73	0.99	3.89	0.92	0.11	0.94
Rate the overall quality of the materials you received	3.49	0.95	3.60	0.87	0.10	0.94
To what extent were the MIC activities effective in meeting your learning needs	3.30	0.87	3.36	0.86	0.01	0.87
To what extend were school administrators effective in supporting teachers participation in the MIC activities	3.46	1.09	3.43	1.06	-0.06	1.24
To what extent has MIC program participation- Improved your beliefs about teaching mathematics	3.19	1.32	2.99	1.34	-0.19	1.33
To what extent has MIC program participation- Improved your sense that you can make a difference in your students learning of mathematics	3.40	1.40	3.18	1.29	-0.24	1.36
To what extent has MIC program participation- Improved your mathematics content knowledge	2.88	1.30	2.93	1.22	0.08	1.00
To what extent has MIC program participation- Improved your effectiveness as a teacher	3.29	1.27	3.13	1.22	-0.16	1.11
To what extent has MIC program participation- Improved teacher effectiveness among other mathematics teachers at your school	3.28	1.30	3.13	1.30	-0.11	1.57
To what extent has MIC program participation- Increased student achievement in mathematics among your students	3.10	1.14	3.09	1.13	-0.04	1.16
To what extent has MIC program participation- Increased student achievement overall among your students	3.07	1.11	2.98	1.20	-0.09	1.12
To what extent has MIC program participation- Lowered dropout rates among your students	2.23	1.20	2.48	1.40	0.21	1.35
To what extent has MIC program participation- Increased graduation rates among your students	2.22	1.26	2.41	1.38	0.11	1.54
To what extent has MIC program participation- Increased grade promotion rates among your students	2.71	1.23	2.81	1.28	0.07	1.30
To what extent has MIC program participation- Increased mathematics course completion rates among your students	2.68	1.28	2.77	1.33	0.08	1.32
To what extent has MIC program participation- Increased course completion rates overall among your students	2.51	1.31	2.71	1.33	0.22	1.25
To what extent has MIC program participation- Increased SAT/ACT mathematics scores among your students	1.92	1.18	2.09	1.27	0.20	1.30

(CONTINUED)

Table M.61. Average Item Response and Average Amount of Change in Response for Participants Who Responded in Both Year 1 and Year 2 (continued)

	Year 1 Average		Year 2 Average		Average Change	
Shared Teacher Survey Items, Years 1 and 2	N ≈ 103		N ≈ 94		N ≈ 86	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
To what extent has MIC program participation- Increased SAT/ACT scores overall among your students	1.87	1.13	2.10	1.29	0.27	1.15
Difficulties for teachers- How much can you do to control disruptive behavior in the classroom	4.10	1.09	4.24	0.82	0.17	1.38
Difficulties for teachers- How much can you do to motivate students who show low interest in school work	3.75	1.04	3.77	0.89	0.01	1.30
Difficulties for teachers- How much can you do to get students to believe they can do well in school work	3.98	1.04	4.08	0.75	0.08	1.20
Difficulties for teachers- How much can you do to help students value learning	3.82	1.05	3.97	0.86	0.15	1.34
Difficulties for teachers- To what extent can you craft good questions for your students	4.08	1.02	4.36	0.63	0.29	1.16
Difficulties for teachers- How much can you do to get students to follow classroom rules	4.05	1.03	4.23	0.80	0.19	1.29
Difficulties for teachers- How much can you do to calm a student with is disruptive or noisy	3.95	1.06	4.15	0.80	0.20	1.29
Difficulties for teachers- How well can you establish a classroom management system	4.08	1.06	4.39	0.75	0.31	1.19
Difficulties for teachers- How much can you use a variety of assessment strategies	4.04	1.02	4.39	0.71	0.42	1.25
Difficulties for teachers- To what extent can you provide an alternative explanation or example when students are confused	4.26	1.01	4.46	0.77	0.25	1.27
Difficulties for teachers- How much can you assist families in helping their children do well in school	3.37	1.10	3.56	0.92	0.21	1.28
Difficulties for teachers- How well can you implement alternative strategies in your classroom	3.86	1.05	4.13	0.79	0.24	1.30

Appendix N: Additional Tables, Figures and Details for the Analyses of MIC Student Outcomes

Overview of the Student Achievement Analyses

This appendix presents additional technical information related to the analyses presented in chapters 6 and 7 in the MIC February 2011 report. Those chapters examined how teachers' participation in MIC was associated with the mathematics achievement of middle school and high school students as measured by performance on TAKS-Math. A randomized control trial was not conducted as part of this evaluation and thus, the analyses cannot prove causality, but can demonstrate associations between MIC and student outcomes. . The main student outcomes for this study were are TAKS-Math scale scores, and college readiness as measured by HERC and commended status. The key independent variables were based on teachers' MIC experience, as students took courses from teachers who varied in terms of years of MIC experience. Using hierarchical linear modeling techniques (HLM), evaluators analyzed the association between teachers' MIC experience and student achievement, while controlling for the influence of student and school variables using PEIMS data. Additional analyses examined how teacher characteristics are correlated with student TAKS-Math performance. .

Hierarchical Linear Modeling (HLM)

To model TAKS-Math scores, evaluators used the hierarchical linear modeling technique. The following equation summarizes the basic modeling approach for TAKS-Math scale scores. This is a hierarchical linear model as the intercepts (i.e., the school effects, *u*'s) were estimated as random effects.[1] X and W are predictor matrices and include variables of main interest or control variables.

Level 1: $Y_{ij} = \beta_{0j} + \beta_{1j} * X_{ij} + \ldots + r_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01} * W + \ldots + u_{0j}$

Level 2: $\beta_{1j} = \gamma_{10} + u_{1j}$

where

- Y is a standardized TAKS-Math scale score
- level-1 is student and level-2 is school postscripts i and j
- indexes, respectively, student and school
- β's and γ's are parameters to be estimated
- X is a student-level variable
- "…" indicates that the model includes other variables (but omitted for the simplicity of presentation)
- W is a school-level variable
- r's and u's are independently and identically distributed residuals

[1] This means that the school averages of the outcome, adjusted for covariates in the model, were weighted by the reliability of the school averages. This precision weighting technique is based on the idea that (a) the schools that contributed a larger number of subjects and produced a smaller outcome variance are statistically more reliable and (b) they should influence the estimation of the grand average of the school averages at a greater magnitude (than other schools with imprecise measurement). As a result, the HLM intercept (β0j), which is the grand average of reliability-weighted school averages, is a conservative estimate (devoid of the influence of imprecisely measured outliers).

For the modeling of dichotomous outcomes, i.e., college readiness and commended status, evaluators employed a form of HLM called multilevel logistic regression modeling. Like the HLM above, this model treats the intercepts or the school effects (*u*'s below) as random effects.

Level 1: $\log(P_{ij}/1-P_{ij}) = \beta_{0j} + \beta_{1j} * X_{ij} \ldots$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01} * X_{j} \ldots + u_{0j}$

Level 2: $\beta_{1j} = \gamma_{10}$

where

- Level-1 is student and level-2 is school.
- Postscripts i and j index, respectively, student and school.
- *P* represents a subject's probability of meeting the standard in the test (or achieving the commended status)
- *u*'s are school-specific residuals that are independently and identically distributed.
- β's are level-1 parameters and γ's are level-2 parameters.
- *X's* with postscripts i and j are level-1 independent variables and X's with a postscript j are level-2 independent variables.

Evaluators were able to link teacher data with student data based on course enrollment information provided through student rosters described in chapter 3. Because students were linked to teachers, as well as to schools, evaluators employed 3-level HLM analyses, utilizing "teacher level" as one of the nesting units. The 3-level HLM equation includes teacher effects as additional random effects. Evaluators did not have access to non-MIC students' teacher/course information, since student rosters and teacher demographic data were not collected for non-MIC teachers. Thus, for the analyses examining how teacher background was associated with student outcomes, the analysis samples included only MIC students.

To control for students' prior-year mathematics achievement , evaluators used a standardized version of TAKS-Math scale scores. The evaluation team standardized the original TAKS-Math scale scores using Texas state means and state standard deviations specific to students' grade level and school year. Other predictor variables available from PEIMS included a standard set of student-level information (including student demographics and educational status), and school-level information, (such as locale types—although these were not included in the final analyses due to multicollinearity). Data on MIC program types was also included using data from the grant applications and progress reports. .

Sample and Variables

Using data collected from three school years (2007–08, 2008–09, 2009–10), evaluators constructed the cycle 1 and cycle 2 analysis samples:

- Cycle 1 Students- This sample of students in MIC Cycle 1 schools included three years of data. Data for this sample of students included information from the pre-intervention year (2007–08), intervention year 1 (2008–09), and intervention year 2 (2009–10)

- Cycle 2 Students-This sample of students in MIC Cycle 2 schools included two years of data. Data for this sample of students included information from the pre-intervention year (2008–09) and intervention year 1 (2009–10).

Both samples included MIC students and non-MIC students. MIC students were students taught for at least one year by a teacher who participated in MIC. Non-MIC students are the remainder of students in the MIC schools who never took a course with an MIC teacher during the period of the evaluation. To identify who were MIC students and who were non-MIC students, evaluators had access to rosters of students who took courses taught by MIC teachers. Based on this course enrollment database, if a student took a course with a MIC teachers for a full year (both in the Fall and Spring semesters),he or she was identified as a MIC student. In cases where students were taught by more than one MIC teacher, the teachers needed to have the same MIC year information (i.e., both teachers participated in MIC for the same amount of time), so classification of students based on their teachers' MIC experience was unambiguous. If this was not the case, the cases were considered invalid and excluded from the analysis sample[2]. Finally, students were considered non-MIC if they were not taught by MIC teachers for both of the semesters or their IDs do not appear in the course enrollment database (recall the student roster data only included students who were taught by MIC teachers).

Most students had only one teacher during the school year for mathematics; however, in cases where MIC students happened to have more than more than one MIC teacher during a school year , the cases were kept in the analyses only if both of the teachers had the same years of MIC experience. This rule removed, for example, a case where a student is taught by one teacher with one year of MIC experience and by another MIC teacher with two years of MIC experience. This makes the meaning of teachers' MIC years of experience clear and unambiguous. When merged with the student database, only one teacher was randomly selected to represent the MIC experience of the students. This simplified the analysis and allowed the use of teachers/courses as one nesting unit in 3-level HLMs for some of the analyses conducted (discussed later).

Descriptions of Variables

Dependent Variables

As mentioned earlier, the student outcomes were TAKS-Math scale scores, as well as college readiness as measured by HERC and TAKS-Math commended status. The HERC college readiness measure was used only for the 11th grade sample. The cut point for HERC was 2200 on TAKS-Math. The cut point score for commended status on TAKS-Math was 2400. For middle school scores, the cut

[2] The original student-course database included 84,781 students who took mathematics courses. 76% of the subjects had valid MIC teacher information as they were either (a) taught by the same teacher in the Fall and Spring semesters or (b) taught by multiple teachers with the same amount of participation in MIC (1 year or 2 years). Invalid cases were (a) students who did not have the same MIC teacher for two consecutive semesters, (b) students taught by MIC teachers with different MIC years, (c) taught by teachers whose MIC year information is missing.

points from 2009–10 varied by subject and grade level because the scores were vertically equated for the first time.

