

**Implementing CMSI Math Curricula in Elementary Schools:  
A Three-Year Longitudinal Cross Case Evaluation Study**

**August 24, 2006**

Stacy A. Wenzel  
Carol R. Fendt  
Meghan Burke  
Minerva Cruz-Familiar  
Crystal Laura  
Gregg Mossberger  
Geen Tomko  
Janise Hurtig

***An External Evaluation Report  
From the PRAIRIE Group, University of Illinois at Chicago College of Education  
For the Chicago Public Schools Office of Mathematics and Science***

For further information, contact Stacy Wenzel,  
[swenzel@uic.edu](mailto:swenzel@uic.edu), 312-413-9221

The conclusions drawn in this report reflect the viewpoints of the authors. While there are many potential viewpoints, these reflect a systematic analysis of data by external evaluators. The hope is that these findings can facilitate improvement of this and related programs through open discussion and consideration of data-driven understandings.

This report is based upon work supported by the  
National Science Foundation under grant No. 0085115.

**Abstract**

After three years of the Chicago Public Schools Chicago Math and Science Initiative (CMSI), external evaluation has illuminated some lessons regarding what schools need so that teachers accept and use with some consistency the research-based math curricula that CMSI supports. Based on a longitudinal comparative cross case study of 13 elementary schools, evidence suggests that schools need the following supports:

- Attendance at summer professional development workshops for most teachers in their first year of implementation
- Curricular materials in building; ready to use
- At some point in last 2 years: the school needs to have had a
  - Principal supporting CMSI through monitoring implementation
  - Specialist or other freed support person working in classrooms with teachers

The evidence also suggests that in addition to the characteristics above, other supports are likely to be needed if schools hope to sustain the use of these curricula long term. These supports include:

- Attendance at summer professional development workshops for all new teachers
- Many teachers with experience and comfort teaching CMSI curricula
- Low teacher turnover
- Teacher leaders of CMSI in both primary and middle grades
- Designated leader at the school for CMSI
- Students and parents with exposure to and some understanding of curricula
- Teachers who view their students' as able to achieve using these curricula

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## Introduction

In February 2003, the Chicago Public Schools (CPS) and its Office of Mathematics and Science (OMS) announced the beginning of a comprehensive program aimed at improving math and science education for all of the district's more than 400,000 students. The new Chicago Math and Science Initiative (CMSI) included resources to support elementary schools as they chose and utilized a handful of math and science curricula deemed by CPS experts to offer good opportunities for students to learn these subjects.<sup>1</sup> The experiences of schools with these OMS-supported curricula have been varied and complex. Previous external evaluation reports have documented some of these experiences.<sup>2</sup>

The Office of Mathematics and Science has supported multi-faceted internal and external evaluation studies which together aim to address critical issues around the impact of their CMSI policies and practices on elementary schools, like:

- A. the extent to which the recommended CMSI curricula and practices were adopted and implemented in schools
- B. the extent of variability in the implementation across teachers and schools
- C. the processes by which school development took place in schools and what supported and impeded development

This report offers evidence to address issues B and C above. It focuses on the experiences in those schools implementing OMS-supported curricula. It is based on data collected by external evaluators (the UIC PRAIRIE Group) from a sample of elementary schools. Case studies of these schools were conducted for the 3 full school years-to-date of the Chicago Public Schools' CMSI: 2003-04, 2004-05 and 2005-06.<sup>3</sup>

The study of the CMSI offers Chicago and the larger math and science education community an important opportunity to build the knowledge base around what types of approaches support students in improving their academic achievement in math and science. Understanding in this area is particularly critical and needed in regard to students from low socioeconomic backgrounds and from diverse ethnic and language backgrounds—like those students served in CPS schools.

## Evaluation Questions and Methods

Based on previous findings on the experiences of elementary school implementing OMS-supported CMSI curricular materials and on current questions of importance to OMS as they move into their fourth year supporting schools using these curricula, the following evaluation questions have helped to shape the focus of this report.

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<sup>1</sup> The documentation of the history of the CMSI can be examined in a variety of internal and external evaluation reports. See reports available on the CPS CMSI website.

<sup>2</sup> See PRAIRIE Group reports: Report D: Exploring Implementation—Intensive Support and Readiness School Stories (August 31, 2004); Case Study Schools Implementing CMSI Curriculum, 2004-05: School Characteristics Related to Implementation (October 24, 2005); Analysis of CPS Elementary Schools on Probation Implementing CMSI Curricula (April 18, 2005).

<sup>3</sup> A concurrent and forthcoming evaluation study conducted by the University of Chicago CEMSE was also conducted during spring 2006. This census survey of all CPS elementary schools will primarily address issues A and B above.

## **Evaluation Questions:**

### **Extent of variability in implementation**

1. How are schools implementing CMSI math curricula in 2005-06? How does the implementation in the case study sample vary at this time? How is the level of variation related to prior years?

### **Relationship of implementation with student achievement**

2. What is the evidence of any relationship between level of implementation of math curricula and student achievement in these CMSI implementing schools?

### **Process of change in implementation**

3. Does the level of use of CMSI curricular materials change over time? In what ways? If so, why? What are the factors that affect implementation of CMSI curricula at particular schools at particular times? What are the obstacles to implementation? How have successful schools overcome these obstacles to better implement CMSI?

4. How do schools with similar resources and facing similar obstacles make different choices and find themselves progressing in differing manners around CMSI implementation?

5. How are schools setting up so CMSI strategies are sustained?

Question 2 will not be addressed in this report, but in an analysis to be added to this report. This next study will examine the relationship of how CMSI math curricula are used in these case study elementary schools with student achievement on the ISAT.

Detail on the research design that under girds this report can be found in the earlier August 31, 2004 PRAIRIE Report A: Data, Methods & Overview. In brief, we have selected case study schools that represent as much of the variation in implementing schools as possible given our small sample size. Our sample of schools is spread geographically across Chicago and includes schools that mirror the variation in the district regarding ethnic and socioeconomic composition of students, student achievement, and school size. We have studied six Voluntary Implementing Schools (former Intensive Support Schools) for 3 years; two Voluntary Implementing Schools (former Readiness Schools) for 2 years; three Mandatory Implementing Schools for 2 years, and then two other Mandatory Implementing Schools for just the last one year. In these schools, during a school year we typically visited the school once a month and collected information from two principal interviews, two interviews and day-long shadowing visits with a specialist (if the school had one), two teacher focus groups, and two observations of teacher meetings. We also examined teacher attendance records for professional development workshops.

Throughout this report, when we refer to an individual school, administrator or teacher we use pseudonyms so to maintain the anonymity of those involved. In vignettes about these schools, we also may change some details and descriptions to further obscure the identities of schools or individuals.

## **Findings: Addressing Evaluation Questions across Cases**

### **Extent of Variability in Implementation**

As more schools progressed in their efforts to implement CMSI curricula, how schools used the materials varies. During the spring 2006, CMSI math curricula were reported in use at about half of the districts' elementary schools according to a survey of schools.<sup>4</sup> From this survey a rich detailed sense of curricula usage will be obtained. In this report, we report not on the quantitative extent of usage but instead a basic sense of how curricula were being used in these particular schools in an effort to better understand the various influences and attitudes that impact implementation. We first examine the case study schools in their third year of implementation after being selected as voluntary Intensive Support schools in 2003-04. Then we describe the case study schools that are in their first or second year of implementation. Figure 1 below summarizes the characteristics of the 4 different groups of schools in the case study sample. We find 3 different "types" of implementers in 2005-2006: Low Implementer Schools, Split Schools and

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<sup>4</sup> See the forthcoming survey results of the University of Chicago CEMSE math survey.

Implementing but Significant Test Prep Interruption Schools. These types match with the typology we have seen emerging from previous evaluation findings that we discuss in an Attachment that reviews previous evaluation findings about CMSI implementing schools.

**Figure 1: Types of Schools Implementing CMSI Math in the Case Study Sample**

	3 <sup>rd</sup> -year Voluntary (N=6 schools)	2 <sup>nd</sup> -year Voluntary (N=2 schools)	2 <sup>nd</sup> -year Mandatory (N=3 schools)	1 <sup>st</sup> -year Mandatory (N=2 schools)
	Split School & Implementing but Significant Test Prep Interruption Schools	--	Low Implementer Schools & Split Schools	Low Implementer Schools
Who uses the curricular materials? Who does not?	Most teachers use. A few resisters.	Not a conclusive pattern across these former Readiness schools.	Some teachers use. Around 20% resist. Many teachers uncomfortable not teaching for mastery of topics.	Some teachers use. Many resistant. Most teachers not convinced in value of the curricula.
What is the level of test prep and other supplementation?	Test prep supplementing occurs with principal's encouragement.		Test prep supplementing occurs with and without principal's encouragement.	Test prep supplementing occurs with and without principal's encouragement.
How much time per day for math?	60 minutes		Varies from 50 to 60 minutes	Less than 60 minutes. From 45 to 55 minutes.
How close is pacing to CMSI pacing charts?	Pacing varies. Some schools close to recommended pace. Others behind because they purposively change topic sequence to match skills students need for ISAT prep		Pacing varies but all think it is too fast.	Behind recommended pace. Lack of time is reason given.