Student-level Basic Covariates

Independent variables included student-, school-, and program-level information. To control for prior achievement, evaluators used the standardized pre-intervention year TAKS-Math scale score for both Cycle 1 and Cycle 2 analyses. Student-level variable predictors were grade level, economic disadvantage, at-risk indicator, gender, race and ethnicity, LEP status, and special education status.

MIC Teacher and Student Experience Variables

By the end of school year 2009–10, Cycle 1 schools and Cycle 2 schools had been in MIC, respectively, for two years and one year. For teachers in MIC schools (both MIC and non-MIC) this meant that some teachers in these schools experienced MIC for zero years, one year, or two years. Cycle 2 teachers (both MIC and non-MIC) had either zero or one year of MIC experience. Combined with the fact that some students took MIC teachers' courses for 1 or 2 years, and others did not at all, the combined Cycle 1 teachers' and students' MIC participation pattern created the following six student groups:

A. Student no experience 2008 to 2010: Non-MIC teacher no experience 2008 to 2010

B. Student one year experience in 2008–09: MIC teacher one year experience in 2008–09/ Non-MIC teacher 2009–10

C. Student one year of experience in 2009–10: Non-MIC teacher in 2008–09/ MIC Teacher one year of experience in 2009–10

D. Student one year experience in 2009–10: Non-MIC teacher in 2008–09/ MIC teacher two years of experience in 2009–10

E. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher one year of experience in 2009–10

F. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher two years of experience in 2009–10

Group A students are the ones that were least exposed to MIC. Even though they belonged to MIC schools, they never took courses from MIC-trained teachers for the two school years of the grant. Group F students were exposed to MIC the most. For two consecutive years, they took courses from MIC teachers who in the second year had also experienced MIC for two consecutive years.

Cycle 2 teachers (either MIC or non-MIC) were in the program for zero or one year. Thus, there were only two groups for cycle 2 students:

A. Students with no MIC experience
B. Students with one year experience with a teacher with one year of MIC experience in 2009–10

The grouping introduced one complexity to the modeling process. Not all groups, defined by MIC experience, were represented in all participating schools. This was particularly a salient problem for the cycle 1 sample as there are all together six student groups. For example, if a school has exceptionally high rate of MIC participation by teachers, for it may not have any non-MIC students (Group A). In contrast, if a school has low teacher participation in MIC, it may not have group F.

Evaluators conducted a sensitivity analysis by running models in two ways. The first model restricts the analysis sample by selecting schools that have at least five students from all six groups for Cycle 1 or two groups for Cycle 2. The second model used the full data but estimated the coefficients for the MIC experience variables as random effects, so imprecision in the estimates will be accounted for. Evaluators compared the results from the two models to interpret the patterns.

MIC Teacher Survey

Only MIC teachers took the MIC teacher survey and non-MIC teachers did not; thus the examination of whether there were any links between teacher perceptions and student achievement was restricted to the sample of students whose teachers participated in MIC.

- Perceptions of Content Knowledge
- Perceptions of Technical Knowledge
- Perceptions of Instructional Skills
- Usage of Instructional Strategies

Amount of Training and Teacher Characteristics

The upload data collected from the MIC grantees regarding the MIC teachers included data on the amount of MIC coaching time and PD (professional development) time the MIC teachers participated in during the course of the year. The time for MIC coaching and PD were categorized into four groups: a) 1 to 20 hours, b) 21 to 40 hours, c) 41 to 60 hours, and d) 60 hours or more. Teacher characteristics used in the analyses included advanced degree, years of experience, and non-math certification (in addition to math certification). Again, this information was only available for the teachers who participated in MIC.

MIC Program Type Variables

MIC programs/grantees varied in the way the MIC program was implemented. A set of indicator variables were prepared to represent the following three program types and "other." The details of the typologies are available in chapter 3 Evaluation Approach, section "Data Sources, Instruments, and Data Collection Activities.

- Approved Service Provider (ASP)-to-District Expert Coaches Program Type
- District-to-Teachers Expert Coaches Program Type:
- Peer-to-Peer Teacher Coaches Program Type:
- Other MIC Program Type.

Summary of Models

The HLM models examined in this report can be classified into two types. As mentioned earlier, the first type compares MIC students and non-MIC students (see definition of MIC and non-MIC students) and the second type examines only MIC students. The difference was caused by the fact that evaluators had access to teacher information only for the teachers of MIC students and thus when examining teacher information/characteristics as predictors, the analysis sample had to exclude students who never took a course with a MIC teacher. In the following discussion, the models that compared MIC and non-MIC students will be referred to as "main" models. The models that utilized teacher information and thus only included MIC students will be referred to as "other" models.

Main Models (including both MIC and non-MIC students)

The goal of these models was to understand how achievement in mathematics was related to different MIC exposure levels. The differences of MIC exposure were captured by MIC-experience variables. As described earlier in this appendix, Cycle 1 sample had six groups of students, while Cycle 2 sample had two groups of students. There were all together six sets of samples and corresponding analyses. For the following four samples, evaluators examined TAKS-Math scale scores and the commended status as the outcome variables.

- Cycle 1 Middle School Student (7^{th} and 8^{th} graders[3]) Sample
- Cycle 1 High School Student (9^{th}, 10^{th}, and 11^{th} graders) S ample
- Cycle 2 Middle School (6^{th}, 7^{th} and 8^{th} graders) Analysis
- Cycle 2 High School (9^{th}, 10^{th}, and 11^{th} graders) Analysis

For the following two samples, college readiness as measured by HERC was examined as the outcome variable.

- Cycle 1 11^{th} Grade Analysis
- Cycle 1 11^{th} Grade Analysis

Again, as discussed above, the grouping of students by their teachers' MIC experience introduced one problem. Cycle 1 students were grouped into six groups (A to F), but these groups were not always represented in all schools. For example, in schools where teachers MIC participation rate was exceptionally high, there may not be group A students (see definition from an earlier section on MIC Experience Variables). This pattern of data may have biased the results such that some findings may have arisen partly because of the pattern of missing groups specific to schools.

To avoid this problem, evaluators examined two models for each analysis. The first model included only schools where each MIC experience group had at least five students. This led to a reduction of sample size and thus the analysis models were referred to as "Random Intercept Model with *Reduced Dataset*." The results were based on a sample that was more balanced in terms of the MIC experience variables.

The second model included all subjects relevant for analytical purposes and thus the models were referred to as "Random Intercept and Coefficient Model with *Full Dataset*." As the name of the model indicates, the coefficients for the MIC experience groups were treated as random effects. What this achieved was the weighting of coefficient estimates by the precision of measurements. When school A had a very small number of students represented in group A, the school's coefficient for group A

[3] The Cycle 1 sample excluded Grade 6 students because their pretest scores were not requested. In the prior-to-intervention year (2007–08) they were in Grade 4 and had not taken TAKS yet.

membership is unreliable and thus treated very lightly in the derivation of the grand effect of group A. The more extreme case is when a school was missing some groups of students entirely. If a school was missing group A students (every student in the school had taken courses with MIC teachers), the coefficient for group A from this school will be inestimable. HLM (implemented by SAS's PROC GLIMMIX) considers this as a highly unreliable estimate and its influence on the overall group A effect will be treated as zero, but the unreliability/uncertainty that the school creates will be reflected in the standard errors of the overall effect.

In interpreting the results, evaluators relied on both models to adjust their confidence in the patterns emerged.

Other Models (Only MIC Students Included)

The remainder of the models presented in chapters 6 and 7 utilized various types of teacher information, including teacher survey, years of service, and certification. As mentioned, only MIC students were included in the analysis samples. Furthermore, because the analysis sample matched students and teachers/courses exactly, the teacher level was used as a nesting unit in the HLM framework. The models were estimated on the same set of analysis samples mentioned earlier for the examination of TAKS-Math scale scores:

- Cycle 1 Middle School Student (7th and 8th graders[4]) Sample
- Cycle 1 High School Student (9th, 10th, and 11th graders) Sample
- Cycle 2 Middle School (6th, 7th and 8th graders) Analysis
- Cycle 2 High School (9th, 10th, and 11th graders) Analysis

The two kinds of models were examined:

- Coaching and Professional Development time for teachers and teacher characteristics (Advanced degree, Years of Experience, Certified in other fields (in addition to mathematics)
- Teacher Survey Information models.

Demographic Characteristics of MIC Students and non-MIC Students

The main focus of the student achievement model was to compare students from MIC grantee schools by level of MIC experience. Cycle 2 students, since their schools were only in MIC for one year, were classified into students who were in MIC only for one year or zero year (no MIC teacher in 2009–10). Cycle 1 students had six groups A to F, depending on a combination of (a) whether students had zero, one, or two years of taking the courses of MIC teachers and (b) whether teachers had zero, one, or two years of MIC experience. Tables below compared the Cycle 1 and Cycle 2 groups in terms of predictors used in the HLM analysis. A is a non-MIC group and B to F groups are MIC experience groups. Statistical tests were conducted to compare group A students (non-MIC) and the rest of students (MIC).

[4] The Cycle 1 sample excluded Grade 6 students because their pretest scores were not requested. In the prior-to-intervention year (2007–08) they were in Grade 4 and had not taken TAKS yet.