**Third-year Voluntary Implementers (Former Intensive Support Schools).** What do the third-year voluntary implementers in our sample of case study schools have in common? Teachers at the schools were using their CMSI math curricular materials as their primary source for instruction. At five of these schools all but a few resistant teachers were using CMSI materials daily, except when they deviated from the curricula to prepare their students for ISAT tests. Interestingly, at these schools, the principals and (if they had one) the specialists all knew about the use of supplemental materials for test preparation---and usually encouraged teachers to do this. All of these schools had schedules that allowed 60 minutes a day for math teaching. All of these schools paid attention to the CMSI pacing guides and while a couple noted teachers were behind because of test prep supplementing, others noted some teachers were close to keeping on pace.

In the section on process of change in implementation, we will look at how these schools maintained this implementation.

In terms of change across time and the external evaluation analysis from 2004-05, five of six case study schools in 2005-06 would be what we would characterize as: “Implementing but Significant Test Prep Interruption.” These five schools were either categorized at this level of implementation or better in 2004-05.<sup>5</sup> Therefore, as they moved from the second to third year of CMSI participation, the voluntary implementing schools maintained their implementation of curricula but continued to rely on non-CMSI materials for preparing students for the ISAT.

One of the six third-year voluntary schools in the case study was a “Split School” in 2004-05. It was difficult for evaluators to characterize this school conclusively for 2005-06. However the data appears to support the view that the school continued to have some teachers primarily using the CMSI curricula and others who were not—making it a Split School again.

**Second-year Voluntary Implementers (Former Readiness Schools).** Two of the schools in our case study sample were former Readiness Schools. The schools as a group, however, did not show a conclusive pattern of implementation.

**Second-year Mandatory Implementers (Schools on Probation).** Second year implementing schools on probation share some common characteristics regarding how they are implementing CMSI math curricula. While some of the teachers at these schools were using curricula for most of their math instruction, many teachers (from half to 20% of the teachers at a school) were strongly resistant and not using the CMSI curricula. The teachers at these schools often did not trust the basic premise behind the “spiraling” design of the curricula and wanted their students to master basic skills before moving on to the next topic. Given this mistrust of the curricula and these schools’ situation as being on Probation due to low standardized test scores, teachers spent considerable time off the CMSI curricula to drill students on basic skills and to prepare for the ISAT. There is uncertainty as to whether teachers at these schools had 60 minutes to teach math. For example at one of the schools, the Specialist told evaluators she just did not know how much time math was taught a day. At another school, the School Report Card listed the time for math as less than one hour a day. Understandably given these implementation practices, the teachers found the recommended pacing for the curricula too fast to keep up with.

**First-year Mandatory Implementers (Schools on Probation).** Two of our case study schools were in their first year attempting to implement CMSI math curricula and were doing so because they were mandated as schools on probation. These two schools had very similar profiles. At each, more than half of the teachers were characterized as using the curricular materials. However there were many resistant teachers who were not convinced of the value of the curricula. Even some of those attempting to implement the materials were challenged by classroom management issues and sometimes lack of materials. Other materials were used to supplement the CMSI materials and the school administration was supportive of this. At both of these schools, there was only 45 to 55 minutes a day to teach math. One of the schools did have a plan though to find 60 minutes a day for next year. Like the other probation schools implementing, the lack of time and other factors made the recommended pacing difficult if not impossible to keep up with.

### **Process of Change in Implementation**

In this study, the change over time in schools’ use of CMSI curricular materials is only beginning to emerge. In Figure 2 below we summarize the broad pattern of change we have seen in terms of how schools implement.

We examine how six third-year voluntary implementing schools, two second-year voluntary implementing schools, three second-year mandatory implementing schools and two first-year mandatory implementing

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<sup>5</sup> One of these five schools was thought to be “Steadily and Solidly Implementing” in 2004-05. It was clearly using non-CMSI test preparation materials in 2005-06. This suggests that either there was some regression from complete reliance on CMSI curricula or that in 2004-05, evaluators categorized the school incorrectly and it was using non-CMSI materials for test preparation during 2004-05 also.

schools changed over time in terms of the level of use with which their teachers worked with students with the CMSI curricular materials in math. Each school is represented by a face symbol which is numbered to indicate the 13 unique schools in the case study school sample used for this study. The facial expression for each school symbol represents whether there was little implementation of the curricula by teachers (a frowning face), whether most were implementing (a smiling face), or whether there were many implementing but also many not implementing (a straight face).