Table N.1. Demographic Characteristics of MIC Cycle 1 Middle School Students by Combined Student-Teacher MIC Experience Category

	A n=1,474	B n=1,019	C n=3,406	D n=1,375	E n=5,175	F n=4,172	B to F Combined n=15,147	Sig A vs. (B to F)
2007–08 TAKS-Math Pretest Scale Score	-0.07	-0.11	-0.09	-0.17	-0.09	-0.08	-0.09	
Grade 7	49%	45%	51%	57%	45%	51%	49%	
Grade 8	49%	55%	47%	39%	55%	49%	50%	
Economic Disadvantage	70%	75%	72%	76%	69%	79%	74%	*
At Risk	47%	52%	44%	42%	47%	49%	46%	
Native American	0%	0%	0%	0%	0%	1%	0%	
Asian	1%	1%	1%	1%	1%	3%	2%	
Black	19%	7%	15%	14%	4%	10%	9%	*
White	15%	11%	9%	12%	12%	14%	12%	*
Hispanic	65%	80%	75%	72%	82%	73%	77%	*
LEP	13%	20%	22%	14%	18%	27%	21%	*
Special Education	4%	4%	3%	4%	2%	4%	3%	

A. Student no experience 2008-2010: Non-MIC teacher no experience 2008-2010

B. Student one year experience in 2008–09: MIC teacher one year experience in 2008–09/ Non-MIC teacher 2009–10

C. Student one year of experience in 2009–10: Non-MIC teacher in 2008–09/ MIC Teacher one year of experience in 2009–10

D. Student one year experience in 2009–10: Non-MIC teacher in 2008–09/ MIC teacher two years of experience in 2009–10

E. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher one year of experience in 2009–10

F. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher two years of experience in 2009–10

Table N.2. Demographic Characteristics of MIC Cycle 1 High School Students by Combined Student-Teacher MIC Experience Category

	A	B	C	D	E	F	B to F Combined	Sig
	n=8,014	n=4,017	n=5,115	n=6,265	n=7,013	n=8,537	n=30,947	A vs. (B to F)
2007–08 Math-TAKS Pretest Scale Score	-0.22	-0.06	-0.19	-0.15	0.02	-0.05	-0.08	*
Grade 9	34%	35%	54%	60%	35%	25%	40%	*
Grade 10	26%	36%	25%	20%	29%	41%	31%	*
Grade 11	39%	29%	21%	20%	36%	34%	29%	*
Economic Disadvantage	79%	75%	67%	78%	67%	75%	73%	*
At Risk	68%	60%	57%	58%	53%	57%	56%	*
Native American	0%	0%	0%	0%	0%	0%	0%	
Asian	1%	1%	1%	0%	2%	2%	1%	*
Black	7%	5%	10%	7%	10%	8%	8%	*
White	8%	9%	12%	8%	11%	11%	10%	*
Hispanic	85%	85%	77%	85%	77%	78%	80%	*
LEP	9%	11%	12%	15%	14%	14%	14%	*
Special Education	5%	4%	4%	4%	3%	4%	4%	*

A. Student no experience 2008-2010: Non-MIC teacher no experience 2008-2010

B. Student one year experience in 2008–09: MIC teacher one year experience in 2008–09/ Non-MIC teacher 2009–10

C. Student one year of experience in 2009–10: Non-MIC teacher in 2008–09/ MIC Teacher one year of experience in 2009–10

D. Student one year experience in 2009–10: Non-MIC teacher in 2008–09/ MIC teacher two years of experience in 2009–10

E. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher one year of experience in 2009–10

F. Student two years of experience in 2009–10: MIC teacher one year of experience in 2008–09/ MIC teacher two years of experience in 2009–10

As mentioned, Cycle 2 students were grouped into only two MIC experience categories, MIC and non-MIC.

Table N.3. Demographic Characteristics of MIC Cycle 2 Students by MIC Experience Variables (A and B)

	Cycle 2 Middle School Students Sample			Cycle 2 High School Students Sample			
	A. NON-MIC	B. MIC		A. NON-MIC	B. MIC		
	n=18,792	n=11,742		n=21,066	n=18,776		
	Average or Percentages						
2008–09 TAKS-Math Pretest Scale Score	-0.18	-0.19		0.02	-0.14	*	
Grade 6	28%	18%	*				
Grade 7	40%	35%	*				
Grade 8	32%	47%	*				
Grade 9				31%	43%	*	
Grade 10				34%	33%		
Grade 11				35%	24%	*	
Economic Disadvantage	79%	77%	*	66%	67%		
At Risk	53%	51%	*	49%	54%	*	
Native American	0%	0%		0%	0%		
Asian	2%	1%	*	2%	1%	*	
Black	12%	16%	*	10%	16%	*	
White	11%	19%	*	16%	24%	*	
Hispanic	75%	64%	*	72%	59%	*	
LEP	30%	18%	*	13%	9%	*	
Special Education	4%	5%	*	5%	6%	*	

Source: PEIMS, 2007–08; PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; *p<.05; **p<.01; ***p<.001

Note: MIC experience variables group cycle 2 students into the following two categories.

A. Student no experience

B. Student one year experience in 2009-2010/teacher one year experience in 2009-2010

Demographic Characteristics of Teachers Survey Respondents vs. Non-Respondents

One limitation of the student achievement analysis that utilized teacher survey information (in addition to there being no survey information from non-MIC teachers) was that not all MIC teachers responded to the survey. Table below compared the demographic characteristics of teachers who responded to the MIC Teacher Survey to and MIC teachers who did not respond. The variables used were teachers' MIC coaching time, PD time, years of teaching experience, certification in non-math fields (in addition to math), and advanced degree.

Table N.4 Demographic Characteristics of Teacher Survey Respondents vs. Non-respondents

Cycle 1 Middle School Students	Teachers w/ Survey Information			Teachers w/o Survey Information			
	N	Mean or %	SD	N	Mean or %	SD	Significance
Average MIC hours	114	19.27	14.45	195	21.50	15.57	
Average PD hours	113	54.57	19.93	192	48.44	17.93	*
Years of Experience	114	7.17	9.09	193	8.04	8.46	
Certified in other fields	114	73.68%		195			
Advanced Degree	113	15.04%		192			
Cycle 1 High School Students	**Teachers w/ Survey Information**			**Teachers w/o Survey Information**			
	N	Mean or %	SD	N	Mean or %	SD	Significance
Average MIC hours	169	18.45	13.18	309	26.19	17.86	*
Average PD hours	166	38.89	17.65	308	36.87	18.51	
Years of Experience	169	8.07	8.85	308	10.75	10.16	*
Certified in other fields	169	36.09%		311			
Advanced Degree	165	21.82%		303			
Cycle 2 Middle School Students	**Teachers w/ Survey Information**			**Teachers w/o Survey Information**			
	N	Mean or %	SD	N	Mean or %	SD	Significance
Average MIC hours	89	19.04	17.50	104	22.12	21.22	
Average PD hours	88	36.38	23.26	101	38.72	26.65	
Years of Experience	91	7.89	8.58	109	8.50	9.00	
Certified in other fields	91	76.92%		109			
Advanced Degree	87	17.24%		108			
Cycle 2 High School Students	**Teachers w/ Survey Information**			**Teachers w/o Survey Information**			
	N	Mean or %	SD	N	Mean or %	SD	Significance
Average MIC hours	173	23.66	21.09	150	24.73	21.32	
Average PD hours	170	41.41	25.03	150	35.99	23.81	*
Years of Experience	179	9.63	9.68	159	9.89	10.36	
Certified in other fields	179	45.25%		160			
Advanced Degree	179	16.20%		157			

Source: Upload data and teacher survey *p<.05; **p<.01; ***p<.001

Notes: The analysis sample included the teachers whose students were found in the student achievement analysis samples with valid pre- and post TAKS outcomes.

Detailed Student Outcomes HLM Tables

Table N.5

MIC Cycle 1 Middle School Students (Grades 7 and 8): Descriptive Statistics for HLM Models

Variable Name	Full Dataset (n=16,440)				Reduced Dataset (n=3,426)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Intercept [TAKS-Math Scale Score (2009–10)]	-0.05	0.96	-5.01	2.88	-0.03	0.95	-2.56	2.88
Pretest TAKS-Math Scale Score (2007–08)	-0.08	0.95	-4.70	2.50	-0.10	0.95	-4.70	2.23
MIC group B	0.06	0.24	0.00	1.00	0.02	0.14	0.00	1.00
MIC group C	0.20	0.40	0.00	1.00	0.02	0.13	0.00	1.00
MIC group D	0.08	0.27	0.00	1.00	0.05	0.22	0.00	1.00
MIC group E	0.31	0.46	0.00	1.00	0.23	0.42	0.00	1.00
MIC group F	0.25	0.44	0.00	1.00	0.67	0.47	0.00	1.00
Grade 8	0.51	0.50	0.00	1.00	0.49	0.50	0.00	1.00
Economically Disadvantaged	0.73	0.44	0.00	1.00	0.74	0.44	0.00	1.00
At-Risk	0.46	0.50	0.00	1.00	0.49	0.50	0.00	1.00
Female	0.49	0.50	0.00	1.00	0.49	0.50	0.00	1.00
Native American	0.00	0.06	0.00	1.00	0.01	0.08	0.00	1.00
Asian	0.02	0.12	0.00	1.00	0.03	0.17	0.00	1.00
Black	0.10	0.30	0.00	1.00	0.09	0.28	0.00	1.00
White	0.12	0.33	0.00	1.00	0.15	0.36	0.00	1.00
LEP	0.20	0.40	0.00	1.00	0.23	0.42	0.00	1.00
Special Education	0.03	0.17	0.00	1.00	0.04	0.19	0.00	1.00
District-to-Teacher MIC Program Type	0.37	0.48	0.00	1.00	0.00	0.00	0.00	0.00
Peer-to-Peer MIC Program Type	0.00	0.02	0.00	1.00	0.00	0.00	0.00	0.00
Other MIC Program Type	0.45	0.50	0.00	1.00	0.67	0.47	0.00	1.00

Source: PEIMS, 2008–09; PEIMS, 2009–10

Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Definition of Groups defined by teachers' MIC experience

A. Student no experience 2008-2010/teacher no experience 2008-2010

B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10

C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09

D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09

E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09

F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Table N.6

MIC Cycle 1 Middle School Students (Grades 7 and 8): Average TAKS-Math Scale Scores as a Function of Teacher and Student Characteristics and MIC Program Type, 2009–10

Variable Name	Full Dataset (n=16,440)		Reduced Dataset (n=3,426)	
	Estimate	Standard Error	Estimate	Standard Error
Intercept [TAKS-Math Scale Score (2009–10)]	-0.05	0.06	-0.29	0.12
Pretest TAKS-Math Scale Score (2007–08)	0.64	0.01*	0.63	0.01*
MIC group B	0.04	0.04	0.15	0.12
MIC group C	0.16	0.05*	0.20	0.13
MIC group D	0.23	0.05*	0.34	0.11*
MIC group E	0.15	0.04*	0.35	0.10*
MIC group F	0.31	0.04*	0.48	0.10*
Grade 8	0.00	0.01	0.01	0.02
Economically Disadvantaged	-0.04	0.01*	-0.06	0.03*
At-Risk	-0.32	0.01*	-0.32	0.03*
Female	0.02	0.01*	0.05	0.02*
Native American	-0.05	0.08	-0.01	0.13
Asian	0.29	0.04*	0.22	0.06*
Black	-0.08	0.02*	-0.09	0.04*
White	0.05	0.02*	0.02	0.03
LEP	0.06	0.01*	0.09	0.03*
Special Education	-0.05	0.03	-0.01	0.06
District-to-Teacher MIC Program Type	0.01	0.07	n/a	
Peer-to-Peer MIC Program Type	-0.31	0.35	n/a	
Other MIC Program Type	0.03	0.07	0.07	0.07
Variance Information				
Residuals	0.37	0.00*	0.37	0.01*
% of Residual Variance Explained	60.14%		58.35%	
Number of Students	16,440		3,426	
Number of Schools	49		5	

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09.
* $p < .05$
Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.
Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Definition of Groups defined by teachers' MIC experience
A. Student no experience 2008-2010/teacher no experience 2008-2010
B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10
C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09
D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09
E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09
F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Table N.7

MIC Cycle 1 High School Students (Grades 9-11): Descriptive Statistics for HLM Models

Variable Name	Full Dataset (n=38,961)				Reduced Dataset (n=13,167)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Intercept [TAKS-Math Scale Score (2009–10)]	-0.15	0.93	-5.06	3.41	-0.14	0.92	-5.06	3.41
Pretest TAKS-Math Scale Score (2007–08)	-0.11	0.91	-4.67	3.14	-0.09	0.91	-4.67	3.14
MIC group B	0.10	0.30	0.00	1.00	0.07	0.26	0.00	1.00
MIC group C	0.13	0.34	0.00	1.00	0.10	0.30	0.00	1.00
MIC group D	0.16	0.37	0.00	1.00	0.15	0.36	0.00	1.00
MIC group E	0.18	0.38	0.00	1.00	0.19	0.39	0.00	1.00
MIC group F	0.22	0.41	0.00	1.00	0.41	0.49	0.00	1.00
Grade 10	0.30	0.46	0.00	1.00	0.30	0.46	0.00	1.00
Grade 11	0.31	0.46	0.00	1.00	0.31	0.46	0.00	1.00
Economically Disadvantaged	0.74	0.44	0.00	1.00	0.74	0.44	0.00	1.00
At-Risk	0.59	0.49	0.00	1.00	0.54	0.50	0.00	1.00
Female	0.50	0.50	0.00	1.00	0.50	0.50	0.00	1.00
Native American	0.00	0.05	0.00	1.00	0.00	0.04	0.00	1.00
Asian	0.01	0.11	0.00	1.00	0.02	0.13	0.00	1.00
Black	0.08	0.27	0.00	1.00	0.13	0.34	0.00	1.00
White	0.10	0.30	0.00	1.00	0.09	0.29	0.00	1.00
LEP	0.13	0.33	0.00	1.00	0.15	0.36	0.00	1.00
Special Education	0.04	0.20	0.00	1.00	0.04	0.19	0.00	1.00
District-to-Teacher MIC Program Type	0.25	0.43	0.00	1.00	0.00	0.00	0.00	0.00
Peer-to-Peer MIC Program Type	0.21	0.41	0.00	1.00	0.22	0.41	0.00	1.00
Other MIC Program Type	0.42	0.49	0.00	1.00	0.67	0.47	0.00	1.00

Source: PEIMS, 2008–09; PEIMS, 2009–10

Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Definition of Groups defined by teachers' MIC experience

A. Student no experience 2008-2010/teacher no experience 2008-2010
B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10
C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09
D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09
E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09
F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Table N.8

MIC Cycle 1 High School Students (Grades 9-11): Modeling TAKS-Math Scale Scores, 2009–10

Variable Name	Full Dataset (n=38,961) Estimate	Full Dataset (n=38,961) Standard Error	Reduced Dataset (n=13,167) Estimate	Reduced Dataset (n=13,167) Standard Error
Intercept [TAKS-Math Scale Score (2009–10)]	-0.02	0.04	-0.10	0.06
Pretest TAKS-Math Scale Score (2007–08)	0.69	0.00*	0.68	0.01*
MIC group B	0.07	0.02*	0.06	0.03*
MIC group C	0.04	0.03	0.06	0.03*
MIC group D	0.06	0.02*	0.04	0.02
MIC group E	0.14	0.02*	0.08	0.02*
MIC group F	0.16	0.03*	0.23	0.02*
Grade 10	-0.01	0.01	-0.01	0.01
Grade 11	-0.15	0.01*	-0.11	0.01*
Economically Disadvantaged	-0.01	0.01	-0.01	0.01
At-Risk	-0.25	0.01*	-0.24	0.01*
Female	-0.03	0.01*	-0.01	0.01
Native American	0.01	0.06	-0.09	0.12
Asian	0.19	0.03*	0.18	0.04*
Black	-0.04	0.01*	-0.05	0.02*
White	0.06	0.01*	0.02	0.02
LEP	-0.01	0.01	0.02	0.01
Special Education	-0.15	0.01*	-0.11	0.03*
District-to-Teacher MIC Program Type	0.13	0.05*	n/a	n/a
Peer-to-Peer MIC Program Type	0.04	0.05	-0.02	0.08
Other MIC Program Type	-0.04	0.04	0.13	0.06
Variance Information				
Residuals	0.31	0.00*	0.31	0.00*
% of Residual Variance Explained	64.17%		63.58%	
Number of Students	38,961		13,167	
Number of Schools	66		11	

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09

* $p < .05$

Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Definition of Groups defined by teachers' MIC experience

A. Student no experience 2008-2010/teacher no experience 2008-2010

B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10

C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09

D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09

E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09

F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Table N.9
Descriptive Statistics for the Cycle 1 Coaching Hour Models

	Variable Name	N	Mean	SD	Min	Max
	A. Reduced Dataset for Random Intercept Model					
Middle School	2009–10 Math TAKS Score	3,503	0.02	0.95	-2.56	2.88
	2007–08 Math TAKS Score	3,503	-0.06	0.95	-2.71	2.23
	Coaching 21 to 40 hours	3,503	0.36	0.48	0.00	1.00
	Coaching 41 or 60 hours	3,503	0.05	0.22	0.00	1.00
	Coaching 60 or more hours	3,503	0.00	0.00	0.00	0.00
	Advanced Degree	3,503	0.21	0.41	0.00	1.00
	Years of Experience	3,503	7.79	8.59	0.00	31.00
	Certified in other fields	3,503	0.81	0.40	0.00	1.00
High School	2009–10 Math TAKS Score	9,410	-0.08	0.93	-5.06	3.41
	2007–08 Math TAKS Score	9,410	-0.06	0.91	-4.44	3.14
	Coaching 21 to 40 hours	9,410	0.32	0.47	0.00	1.00
	Coaching 41 or 60 hours	9,410	0.11	0.32	0.00	1.00
	Coaching 60 or more hours	9,410	0.05	0.21	0.00	1.00
	Advanced Degree	9,410	0.22	0.42	0.00	1.00
	Years of Experience	9,410	9.93	10.34	0.00	46.00
	Certified in other fields	9,410	0.37	0.48	0.00	1.00
	B. Full Dataset for Random Intercept & Coefficient Model					
Middle School	2009–10 Math TAKS Score	13,817	-0.02	0.95	-5.01	2.88
	2007–08 Math TAKS Score	13,817	-0.09	0.94	-2.97	2.50
	Coaching 21 to 40 hours	13,817	0.44	0.50	0.00	1.00
	Coaching 41 or 60 hours	13,817	0.10	0.30	0.00	1.00
	Coaching 60 or more hours	13,817	0.03	0.17	0.00	1.00
	Advanced Degree	13,817	0.20	0.40	0.00	1.00
	Years of Experience	13,817	7.70	8.71	0.00	42.00
	Certified in other fields	13,817	0.70	0.46	0.00	1.00
High School	2009–10 Math TAKS Score	26,136	-0.09	0.94	-5.06	3.41
	2007–08 Math TAKS Score	26,136	-0.07	0.92	-4.44	3.14
	Coaching 21 to 40 hours	26,136	0.35	0.48	0.00	1.00
	Coaching 41 or 60 hours	26,136	0.21	0.41	0.00	1.00
	Coaching 60 or more hours	26,136	0.05	0.22	0.00	1.00
	Advanced Degree	26,136	0.20	0.40	0.00	1.00
	Years of Experience	26,136	9.66	9.62	0.00	46.00
	Certified in other fields	26,136	0.37	0.48	0.00	1.00

Table N.10
Descriptive Statistics for the Cycle 1 Professional Development Hour Models

	Variable Name	N	Mean	SD	Min	Max
	A. Reduced Dataset for Random Intercept Model					
Middle School	2009–10 TAKS-Math Score	3,982	-0.01	0.94	-2.56	2.88
	2007–08 TAKS-Math Score	3,982	-0.10	0.96	-2.97	2.23
	Coaching 21 to 40 hours	3,982	0.09	0.28	0.00	1.00
	Coaching 41 or 60 hours	3,982	0.27	0.44	0.00	1.00
	Coaching 60 or more hours	3,982	0.64	0.48	0.00	1.00
	Advanced Degree	3,982	0.22	0.41	0.00	1.00
	Years of Experience	3,982	7.52	8.21	0.00	37.00
	Certified in other fields	3,982	0.81	0.39	0.00	1.00
High School	2009–10 TAKS-Math Score	9,219	-0.06	0.91	-4.44	3.14
	2007–08 TAKS-Math Score	9,219	0.15	0.36	0.00	1.00
	Coaching 21 to 40 hours	9,219	0.24	0.43	0.00	1.00
	Coaching 41 or 60 hours	9,219	0.42	0.49	0.00	1.00
	Coaching 60 or more hours	9,219	0.23	0.42	0.00	1.00
	Advanced Degree	9,219	9.85	10.33	0.00	46.00
	Years of Experience	9,219	0.38	0.49	0.00	1.00
	Certified in other fields	3,982	-0.01	0.94	-2.56	2.88
	B. Full Dataset for Random Intercept & Coefficient Model					
Middle School	2009–10 TAKS-Math Score	13,561	-0.02	0.95	-5.01	2.88
	2007–08 TAKS-Math Score	13,561	-0.08	0.94	-2.97	2.50
	Coaching 21 to 40 hours	13,561	0.15	0.36	0.00	1.00
	Coaching 41 or 60 hours	13,561	0.42	0.49	0.00	1.00
	Coaching 60 or more hours	13,561	0.37	0.48	0.00	1.00
	Advanced Degree	13,561	0.21	0.41	0.00	1.00
	Years of Experience	13,561	7.79	8.77	0.00	42.00
	Certified in other fields	13,561	0.71	0.46	0.00	1.00
High School	2009–10 TAKS-Math Score	25,776	-0.07	0.92	-4.44	3.14
	2007–08 TAKS-Math Score	25,776	0.24	0.43	0.00	1.00
	Coaching 21 to 40 hours	25,776	0.26	0.44	0.00	1.00
	Coaching 41 or 60 hours	25,776	0.26	0.44	0.00	1.00
	Coaching 60 or more hours	25,776	0.20	0.40	0.00	1.00
	Advanced Degree	25,776	9.72	9.63	0.00	46.00
	Years of Experience	25,776	0.37	0.48	0.00	1.00
	Certified in other fields	13,561	-0.02	0.95	-5.01	2.88

Table N.11

MIC Cycle 1 Middle School Students (Grade 7 and 8): Average TAKS-Math Scale Scores as a Function of Hours of PD, Hours of Coaching, and Teacher Characteristics by School Level, 2009–10