**Figure 2: Patterns of Change in Implementation of CMSI Curricula**

	2003-2004	2004-2005	2005-2006	Pattern
Third-year Voluntary	1☹ 2☹  3☺ 4☺ 5☺ 6☺	1☺ 2☺ 3☺ 4☺ 5☺ 6☺	1☺ 2☺ 3☺ 4☺ 5☺ 6☺	First year implementation easier for some voluntary schools than others. These schools are likely to implement by second year.
Second-year Voluntary		7☹ 8☹	7☹ 8☺	
Second-year Mandatory		9☹ 10☹ 11☺	9☺ 10☺ 11☺	Most first year mandatory schools are very challenged by implementation. Some teachers at these schools are likely to implement by second year but unlikely that most teachers are implementing. .
First -year Mandatory			12☹ 13☹	

Legend		
☹	☺	☹
Low Implementing School	Implementing but Significant Test Prep Interruption	Implementing but Split School

To understand these changes over time and what factors influence them, we looked systematically at various characteristics of these schools and how these changed over time—over the 1, 2 or 3 years the school has attempted to use the CMSI curricula. In Figure 3, we examine the patterns we see in terms of how these factors play across the types of school in our study.

**Figure 3:**  
**Factors Influencing Implementation of CMSI Curricula, Change Over Time**  
**Patterns Noted as What Characterizes the School Types**

<b>Around teacher preparation for using curricula</b>				
	Third-year Voluntary	Second-year Voluntary	Second-year Mandatory	First-year Mandatory
Attendance at summer professional development workshops <i>(Change between year 1 to 2 to 3)</i>	Up then Down	Up	No pattern	--
Teachers with experience and comfort teaching CMSI curricula <i>(Many ~75+%; Mixed 25-75%; Little &lt;25%)</i>	Many	Mixed to Little		
Teacher turnover <i>(High ~20+%; Low &lt;10%)</i>	Low		High to Low	
Grade level math meetings	Mixed pattern across schools. Half have them and half do not.			
How many teacher leaders <sup>6</sup> of CMSI <i>(In 2005-06)</i>	0 to 3 per school	0 to 2	0	0 to 1
<b>Around administrative support</b>				
	Third-year Voluntary	Second-year Voluntary	Second-year Mandatory	First-year Mandatory
Principal supports CMSI through monitoring implementation	Yes in half of the schools			
Specialist or other freed support person working in classrooms with teachers	Yes in year 1 but now mixed	Mixed but little classroom help		
School community with trusting relationships	Mixed			
Curricular materials in building; ready to use	Yes		Mixed	
Designated leader at the school for CMSI	Specialist in year 1 but now some have no one	Assistant Principal or Specialist		City Wide Specialist
<b>Around students and parents</b>				
	Third-year Voluntary	Second-year Voluntary	Second-year Mandatory	First-year Mandatory
Students and parents with experience in and understanding of curricula	Mixed pattern			
Teachers views on students' abilities	Students can achieve with these curricula	Curricula will not work with our students		

What are the important lessons to be gleaned from patterns found through longitudinal study of these 13 schools? We are cautious about overstating the meaning of these findings but believe there are some early

<sup>6</sup> Our use of teacher leaders is truly meant to represent the number of teachers. This number does not include part- or full-time freed specialists acting as CMSI leaders within the school.

ideas to be considered by the CMSI leadership and others as they make decisions around the support of schools using CMSI math curricula.

**Third-year Voluntary Implementers (Former Intensive Support Schools).** Schools that initially volunteered and were selected to use these math curricula and received intensive support appear to have made the quickest and broadest progress in terms of having most teachers using the materials most of the time with some correspondence to the pacing and time allocation suggested by OMS. By the second year of implementation, these schools--as compared to either former Readiness schools or schools on probation mandated to use the curricula—were usually characterized as Implementing with most teachers using the CMSI materials.

However, even with these former Intensive Support Schools, we see that supporting the implementation of CMSI math curricula will likely require continued efforts and is not yet set up to be easily sustained in most schools. In only one of the schools in this study are there grade-level math meetings at least every month, teacher leaders in both primary and middle grades, required professional development for all new teachers, and students and parents who are very positive about the CMSI curricula. Further, these traits have taken 3 years to come to fruition. These are the kinds of infrastructure and norms that bode well for the use of these curricula even if a supportive principal leaves or a school math specialist can no longer be funded as a freed position.

These third-year voluntary implementing schools stood out from the other schools in this study as having many teachers who were somewhat comfortable using the curricula. Because most had already attended some professional development on the curricula, they relied less on professional development and outside specialists and could call on the other teachers at their school for help. However, at these schools new and/or less experienced teachers seemed to benefit from professional development and wanted to attend though not all were allowed this opportunity. In most third year voluntary schools, budget money was not readily provided for experienced users to continue to attend professional development on the math curricula, nor was it clear that experienced users wanted to attend these workshops.