Level	Variable Name	Coaching Models n	Coaching Models Estimate	Coaching Models Standard Error	PD Models n	PD Models Estimate	PD Models Standard Error
Full Dataset							
Middle School	Intercept [Coaching/PD 0 to 20 Hours]	13,678	-0.06	0.07	13,428	-0.10	0.10
Middle School	Coaching/PD 21 to 40 Hours	13,678	-0.01	0.04	13,428	-0.04	0.08
Middle School	Coaching/PD 41 or 60 Hours	13,678	0.01	0.07	13,428	-0.03	0.08
Middle School	Coaching/PD 60 or More Hours	13,678	-0.19	0.13	13,428	0.05	0.09
Middle School	Advanced Degree	13,678	0.00	0.04	13,428	-0.01	0.04
Middle School	Years of Experience	13,678	0.01	0.00*	13,428	0.01	0.00*
Middle School	Certified in Other Fields	13,678	0.05	0.03	13,428	0.04	0.03
High School	Intercept [Coaching/PD 0 to 20 Hours]	26,136	-0.06	0.05	25,776	-0.11	0.06*
High School	Coaching/PD 21 to 40 Hours	26,136	0.05	0.02	25,776	0.06	0.03
High School	Coaching /PD 41 or 60 Hours	26,136	0.04	0.03	25,776	0.07	0.03*
High School	Coaching/PD 60 or More Hours	26,136	-0.09	0.06	25,776	0.14	0.04*
High School	Advanced Degree	26,136	0.01	0.02	25,776	0.00	0.02
High School	Years of Experience	26,136	0.00	0.00*	25,776	0.00	0.00*
High School	Certified in Other Fields	26,136	0.01	0.02	25,776	0.01	0.02
Reduced Dataset							
Middle School	Intercept [Coaching/PD 0 to 20 Hours]	3,242	- 0.05	0.15	3,700	- 0.10	0.15
Middle School	Coaching/PD 21 to 40 Hours	3,242	-	0.07	3,700	-	0.14
Middle School	Coaching/PD 41 or 60 Hours	3,242	n/a	n/a	3,700	-	0.07
Middle School	Coaching/PD 60 or More Hours	3,242	n/a	n/a	3,700	n/a	n/a
Middle School	Advanced Degree	3,242		0.08	3,700		0.07
Middle School	Years of Experience	3,242		0.00	3,700		0.00
Middle School	Certified in Other Fields	3,242		0.09	3,700		0.08
High School	Intercept [Coaching/PD 0 to 20 Hours]	9,410	- 0.25	0.10*	9,219	- 0.27	0.14
High School	Coaching/PD 21 to 40 Hours	9,410			9,219		0.07
High School	Coaching /PD 41 or 60 Hours	9,410		0.07	9,219		0.08
High School	Coaching/PD 60 or More Hours	9,410	-		9,219		0.08
High School	Advanced Degree	9,410	-	0.04	9,219	-	0.04
High School	Years of Experience	9,410			9,219		
High School	Certified in Other Fields	9,410		0.04	9,219		0.04

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;

* $p < .05$

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: The 3-level HLM models were employed (level-1 student, level-2 teacher, level 3 school). The models included pretest TAKS-Math scale score, MIC experience group A to F, Grades (7 and 8 if middle school; 9, 10, 11 if high schools), economically disadvantaged status, at-risk status, gender, race and ethnicity, LEP status, special education status, grantee MIC program type.

Reference category: the coaching or PD 0 to 20 hours.

Table N.12

MIC Cycle 1 Middle School Students (Grades 7 and 8): Likelihood that Students Will Meet Commended Status on TAKS-Math as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n = 16,440)			Reduced Dataset (n = 3,426)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	-2.33	0.25***		-3.78	1.09*	
Pretest TAKS-Math Scale Score (2007–08)	1.79	0.04***	6.00	1.77	0.08***	5.84
MIC group B	0.08	0.22	1.09	0.49	1.30	1.63
MIC group C	0.43	0.19*	1.54	1.75	1.15	5.75
MIC group D	0.63	0.23**	1.87	2.19	1.09*	8.92
MIC group E	0.27	0.17	1.31	1.82	1.07	6.16
MIC group F	0.97	0.19***	2.65	2.51	1.06	12.28
Grade 8	-0.04	0.06	0.96	0.03	0.11	1.03
Economically Disadvantaged	-0.16	0.06**	0.85	-0.23	0.13	0.79
At-Risk	-0.98	0.07*	0.38	-0.92	0.14***	0.40
Female	0.01	0.05	1.01	0.13	0.11	1.14
Native American	-0.01	0.44	0.99	0.19	0.61	1.21
Asian	0.71	0.17***	2.04	0.46	0.28	1.59
Black	-0.18	0.10	0.83	-0.17	0.21	0.84
White	0.23	0.08**	1.26	0.16	0.16	1.17
LEP	0.26	0.09**	1.30	0.35	0.17*	1.42
Special Education	0.03	0.24	1.03	-0.80	0.62	0.45

(CONTINUED)

Table N.12 (CONTINUED)

MIC Cycle 1 Middle School Students (Grades 7 and 8): Likelihood that Students Will Meet Commended Status on TAKS-Math as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n = 16,440)			Reduced Dataset (n = 3,426)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
District-to-Teacher MIC Program Type	0.36	0.24	1.43	n/a		n/a
Peer-to-Peer MIC Program Type	-3.75	12.89	0.02	n/a		n/a
Other MIC Program Type	0.15	0.23	1.16	-0.04	0.28	0.96
Variance Information						
% of Between-School Variance Explained	36.18%			47.55%		
Number of Students	16,440			3,426		
Number of Schools	65			49		

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;

*$p < .05$; ** $p < .01$; *** $p < .001$

Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Definition of groups defined by teachers' MIC experience

A. Student no experience 2008-2010/teacher no experience 2008-2010

B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10

C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09

D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09

E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09

F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Table N.13

MIC Cycle 1 High School Students (Grades 9-11): Likelihood that Students Will Meet TAKS-Math Commended Status as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n = 38,961) Estimate	Standard Error	Odds Ratio	Reduced Dataset (n = 13,167) Estimate	Standard Error	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	-1.89	0.13***		-2.00	0.25***	
Pretest TAKS-Math Scale Score (2007–08)	2.34	0.03***	10.42	2.38	0.06***	10.76
MIC group B	-0.01	0.09	0.99	0.10	0.19	1.11
MIC group C	-0.11	0.11	0.90	-0.09	0.19	0.91
MIC group D	-0.04	0.12	0.96	-0.16	0.18	0.85
MIC group E	0.18	0.09*	1.20	0.03	0.17	1.03
MIC group F	0.22	0.13	1.25	0.47	0.16**	1.61
Grade 10	-0.82	0.05***	0.44	-0.88	0.09***	0.41
Grade 11	-0.31	0.05	0.74	-0.20	0.08*	0.82
Economically Disadvantaged	-0.08	0.05	0.93	-0.18	0.07*	0.83
At-Risk	-0.79	0.04***	0.46	-0.89	0.08***	0.41
Female	-0.18	0.04***	0.84	-0.10	0.06	0.90
Native American	-0.68	0.41	0.51	-1.72	0.84*	0.18
Asian	0.36	0.14*	1.43	0.18	0.21	1.19
Black	-0.05	0.08	0.95	-0.08	0.11	0.93
White	0.13	0.06*	1.13	-0.07	0.11	0.93
LEP	-0.02	0.09	0.98	0.09	0.14	1.09
Special Education	-0.23	0.21	0.79	-0.12	0.37	0.88

(CONTINUED)

Table N.13 (CONTINUED)

MIC Cycle 1 High School Students (Grades 9-11): Likelihood that Students Will Meet TAKS-Math Commended Status as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n = 38,961)			Reduced Dataset (n = 13,167)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
District-to-Teacher MIC Program Type	0.46	0.15**	1.58	n/a		1.00
Peer-to-Peer MIC Program Type	0.10	0.16	1.11	-0.17	0.24	0.85
Other MIC Program Type	-0.12	0.14	0.89	0.22	0.20	1.25
Variance Information						
% of Between-School Variance Explained	83.85%			73.48%		
Number of Students	38,961			13,167		
Number of Schools	66			11		

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
*$p < .05$; ** $p < .01$; *** $p < .001$

Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Definition of groups defined by teachers' MIC experience
A. Student no experience 2008-2010/teacher no experience 2008-2010
B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10
C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09
D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09
E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09
F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Table N.14

MIC Cycle 1 High School Students (Grade 11 only): Modeling Student College Readiness Based on HERC Cut Point of TAKS-Math Scale Scores, 2009–10

Variable Name	Full Dataset (n=12,045)			Reduced Dataset (n=2,344)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	1.024	0.18*		0.846	0.33	
Pretest TAKS-Math Scale Score (2007–08)	2.547	0.06*	12.77	2.564	0.14*	12.99
MIC group B	0.120	0.11	1.13	0.410	0.33	1.51
MIC group C	-0.020	0.13	0.98	-0.120	0.36	0.89
MIC group D	0.127	0.16	1.14	0.810	0.37*	2.26
MIC group E	0.309	0.12*	1.36	0.500	0.30	1.65
MIC group F	0.247	0.16	1.28	0.740	0.31*	2.10
Economically Disadvantaged	0.063	0.07	1.07	0.135	0.14	1.14
At-Risk	-0.730	0.06*	0.48	-0.746	0.14*	0.47
Female	-0.052	0.05	0.95	-0.075	0.12	0.93
Native American	0.212	0.66	1.24	4.877	12.00	131.22
Asian	0.440	0.29	1.55	0.667	0.51	1.95
Black	-0.320	0.10*	0.73	-0.357	0.16*	0.70
White	-0.048	0.10	0.95	0.403	0.24	1.50
LEP	-0.010	0.09	0.99	0.279	0.19	1.32
Special Education	-0.717	0.16*	0.49	-0.086	0.35	0.92

(CONTINUED)

Table N.14 (CONTINUED)

MIC Cycle 1 High School Students (Grade 11 only): Modeling Student College Readiness Based on HERC Cut Point of TAKS-Math Scale Scores, 2009–10

Variable Name	Full Dataset (n= 12,045) Estimate	Full Dataset Standard Error	Full Dataset Odds Ratio	Reduced Dataset (n=2,344) Estimate	Reduced Dataset Standard Error	Reduced Dataset Odds Ratio
District-to-Teacher MIC Program Type	0.346	0.21	1.41	0.000		1.00
Peer-to-Peer MIC Program Type	0.029	0.23	1.03	-0.340	0.26	0.71
Other MIC Program Type	-0.237	0.20	0.79	0.000		1.00
Variance Information						
Between-School Variance of School Intercepts	0.244	0.14		0.029	(0.03)	
Number of Students	12,045			2,344		
Number of Schools	65			5		

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
p* < .05; ** *p* < .01; * *p* < .001

Note: Reference categories for multiple category information are students not taught by MIC teachers (MIC group A), Hispanic students, and ASP-to-District MIC Program Type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Definition of groups defined by teachers' MIC experience
A. Student no experience 2008-2010/teacher no experience 2008-2010
B. Student one year experience in 2008–09/teacher one year experience in 2008–09/non-MIC teacher 2009–10
C. Student one year of experience in 2009–10/teacher one year of experience in 2009–10/non-MIC teacher in 2008–09
D. Student one year experience in 2009–10/teacher two years of experience in 2009–10/non-MIC teacher in 2008–09
E. Student two years of experience in 2009–10/teacher one year of experience in 2009–10/MIC teacher in 2008–09
F. Student two years of experience in 2009–10/teacher two years of experience in 2009–10/MIC teacher in 2008–09

Table N.15

MIC Cycle 1 High School Students (Grades 9-11): Likelihood that Students Will Pass Math Courses as a Function of Teacher and Student Characteristics and MIC Program Type, 2008–09

Variable Name	Geometry (n = 18,282) Estimate	Standard Error	Odds Ratio	Algebra 1 (n = 16,685) Estimate	Standard Error	Odds Ratio	Algebra 2 (n = 13,036) Estimate	Standard Error	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	1.37	0.08*		1.43	0.07*		1.83	0.17*	
Pretest TAKS-Math Scale Score (2007–08)	0.00	0.02	1.00	-0.01	0.02	0.99	-0.01	0.02	0.99
MIC Single-Year Teacher Participants	0.30	0.04*	1.34	0.32	0.04*	1.38	0.42	0.05*	1.53
Grade 10	0.45	0.04*	1.56	0.03	0.08	1.03	0.06	0.16	1.06
Grade 11	0.19	0.06*	1.20	0.68	0.10*	1.98	0.16	0.15	1.17
Economically Disadvantaged	-0.08	0.04	0.93	-0.17	0.05*	0.84	-0.03	0.06	0.97
At-Risk	-1.37	0.05*	0.25	-1.25	0.05*	0.29	-1.25	0.06*	0.29
Female	0.26	0.04*	1.30	0.27	0.04*	1.31	0.28	0.05*	1.32
Native American	0.53	0.47	1.71	0.07	0.39	1.08	-0.80	0.46	0.45
Asian	0.56	0.21*	1.76	1.05	0.32*	2.85	0.77	0.25*	2.15
Black	-0.01	0.06	0.99	0.24	0.07*	1.28	0.13	0.09	1.14
White	0.26	0.07*	1.29	0.17	0.07*	1.18	0.27	0.08*	1.31
LEP	0.06	0.05	1.07	0.00	0.05	1.00	0.12	0.07	1.13
Special Education	0.01	0.06	1.01	-0.07	0.06	0.93	-0.09	0.09	0.91
District -to-Teacher MIC Program Type	-0.03	0.06	0.97	-0.24	0.06*	0.79	-0.32	0.08*	0.73
Peer-to-Peer MIC Program Type	0.42	0.06*	1.53	0.72	0.07*	2.06	0.02	0.08	1.02
Other MIC Program Type	0.23	0.06*	1.26	0.24	0.05*	1.27	-0.12	0.08	0.88
Number of Students	18,282			16,685			13,036		
Number of Schools	69			69			66		

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;
*$p < .05$

Note: Reference categories for multiple category information are Grade 9 students, Hispanic students, and ASP-to-District MIC Program Type.
Note: Fixed effect logistic regression models were used. The HLM approach that treated school as random effects did not converge.
Note: The outcome variable received the value of 1 if students passed the course without failing; 0 if students failed courses or had mixed results of pass and failure.
Note: The analysis sample includes students in Grades 9-11 who took the math courses. They are both MIC students (students who took courses from teachers who participated in MIC) and non-MIC students (students who took courses from teachers who did not participate in MIC).

Table N.15

MIC Cycle 1 Teacher Perceptions of the Effects of MIC on Their Content Knowledge, Technical Knowledge, Instructional Skills, and Usage of Instructional Strategies by School Level, 2009–10

High School	n	Mean	SD	Min	Max
TAKS-Math Scale Score	7,239	-0.25	0.88	-5.06	3.41
Perceptions of Content Knowledge	7,239	2.26	1.18	0	4
Perceptions of Technical Knowledge	7,349	2.60	1.04	0	4
Perceptions of Instructional Skills	7,349	2.72	1.06	0	4
Usage of Instructional Strategies	6,799	2.25	1.18	0	4
Middle School	n	Mean	SD	Min	Max
TAKS-Math Scale Score	4,868	0.01	0.96	-2.77	2.88
Perceptions of Content Knowledge	4,868	2.29	1.00	0	4
Perceptions of Technical Knowledge	4,778	2.35	1.01	0	4
Perceptions of Instructional Skills	4,801	2.39	1.05	0	4
Usage of Instructional Strategies	4,571	1.91	1.17	0	4

Source: PEIMS, 2008–09; PEIMS, 2009–10

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Table N.16

Relationships between MIC Cycle 1 Teacher Perceptions of MIC and Student Math Achievement by School Level, 2009–10

School Level	Domain	Estimate	Standard Error
High School	Perceptions of Content Knowledge	0.030	0.006*
	Perceptions of Technical Knowledge	0.030	0.007*
	Perceptions of Instructional Skills	0.018	0.007*
	Usage of Instructional Strategies	-0.013	0.007
Middle School	Perceptions of Content Knowledge	0.017	0.006
	Perceptions of Technical Knowledge	0.040	0.011*
	Perceptions of Instructional Skills	0.017	0.006
	Usage of Instructional Strategies	-0.054	0.011*

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09; MIC Teacher Survey, 2009-2010

*$p < .05$

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Table N.17

MIC Cycle 2 Middle School Students (Grades 7 and 8): Descriptive Statistics for HLM Models

Variable Name	Full Dataset (n=30,534)				Reduced Dataset (n=27,292)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Intercept [TAKS-Math Scale Score (2009–10)]	-0.21	0.96	-4.89	2.88	-0.21	0.96	-4.89	2.88
Prior Year TAKS-Math Scale Score (2008–09)	-0.18	0.96	-4.91	3.06	-0.19	0.96	-3.18	3.06
MIC Single-Year Teacher Participant	0.38	0.49	0.00	1.00	0.42	0.49	0.00	1.00
Grade 7	0.38	0.49	0.00	1.00	0.39	0.49	0.00	1.00
Grade 8	0.38	0.48	0.00	1.00	0.39	0.49	0.00	1.00
Economically Disadvantaged	0.78	0.41	0.00	1.00	0.78	0.41	0.00	1.00
At-Risk	0.52	0.50	0.00	1.00	0.53	0.50	0.00	1.00
Female	0.50	0.50	0.00	1.00	0.50	0.50	0.00	1.00
Native Americans	0.00	0.05	0.00	1.00	0.00	0.05	0.00	1.00
Asian	0.02	0.13	0.00	1.00	0.02	0.13	0.00	1.00
Black	0.13	0.34	0.00	1.00	0.13	0.34	0.00	1.00
White	0.14	0.35	0.00	1.00	0.14	0.35	0.00	1.00
LEP	0.25	0.44	0.00	1.00	0.26	0.44	0.00	1.00
Special Education	0.04	0.20	0.00	1.00	0.04	0.20	0.00	1.00
District-to-Teacher MIC Program Type	0.17	0.37	0.00	1.00	0.11	0.31	0.00	1.00
Peer-to-Peer MIC Program Type	0.12	0.33	0.00	1.00	0.12	0.33	0.00	1.00
Other MIC Program Type	0.38	0.48	0.00	1.00	0.41	0.49	0.00	1.00

Source: PEIMS, 2008–09; PEIMS, 2009–10

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Note: Reference categories for multiple category information are zero year MIC experience teacher, Grade 6, Hispanic students, and ASP-to-District MIC Program Type.

Table N.18

MIC Cycle 2 Middle School Students (Grades 7 and 8): Average TAKS-Math Scale Scores as a Function of Teacher and Student Characteristics and MIC Program Type, 2009–10

Variable Name	Full Dataset (n = 30,534)		Reduced Dataset (n = 28,292)	
	Estimate	Standard Error	Estimate	Standard Error
Intercept [TAKS-Math Scale Score (2009–10)]	-0.08	0.04	-0.04	0.04
Prior Year TAKS-Math Scale Score (2008–09)	0.69	0.00*	0.70	0.00*
MIC Single-Year Teacher Participant	0.04	0.03	0.00	0.01
Grade 7	0.10	0.01*	0.08	0.01*
Grade 8	0.09	0.01*	0.08	0.01*
Economically Disadvantaged	-0.04	0.01*	-0.05	0.01*
At-Risk	-0.18	0.01*	-0.18	0.01*
Female	-0.01	0.01	-0.01	0.01
Native American	0.02	0.07	0.02	0.08
Asian	0.29	0.03*	0.31	0.03*
Black	-0.08	0.01*	-0.09	0.01*
White	0.00	0.01	0.00	0.01
LEP	-0.03	0.01*	-0.03	0.01*
Special Education	-0.33	0.02*	-0.33	0.02*
District-to-Teacher MIC Program Type	0.16	0.06*	0.17	0.07*
Peer-to-Peer MIC Program Type	0.05	0.07	0.04	0.06
Other MIC Program Type	0.06	0.05	0.05	0.04
Intercept	-0.08	0.04	-0.04	0.04
Variance Information				
Residuals	0.33	0.00	0.34	0.00
% of Residual Variance Explained			63.20%	
Number of Students	30,534		28,292	
Number of Schools	71		47	

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;

*$p < .05$

Note: Reference categories for multiple category information are MIC teacher non-participants, Grade 6, Hispanic students, and ASP-to-District MIC Program Type.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Table N.19

MIC Cycle 2 Middle School Students (Grades 7 and 8): Average TAKS-Math Scale Scores as a Function of Hours of PD and Hours of Coaching, 2009–10

Hours	PD Models		Coaching Models	
	Estimate	Standard Error	Estimate	Standard Error
Intercept [0 hours]	-0.033	0.036	-0.048	0.036
1 to 20 hours	-0.011	0.014	-0.011	0.011
21 to 40 hours	0.025	0.016	0.051	0.024*
41 to 60 hours	0.017	0.014	0.046	0.022*
61 hours or more	0.019	0.022	0.200	0.035*

Source: PEIMS, 2008–09; PEIMS, 2009–10;*$p < .05$

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Table N.20

MIC Cycle 2 High School Students (Grades 9-11): Descriptive Statistics for HLM Models

Variable Name	Full Dataset (n=39,842) Mean	SD	Min	Max	Reduced Dataset (n=35,668) Mean	SD	Min	Max
Intercept [TAKS-Math Scale Score (2009–10)]	-0.14	0.95	-5.06	3.41	-0.18	0.94	-5.06	3.41
Prior Year TAKS-Math Scale Score (2008–09)	-0.06	0.95	-5.03	3.15	-0.09	0.94	-5.03	3.15
MIC Single-Year Teacher Participant	0.47	0.50	0.00	1.00	0.51	0.50	0.00	1.00
Grade 10	0.33	0.47	0.00	1.00	0.32	0.47	0.00	1.00
Grade 11	0.30	0.46	0.00	1.00	0.30	0.46	0.00	1.00
Economically Disadvantaged	0.66	0.47	0.00	1.00	0.67	0.47	0.00	1.00
At-Risk	0.51	0.50	0.00	1.00	0.54	0.50	0.00	1.00
Female	0.50	0.50	0.00	1.00	0.50	0.50	0.00	1.00
Native American	0.00	0.05	0.00	1.00	0.00	0.05	0.00	1.00
Asian	0.02	0.13	0.00	1.00	0.02	0.13	0.00	1.00
Black	0.12	0.33	0.00	1.00	0.12	0.33	0.00	1.00
White	0.20	0.40	0.00	1.00	0.19	0.39	0.00	1.00
LEP	0.11	0.32	0.00	1.00	0.12	0.33	0.00	1.00
Special Education	0.05	0.23	0.00	1.00	0.06	0.23	0.00	1.00
District-to-Teacher MIC Program Type	0.19	0.39	0.00	1.00	0.12	0.32	0.00	1.00
Peer-to-Peer MIC Program Type	0.11	0.32	0.00	1.00	0.12	0.33	0.00	1.00
Other MIC Program Type	0.36	0.48	0.00	1.00	0.40	0.49	0.00	1.00

Source: PEIMS, 2008–09; PEIMS, 2009–10

Note: Reference categories for multiple category information are zero year MIC experience teacher, Grade 9, Hispanic students, and ASP-to-District MIC Program Type.