**Second-year Voluntary Implementers (Former Readiness Schools).** Schools that wanted to implement the CMSI math curricula as Intensive Support School but became Readiness Schools instead in 2003-04 did not fare significantly better than schools that did not volunteer, did not receive resources as Readiness Schools and were mandated to use the materials because they were on probation. Rather than progressing with most teachers implementing by year 2—like the former Intensive Support Schools—these schools appear to be poised to possibly achieve that level of implementation in three years instead of two.

The two former Readiness Schools in our study mirror each other but also diverge from each other in terms of the types of resources they have had available to them. Neither had a freed specialist in their first year of implementation and in their second year, they had a math specialist but not one trained by OMS nor did the specialists work in classrooms with teachers. The schools differed with one having vocal principal support and no teacher-leaders and the other not having vocal principal support but having strong teacher-leadership behind the CMSI.

**Second-year Mandatory Implementers (Schools on Probation).** One of the schools on probation that faced very challenging situations with high teacher turnover found some success in getting teachers to use the CMSI math curricula. Critical in this success was a convergence of strong leadership from the Area-level and from school-level support of a principal and specialist. Yet, like with second-year voluntary schools, this school took two years to achieve the type of teacher use of curricula that former Intensive Support Schools found in one year. This school while not without major problems was more successful than the other schools in this category.

Attendance at professional development workshops seemed to be the only thing that helped more teachers at other second-year mandatory (and the second-year voluntary) schools to implement the CMSI curricula. Additional infrastructure had not been built in these schools in most cases. For example, when these schools did have specialist positions, the persons hired did not have the support from the principal to enforce teachers' attendance at professional development workshop or to hold teachers accountable for use

of curricula. Nor did all of these specialists have deep training and/or experience in using the schools' CMSI curricula.

**Supporting Implementation versus Sustaining Implementation.** As we noted above, there is only one of our 13 case study schools that we feel somewhat optimistic about in terms of having built school infrastructure and normative values that (without significant OMS support) may sustain into the future the use of CMSI curricula. In this third-year voluntarily implementing school there are grade-level math meetings at least every month, teacher leaders in both primary and middle grades, and required professional development for all new teachers. Also students and parents seem to have accepted this style of teaching and the use of these curricula as a norm and would not want to go back to “cemetery rows” and “drill and kill.” This school is not receiving special support from OMS or their Area.

Examination of this school in comparison to others leads us to suggest and then discuss which school characteristics might be key for schools moving from low implementation to implementation and then from implementation with special OMS or Area support to implementation that will be sustainable without such support.

To become an implementing school, the following characteristics seem to be needed at the school:

- Attendance at summer professional development workshops for most teachers in their first year of implementation
- Curricular materials in building; ready to use
- At some point in last 2 years: the school needs to have had a
  - Principal supporting CMSI through monitoring implementation
  - Specialist or other freed support person working in classrooms with teachers.

The evidence also suggests that in addition to the characteristics above, other supports are likely to be needed if schools hope to sustain the use of these curricula long term. These supports include:

- Attendance at summer professional development workshops for all new teachers
- Many teachers with experience and comfort teaching CMSI curricula
- Low teacher turnover
- Teacher leaders of CMSI in both primary and middle grades
- Designated leader at the school for CMSI
- Students and parents with exposure to and some understanding of curricula
- Teachers who view their students' as able to achieve using these curricula.

There are important decisions to be made by administrators and teachers in schools and by the district and Area staff who hope to support their sustained use of the CMSI math curricula. We consider two critical issues around which these decisions would be made:

***How has the role of school-based CMSI Specialists changed over time?  
What role, if any, do they continue to play once they re-enter the classroom?***

Though most schools are not able to fund for long a school-based math specialist to work in classrooms with teachers, having these specialists freed in the school for a period of time appears to be essential to the successful implementation of these CMSI math curricula. Over the past 3 years, we have seen various paths taken by the specialist at the six former Intensive Support Schools we have followed. In two of these schools, the original specialists have gone on to other math instructional leadership positions in Chicago. In the other four of these schools, the original specialist has remained at the school. Of these four former specialists, two have returned full-time to classroom teaching and two still have half of their time freed as a math specialist. The paths of each of these specialists are unique and best seen through the vignettes for the case study schools. Rather than suggest any sure lessons, examination of their experiences across the case study schools raises more questions for further decision and inquiry. For example,

? In what ways can the district shape its instructional leadership roles so that when teachers are hired into these roles, the schools from which they come are not harmed but rather aided in terms of their own

progress toward good math instruction? What are the ways that former school based teacher-leaders can use their district leadership roles to benefit their former schools?