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Table N.21
Descriptive Statistics for the Cycle 2 Coaching and Professional Development Hour Models

	Variable Name	N	Mean	SD	Min	Max
	Coaching Hour Model					
Middle School	2008–09 TAKS-Math Score	11,148	-0.25	0.91	-4.89	2.88
	Coaching 21 to 40 hours	11,148	0.12	0.33	0.00	1.00
	Coaching 41 or 60 hours	11,148	0.12	0.33	0.00	1.00
	Coaching 60 or more hours	11,148	0.09	0.29	0.00	1.00
	Advanced Degree	11,148	0.14	0.35	0.00	1.00
	Years of Experience	11,148	9.25	9.32	0.00	40.00
	Certified in other fields	11,148	0.75	0.43	0.00	1.00
High School	2008–09 TAKS-Math Score	17,920	-0.20	0.87	-5.06	3.41
	Coaching 21 to 40 hours	17,920	0.20	0.40	0.00	1.00
	Coaching 41 or 60 hours	17,920	0.19	0.40	0.00	1.00
	Coaching 60 or more hours	17,920	0.10	0.29	0.00	1.00
	Advanced Degree	17,920	0.19	0.40	0.00	1.00
	Years of Experience	17,920	9.94	9.93	0.00	40.00
	Certified in other fields	17,920	0.45	0.50	0.00	1.00
	Professional Development Model					
Middle School	2008–09 TAKS-Math Score	10,864	-0.24	0.93	-4.89	2.88
	Coaching 21 to 40 hours	10,864	0.20	0.40	0.00	1.00
	Coaching 41 or 60 hours	10,864	0.28	0.45	0.00	1.00
	Coaching 60 or more hours	10,864	0.17	0.38	0.00	1.00
	Advanced Degree	10,864	0.13	0.34	0.00	1.00
	Years of Experience	10,864	8.93	8.92	0.00	40.00
	Certified in other fields	10,864	0.75	0.43	0.00	1.00
High School	2008–09 TAKS-Math Score	17,499	-0.21	0.87	-5.06	3.41
	Coaching 21 to 40 hours	17,499	0.26	0.44	0.00	1.00
	Coaching 41 or 60 hours	17,499	0.23	0.42	0.00	1.00
	Coaching 60 or more hours	17,499	0.21	0.41	0.00	1.00
	Advanced Degree	17,499	0.20	0.40	0.00	1.00
	Years of Experience	17,499	9.84	9.85	0.00	40.00
	Certified in other fields	17,499	0.45	0.50	0.00	1.00

Table N.22

MIC Cycle 2: Average TAKS-Math Scale Scores as a Function of Hours of PD, Hours of Coaching, and Teacher Characteristics by School Level, 2009–10

Level	Variable Name	Coaching Models			PD Models		
		n	Estimate	Standard Error	n	Estimate	Standard Error
Middle School	Intercept [Coaching/PD 0 to 20 Hours]	11,148	-0.02	0.06	10,864	0.03	0.07
	Coaching/PD 21 to 40 Hours	11,148	0.00	0.05	10,864	-0.03	0.05
	Coaching /PD 41 or 60 Hours	11,148	-0.01	0.05	10,864	-0.06	0.05
	Coaching/PD 60 or More Hours	11,148	0.07	0.08	10,864	-0.05	0.05
	Advanced Degree	11,148	0.03	0.04	10,864	0.02	0.04
	Years of Experience	11,148	0.00	0.00	10,864	0.00	0.00
	Certified in Other Fields	11,148	-0.01	0.04	10,864	-0.01	0.04
High School	Intercept [Coaching/PD 0 to 20 Hours]	17,920	0.07	0.04	17,499	0.05	0.05
	Coaching/PD 21 to 40 Hours	17,920	0.01	0.04	17,499	0.06	0.04
	Coaching /PD 41 or 60 Hours	17,920	0.05	0.05	17,499	0.00	0.04
	Coaching/PD 60 or More Hours	17,920	-0.01	0.06	17,499	0.00	0.04
	Advanced Degree	17,920	0.03	0.03	17,499	0.04	0.03
	Years of Experience	17,920	0.01	0.00*	17,499	0.01	0.00*
	Certified in Other Fields	17,920	-0.03	0.03	17,499	-0.03	0.03

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
*$p < .05$

Note: The 3-level HLM models were employed (level-1 student, level-2 teacher, level-3 school). The models included pretest TAKS-Math scale score, Grades (6, 7, and 8 if middle school; 9, 10, and 11 if high schools), economically disadvantaged status, at-risk status, gender, race and ethnicity, LEP status, special education status, grantee MIC program type.
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Reference category: the coaching or PD 0 to 20 hours.

Table N.23

MIC Cycle 2 Middle School Students (Grades 7 and 8): Likelihood that Students Will Meet Commended Status on TAKS-Math as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n=30,534) Estimate	Standard Error	Odds Ratio	Reduced Dataset (n=28,292) Estimate	Standard Error	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	-1.56	0.16***		-1.47	0.16***	
Prior Year TAKS-Math Scale Score (2008–09)	2.14	0.03***	8.51	2.13	0.03***	8.43
MIC Single-Year Teacher Participant	-0.16	0.11	0.85	-0.16	0.06*	0.86
Grade 7	-0.31	0.06***	0.74	-0.34	0.06***	0.71
Grade 8	-0.30	0.06***	0.74	-0.33	0.06***	0.72
Economically Disadvantaged	-0.18	0.05***	0.84	-0.19	0.05***	0.83
At-Risk	-0.63	0.06***	0.53	-0.61	0.06***	0.54
Female	-0.06	0.04	0.94	-0.07	0.04	0.93
Native American	0.11	0.38	1.11	0.16	0.40	1.17
Asian	1.09	0.13***	2.97	1.11	0.14***	3.05
Black	-0.25	0.08**	0.78	-0.25	0.08**	0.78
White	0.02	0.07	1.02	0.03	0.07	1.03
LEP	0.03	0.07	1.03	0.01	0.07	1.01
Special Education	-1.21	0.20***	0.30	-1.18	0.21***	0.31

(CONTINUED)

Table N.23 (CONTINUED)

MIC Cycle 2 Middle School Students (Grades 7 and 8): Likelihood that Students Will Meet Commended Status on TAKS-Math as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n= 30,534) Estimate	Full Dataset Standard Error	Full Dataset Odds Ratio	Reduced Dataset (n= 28,292) Estimate	Reduced Dataset Standard Error	Reduced Dataset Odds Ratio
District-to-Teacher MIC Program Type	0.24	0.22	1.27	0.31	0.27	1.36
Peer-to-Peer MIC Program Type	-0.09	0.24	0.91	-0.01	0.24	0.99
Other MIC Program Type	0.06	0.19	1.06	0.00	0.18	1.00
Variance Information						
% of Between-School Variance Explained	35.59%			30.08%		
Number of Students	30,534			28,292		
Number of Schools	71			47		

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09

*p < .05; ** p < .01; *** p < .001

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Students in Grade 6 in 2009–10 were in Grade 4 in 2007–08 and are not included in this analysis.

Note: Reference categories for multiple category information are students not taught by MIC teachers, Grade 6, Hispanic students, and ASP-to-District MIC Model.

Table N.24

MIC Cycle 2 High School Students (Grades 9-11): Likelihood that Students Will Meet TAKS-Math Commended Status as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n=39,842)			Reduced Dataset (n=35,668)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	-1.64	0.15***		-1.71	0.13***	
Prior Year TAKS-Math Scale Score (2008–09)	2.62	0.03***	13.74	2.61	0.04***	13.56
MIC Single-Year Teacher Participant	-0.37	0.13**	0.69	-0.33	0.07***	0.72
Grade 10	-1.17	0.05***	0.31	-1.08	0.05***	0.34
Grade 11	-0.11	0.05*	0.89	0.06	0.05	1.06
Economically Disadvantaged	-0.19	0.04***	0.83	-0.18	0.05***	0.84
At-Risk	-0.62	0.05***	0.54	-0.65	0.05***	0.52
Female	-0.14	0.04***	0.87	-0.12	0.04**	0.89
Native American	0.16	0.34	1.18	0.09	0.37	1.09
Asian	0.65	0.12***	1.91	0.70	0.13***	2.01
Black	-0.34	0.08***	0.71	-0.33	0.09***	0.72
White	0.18	0.05**	1.19	0.21	0.06***	1.24
LEP	-0.05	0.10	0.96	-0.02	0.10	0.98
Special Education	-1.45	0.19***	0.23	-1.45	0.21***	0.24

(CONTINUED)

Table N.24 (CONTINUED)

MIC Cycle 2 High School Students (Grades 9-11): Likelihood that Students Will Meet TAKS-Math Commended Status as a Function of Having an MIC Teacher and Other Student Characteristics, 2009–10

Variable Name	Full Dataset (n=39,842)			Reduced Dataset (n=35,668)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
District-To-Teacher MIC Program Type	0.18	0.21	1.20	-0.26	0.23	0.77
Peer-to-Peer MIC Program Type	-0.15	0.26	0.86	-0.02	0.21	0.98
Other MIC Program Type	-0.214	0.21	0.81	-0.18	0.16	0.84
Variance Information						
% of Between-School Variance Explained	60.29%			68.14%		
Number of Students	39,842			35,668		
Number of Schools	63			43		

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
*$p < .05$; ** $p < .01$; *** $p < .001$

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Reference categories for multiple category information are students not taught by MIC teachers, Grade 9, Hispanic students, and ASP-to-District MIC Program Type.