? How can principals work successfully with former specialists who return to the classroom to draw on their expertise as instructional leaders? How can schools make time for former specialist (and other teacher-leaders) to work with new teachers who are learning to implement CMSI curricula? How can schools make time for these teacher-leaders to assist with leading professional development or assessing what curricular material supplies to order? How can former specialist find time to use their math leadership skills without adding undue stress to their already full role as a classroom teacher?

*How are parents and students understanding the new curricula and expressing their views on it?*

Some of the schools in the study have begun having regular parent and student math activities such as Math Family Night, monthly parent meetings, and problem of the day. These activities have been dependent on the school having a designated person in charge of math and this is not always the case at all schools. When there is not a designated person, these activities diminish. However, when schools have used these types of activities there seems to be a belief among school leaders that parents and students feel that the new CMSI math curricula are “here to stay.” Educators at some of these schools that were actively involved in these types of activities explained to evaluators that trying to change the curricula back to pre-CMSI days would not be tolerated by students, teachers, or parents.

**Findings: Addressing Evaluation Questions within Cases through Vignettes**

While some patterns have emerged from this cross case analysis, the other type of useable findings comes through close examination of the stories of the individual 13 schools. We share short vignettes of how these schools experience using CMSI math curricula. We first share vignettes for five of the Third-year Voluntary, then the two Second-year Voluntary, then the three Second-year Mandatory, and then the two First-year Mandatory Implementing Schools.<sup>7</sup>

**Vignettes: Third-year Voluntary Implementers (Former Intensive Support Schools)**

**Jane Goodall Elementary School**

Goodall School was an Intensive Support CMSI school in 2003-04, the first year of its implementation of the CMSI curricula. In 2003-04, implementation of the CMSI got off to a positive start at Goodall with strong leadership and commitment from the ten first-wave teachers. Teachers were generally enthusiastic about the materials stating that “it is what kids really, really need and that the kids love every lesson.” Teachers were also positive about the OMS professional development they were receiving. The Specialist was described in positive terms by the principal and observations of her work revealed a professional committed to the CMSI and to supporting all 10 first-wave teachers in their work.

At the same time, not surprisingly, some barriers to implementation were observed at Goodall, by both school staff and the evaluation team. Uneven implementation was noted in first-wave teachers’ classrooms and some resistance emerged, especially among the middle grade teachers. Other potential problems were identified in leadership in the school as the Specialist was uncertain about her decision to leave the classroom and although she saw potential in the program, seemed certain that it would be a “two-year program” that would then end at Goodall. In addition, the principal expressed little interest in the program, having only vague knowledge of its operations.

The CMSI ended on a strained note in Goodall at the end of 2003-04. In spring 2004, the principal was surprised when OMS cut their commitment to funding. At the last minute, he found money to keep the

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<sup>7</sup> We do not include a vignette for one of the six Third-year Voluntary Schools where we were able to collect enough data to categorize the school in terms of level of implementation but not enough to understand in a robust enough fashion the factors influencing the level of implementation of the CMSI math curricula.

Specialist but had to give up other things that the SIPAA committee had planned on. This caused some resentment and mistrust of the OMS.

In 2004-05, Goodall went to full implementation. All teachers began to use the CMSI materials. Both positive and negative indicators of implementation were seen in the data. On the one hand, teachers were using the materials regularly, based on their own self-report and on the views of the principal, the Specialist and another school administrator. In addition, the specialist reported that first-wave teachers were supporting second-wave teachers in learning to use the new materials. In addition, teachers were attending professional development, and commitment was high to continuing this training.

Also positive was the increasing sophistication of the specialist, whose language describing “good implementation” emerged in second year interviews. The specialist role was a mix between in-classroom and materials support, as she estimated that she spent half of her role in classrooms observing, co-teaching and demonstrating lessons for teachers and half coordinating materials and other programs for the school.

At the same time, new challenges emerged as the school attempted to implement the materials in split-grade classrooms, as some teacher resistance continued, as teachers were still struggling to understand the standards-based approach, and as the older students who had not had the materials throughout their grade school career continued to struggle.

At the end of the year, the principal was replaced and the specialist position discontinued, creating uncertainty about the future of the implementation of CMSI materials. In addition, ISAT math test scores declined at Goodall in 2004-05, potentially leading to some concern on the part of teachers.

In 2005-2006 Goodall faced a crucial year moving from the last remnants of intensive support to sustainability. The school year brought with it a new principal and assistant principal, one having been a former math specialist. Meanwhile, the school specialist returned to the classroom to take on an upper grade departmental math teaching position after two years as the full time school specialist.