Table N.25

MIC Cycle 2 High School Students (Grade 11 Only): Modeling Student College Readiness Based on HERC Cut Point of TAKS-Math Scale Scores, 2009–10

Variable Name	Full Dataset (n=11,885)			Reduced Dataset (n=8,272)		
	Estimate	Standard Error	Odds Ratio	Estimate	Standard Error	Odds Ratio
Intercept [TAKS-Math Scale Score (2009–10)]	1.675	0.16*		1.569	0.22*	
Prior Year TAKS-Math Scale Score (2008–09)	2.686	0.06*	14.68	2.672	0.07*	14.46
MIC Single-Year Teacher Participant	0.040	0.11	1.04	0.100	0.13	1.11
Economically Disadvantaged	-0.027	0.06	0.97	0.012	0.07	1.01
At-Risk	-0.579	0.06*	0.56	-0.606	0.07*	0.55
Female	-0.149	0.05*	0.86	-0.169	0.06*	0.84
Native American	-0.787	0.46	0.46	-0.424	0.59	0.65
Asian	0.191	0.25	1.21	0.176	0.35	1.19
Black	-0.524	0.09*	0.59	-0.653	0.11*	0.52
White	-0.021	0.08	0.98	-0.106	0.10	0.90
LEP	-0.309	0.09*	0.73	-0.338	0.12*	0.71
Special Education	-1.375	0.16*	0.25	-1.259	0.20*	0.28
District-to-Teacher MIC Program Type	-0.037	0.21	0.96	0.081	0.35	1.08
Peer-to-Peer MIC Program Type	0.163	0.24	1.18	0.233	0.37	1.26
Other MIC Program Type	0.025	0.19	1.02	0.140	0.27	1.15
Variance Information						
Number of Students	11,885			8,272		
Number of Schools	56			29		

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09
$*p < .05$; $**p < .01$; $***p < .001$

Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations (SD) specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Note: Reference categories for multiple category information are zero year MIC experience teacher, Hispanic students, and ASP-to-District MIC Program Type.

Table N.26

Relationships between MIC Cycle 2 Teacher Perceptions of MIC and Student Math Achievement by School Level, 2009–10

Level	Domain	Estimate	Standard Error
High School	Perceptions of Content Knowledge	-0.026	0.006*
	Perceptions of Technical Knowledge	-0.027	0.007*
	Perceptions of Instructional Skills	-0.022	0.007*
	Usage of Instructional Strategies	-0.004	0.007
Middle School	Perceptions of Content Knowledge	-0.027	0.014
	Perceptions of Technical Knowledge	-0.032	0.014*
	Perceptions of Instructional Skills	-0.010	0.017
	Usage of Instructional Strategies	0.023	0.014

Source: PEIMS, 2008–09; PEIMS, 2009–10; Common Core of Data, 2008–09;
$^*p < .05$
Note: TAKS-Math scale scores were transformed to standardized z-scores based on the means and standard deviations specific to grade levels of TAKS test takers. A negative z-score indicates a mean below the state average, while a positive z-score indicates a mean above the state average.

Appendix O: HERC/College Readiness Indicators

College Readiness Indicators

These indicators are grouped together to help provide a picture of college preparedness at a given high school. They can be used by educators as they work to ensure that students are able to perform college-level course work at institutions of higher education.

The indicators include:

- Advanced Course/Dual Enrollment Completion;
- Recommended High School Program/Distinguished Achievement Program Graduates;
- AP/IB Results;
- Texas Success Initiative (TSI) Higher Education Readiness Component;
- SAT/ACT Results; and
- College-Ready Graduates.

College-Ready Graduates

To be considered college-ready as defined by this indicator, a graduate must have met or exceeded the college-ready criteria on the TAKS exit-level test, or the SAT test, or the ACT test. The criteria for each are:

Table O.1
College –Ready Criteria

Subject	Exit-level TAKS		SAT		ACT
ELA	>= 2200 scale score on ELA test AND a "3"or higher on essay	OR	>=500 on Critical Reading AND >=1070 Total	OR	>= 19 on English AND >= 23 Composite
Math	>= 2200 scale score on mathematics test	OR	>=500 on Math AND >=1070 Total	OR	>= 19 on Math AND >= 23 Composite

Three values are calculated for this indicator:

1. Eng Lang Arts. This shows the percent of graduates who scored at or above the criterion score on the TAKS, SAT, or ACT English language arts tests.

   number of graduates who scored at or above the College-Ready criterion for ELA
   divided by
   number of graduates (class of 2008) with ELA results to evaluate

2. Mathematics. This shows the percent of graduates who scored at or above the criterion score on the TAKS, SAT, or ACT mathematics tests.

   number of graduates who scored at or above the College-Ready criterion for mathematics
   divided by
   number of graduates (class of 2008) with mathematics results to evaluate

3. Both Subjects. This shows the percent of graduates who scored at or above the criterion score on both the TAKS, SAT, or ACT ELA and mathematics tests.

   number of graduates who scored at or above the College-Ready criteria on both ELA & mathematics
   divided by
   number of graduates (class of 2008) with results in both subjects to evaluate

This indicator differs from the TSI - Higher Education Readiness Component, in several ways:

- it includes performance on the SAT and ACT;
- it is based on prior year graduates rather than current year 11th graders;
- it provides an overall measure of both subjects combined; and
- performance is tied to the campus and district where the student graduated, while the TSI indicator uses the campus and district where the TAKS tests were administered.

Performance on the exit-level TAKS includes performance on TAKS (Accommodated).

Schools and districts may qualify for Gold Performance Acknowledgment for performance on the College-Ready Graduates indicator (measure 3 above). For a more detailed explanation of Gold Performance Acknowledgment, see Chapter 5 of the 2009 Accountability Manual. (Sources: TEA Student Assessment Division, The College Board, Aug. 2008, Aug. 2009, ACT, Inc. Oct. 2008, Oct. 2007; and PEIMS, Oct. 2008, Oct. 2007)

Commended Performance: See TAKS Commended.

Appendix P: Additional Tables & Figures for MIC Cost & Sustainability Analysis

Table P.1: Expenditures for Cycle 1 MIC Grantees

Grantee Name	Total Expenditures	Number of Teachers served	Number of students served	Average costs per teacher	Average costs per student
ALICE ISD	$194,765	32	2,060	$6,086	$95
BEEVILLE ISD	$218,805	28	1,720	$7,814	$127
CLARKSVILLE ISD	$53,218	9	365	$5,913	$146
COVINGTON ISD	$30,000	4	139	$7,500	$216
DIBOLL ISD	$146,653	19	803	$7,719	$183
EL PASO ISD	$220,809	294	27,159	$751	$8
EVOLUTION ACADEMY CHARTER SCHOOL	$60,000	6	405	$10,000	$148
GALENA PARK ISD	$225,001	141	9,166	$1,596	$25
GALVESTON ISD	$186,397	51	1,672	$3,655	$111
HIDALGO ISD	$149,560	5	1,714	$29,912	$87
HIGGS CARTER KING GIFTED & TALENTED	$45,776	6	104	$7,629	$440
HOUSTON ISD	$168,936	23	1,598	$7,345	$106
IRVING ISD	$199,165	225	15,047	$885	$13
LA FERIA ISD	$145,900	20	636	$7,295	$229
LA JOYA ISD	$118,544	26	2,569	$4,559	$46
LA VEGA ISD	$160,000	21	1,462	$7,619	$109
LA VILLA ISD	$54,048	10	393	$5,405	$138
MANOR ISD	$225,000	32	2,538	$7,031	$89
MARLIN ISD	$19,301	5	244	$3,860	$79
MOTLEY COUNTY ISD	$212,670	39	1,603	$5,453	$142
PHARR-SAN JUAN-ALAMO ISD	$224,450	85	5,651	$2,641	$40
RUNGE ISD	$34,572	3	126	$11,524	$274
SAN ANTONIO ISD	$155,968	12	3,376	$12,997	$46
SAN FELIPE-DEL RIO CISD	$180,467	33	2,239	$5,469	$81
STAR ISD	$30,000	4	64	$7,500	$469
VALLEY VIEW ISD	$50,929	13	932	$3,918	$55
WESLACO ISD	$193,183	41	3,895	$4,712	$50
WEST OSO ISD	$128,156	15	836	$8,544	$153
WINFREE ACADEMY CHARTER SCHOOLS	$156,900	23	1,733	$6,822	$91
Average Total	**$137,558**	**42**	**3,108**	**$6,971**	**$131**

Table P.2: Expenditures for Cycle 2 MIC Grantees

Grantee Name	Total Expenditures	Number of teachers served	Number of students served	Average costs per teacher	Average costs per student
ABILENE ISD	$78,360	42	5,382	$1,866	$15
Houston CAN! AMERICA CAN!	$626	25	812	$25	$1
ATHENS ISD	$59,381	22	-	$2,699	-
BEN BOLT-PALITO BLANCO ISD	$21,354	4	207	$5,339	$103
CHAPEL HILL ISD	$30,933	24	1,539	$1,289	$20
CORSICANA ISD	$107,106	22	2,035	$4,868	$53
COSMOS FOUNDATION INC	$16,132	14	888	$1,152	$18
DAWSON ISD	$60,929	13	402	$4,687	$152
DEL VALLE ISD	$69,464	61	4,338	$1,139	$16
EAST CENTRAL ISD	$133,558	41	3,376	$3,258	$40
ELGIN ISD	$111,030	20	1,967	$5,552	$56
EVERMAN ISD	$104,208	36	2,514	$2,895	$41
GLADEWATER ISD	$99,675	20	864	$4,984	$115
GOOSE CREEK CISD	$62,420	23	1,753	$2,714	$36
HILLSBORO ISD	$63,971	11	621	$5,816	$103
IDEA ACADEMY INC	$105,973	35	2,777	$3,028	$38
KINGSVILLE ISD	$46,736	22	1,314	$2,124	$36
LAREDO ISD	$83,277	25	1,650	$3,331	$50
MARSHALL ISD	$84,445	26	1,420	$3,248	$59
MCALLEN ISD	$63,109	23	1,970	$2,744	$32
MCGREGOR ISD	$66,811	10	619	$6,681	$108
MERCEDES ISD	$40,972	22	1,801	$1,862	$23
MT PLEASANT ISD	$70,768	28	2,114	$2,527	$33
PASADENA ISD	$25,462	44	3,390	$579	$8
PATTON SPRINGS ISD	$50,590	16	205	$3,162	$247
PLAINVIEW ISD	$40,349	16	1,229	$2,522	$33
SAN BENITO CISD	$45,159	31	2,247	$1,457	$20
SCHOOL OF EXCELLENCE IN EDUCATION	$68,851	24	686	$2,869	$100
SNOOK ISD	$94,741	22	718	$4,306	$132
TYLER ISD	$79,201	43	1,500	$1,842	$53
WACO ISD	$62,373	16	1,155	$3,898	$54
WEST SABINE ISD	$6,500	5	285	$1,300	$23
Average Total	**$64,202**	**25**	**1,670**	**$2,993**	**$59**