The benefits of two years of steady implementation at Goodall were evident in teacher and student comfort level, confidence, and math reasoning. Teachers noted these changes saying the program had gotten easier for both them and students and that students were better able to explain their process of problem solving. Furthermore, the entire school was outfitted with CMSI materials and teachers started the year off with materials and resources. Some pairs of teachers who were paired as mentor and mentee worked together with the more experienced teacher helping the less experienced teacher. This was especially important, as most teachers did not attend professional development because funds were not available.

With limited funds seemingly available to the new principal, some effort was made to free the former Specialist from momentary classroom duties in order for her to assist teachers in implementation of CMSI; however, this plan was not an ideal option for the classroom teacher who would still be responsible for planning her own classes, making sure what she planned was covered by the substitute, etc. The former Specialists chose more often than not to forego this type of classroom support to colleagues and chose instead to speak with them more informally on her own time and schedule.

The data reflected two different stories on in-school professional development. Teachers reported no meetings were devoted to math or CMSI while the principal thought two meetings were devoted to it. There was no longer a family math night. The principal claimed to have observed during math classes; yet, teachers submitted that observations were sporadic and not purposeful during math. The principal admitted the focus was on reading and writing.

The new administration at this school seemed to have strained relations with teachers throughout this year. There seems to be a low to moderate level of trust within the school. Teachers felt uninformed about what was happening in general. In addition, teachers reported parents had a large influence on the principal, as some parents had introduced a new science curriculum that was then adopted in the 4<sup>th</sup> and 5<sup>th</sup> grades. The organized parents' group seemed very involved and had arranged a well attended Science Night; however, this had nothing to do with the CMSI science or math curricula. In addition, teachers reported some parents

would not work through the math homework with their children. Although, there were well attended family math nights in the past.

As for the future of CMSI at Goodall, the principal planned to attend principal professional development but had no plans in the SIPAAA to support a specialist position in the future. In addition, there would be money for materials and for teachers to attend at least one professional development session. However, the principal indicated there was little purpose to having an extended day where the former math specialist would be assigned to work with teachers and take care of other CMSI matters, even though this was something the teachers and administration agreed upon. Furthermore, the principal anticipated the loss of several teacher positions for the following year and claimed these budget cuts made it difficult to support CMSI with a Specialist position or teacher professional development, possibly leaving the initiative here in a somewhat precarious situation. At the same time the years of good implementation, the funding for materials, the increased confidence among staff and students with the curricula, and the established teacher-mentor relationships were all very positive signs for CMSI at Goodall.

### **Julia Child Elementary School**

In 2003-04 Julia Child Elementary School became an Intensive Support School that functioned for the next two years with vocal principal support and a full-time (2003-04) then part-time (2004-05) specialist. The school has had a low teacher turnover rate and a diverse student population that is stronger than average in terms of student achievement and the socioeconomic status of their families. In 2005-06, Child Elementary went through a major transition. The principal left rather unexpectedly and the long-time assistant principal moved into the principalship. No freed specialist position was funded and the former specialist became a full-time teacher.

Yet the school continued to implement the CMSI math curricula and teacher leaders and regular meetings to discuss math appeared to play a role in this. There was mixed success in terms of how these structures impacted math instruction. The school had a math team composed of teachers from different grade level., Additionally, all bilingual and regular education teachers meet in their grade levels. However, teachers found the collaboration between grade level teams to be limited and impeding the effective mapping of a spiraling curriculum. Special education and bilingual teachers found it difficult to schedule time to confer with homeroom teachers about students' performance, lesson modifications, and grading criteria. The teachers engaged in internal curricular development and mapping but not on a consistent basis or in both science and math. Some grade level teams reported success; others did not. Two grade level teams report preparing math lessons, sharing resources, modifying according to their students, and troubleshooting together.

Outside help to the school was limited. The Area Coach had not been involved in the school during 2005-06. An OMS Facilitator, however, reportedly came to the school for a meeting with teacher. However, that meeting received mixed reviews as a number of teachers found the Facilitator unprepared for their time together.

Teacher participation in CMSI activities was not monitored. All the teachers in a focus group acknowledged that no one came in to monitor or observe their math and science lessons. The new principal reported not having the opportunity to observe everyone and not knowing when math was taught. Administrators were not sure who had attended professional development nor were they able to say if anyone would continue to attend. The principal did not recall attending any CMSI professional development, but did note that at a principal's meeting CMSI was discussed. In terms of professional development offered within the school, a review of the School Improvement Plan indicated that school-wide professional development focused on reading extended responses, not the CMSI.

In terms of CMSI professional development, teachers reasons for not attending were numerous. In spite of the fact that the Facilitator told teachers that they should attend throughout the school year, many teachers believed that professional development during the school year was for individuals who have not attended. To minimize the confusion around the offerings, the teachers suggested that the titles of the workshops delineate that they are a series. The teachers realized that the curricula was not something they will know how to teach from attending one or two meetings. For example one teacher, noted that it had taken two

years for her to feel comfortable teaching it. Others did not attend because the location is far from their building. Some teachers suggested offering them during the week. Some teachers questioned how knowledgeable the presenters were about the materials and knowing how to teach adult learners. The more experienced users believed that the content of professional development did not go into deeper understandings about math. Special education teachers would attend if they believed professional development would help them differentiate the curriculum's activities for their students. When some bilingual teachers attended, the professional development providers did not address their concerns because they did not know how.

Constraints to the implementation of the CMSI were time and money and some teacher resistance from a few veteran faculty. First, the current CPS mandate of 120 minutes of reading/writing instruction made it difficult to schedule 60 minutes for math in the upper grades departmental schedule. Second, many teachers reported that the school did not have money for substitutes so they could attend professional development during the week. While some teachers did not have any problems implementing the math curriculum, they noted that their preparation for using the program required a lot of time and work. A few teachers discreetly abandoned the series and substituted with familiar materials. Furthermore, the pacing chart received mixed reviews from the regular, bilingual, and special education teachers. They believed that messages from professional developers stating that some lessons could be taught in one day were unrealistic.

A shift in the story at Child School came in the spring semester when the new principal named a new assistant principal who had deep experience with mathematics and specifically the CMSI curricula. The principal and assistant principal were agreed that the new assistant would be the point person for the upcoming year around math education. Next year, the assistant principal would visit every classroom: modeling instruction for teachers, monitoring their pacing, etc. The assistant principal's vision for getting the school to focus on the CMSI was for teachers to develop curriculum maps. The AP would also like the teachers to review the students' ISAT scores to assess where the students were and to figure out what the students needed to learn. Money was put aside in the SIPAAA to bring in teachers in August 2007 to do this planning.

### **Dorothea Lange Elementary School**

Lange School was chosen as an Intensive Support school in 2003-2004 to implement the new CMSI math curricula. The school population was little smaller than the typical CPS school and the students were somewhat less impoverished than in a typical CPS school. Teachers had been using a CMSI-supported curriculum prior to 2003-04 in grades K-5, and in 2003-2004 the school added another CMSI-supported curriculum for grades 6-8. That year they had a strong Specialist and were very positive about professional development, which the principal strongly encouraged and paid for. The second year, the specialist was cut to half-time and finally left to take another position. For 2005-2006, the principal decided to hire an inexperienced teacher to be the specialist.

The specialist increased the prominence of math as a school focus on a daily basis through math competitions and incentives, even getting the parents more involved. However, due to the specialist's inexperience in the classroom and with the curricula, she was not utilized as a classroom consultant or instructional leader because the staff had more experience than the specialist, not only in teaching, but particularly with the CMSI curricula.

The general belief of teachers at this school was that professional development was only good for new users, but that it was quite helpful for them. In point of fact, in 2005-2006, only people new to the curriculum were paid to go to professional development. Therefore, only new teachers and the specialist attended, and, at that, they attended slightly less than half the scheduled hours. All parties in the school agreed the teachers mostly consulted each other and that they met not only informally, but also formally in grade level meetings weekly. Most such meetings involved some discussion of math and sometimes (but not often) included formal presentations by the specialist.

During the second interview, the principal revealed that the specialist position may not be funded this next school year, 2006-2007. The specialist already had been teaching three classes, and may be put to better use as a full-fledged classroom teacher to reduce the number of students per class. Whether or not that

would be the same person or involve turnover and how implementation would be affected either way were open questions for 2006-2007. *What role should a specialist play in this type of school, with such an experienced staff? How would Lange school not having a specialist change the role of OMS or the Area?*

There was still some resistance to the program as a whole by a couple of teachers and some disagreement about what was being done about it. The principal claimed to be handling it and resolving the issue, but the specialist stated that the principal did not follow through, so teachers just ignored the threats of consequences. One teacher in particular admitted continued disagreement with the whole program. Plus, the principal admitted that she permitted teachers to supplement and change the sequence in the curriculum to meet the needs of the students for ISAT testing in March. Such supplementation and changes in sequence were at the teachers' discretion, using their professional judgment. One thing was certain: implementation was not 100%, nor as fully intended.

Even the teachers most favorable to the CMSI curricula admitted to some major difficulties with them, constraining full implementation. Particular problems cited were far too few assessments, especially at the unit level, not nearly enough homework, the failure to match up the concept pacing sequence with ISAT in March, and the fact that the curricula were very parent-unfriendly. As stated earlier, teachers solved the problems, or at least ameliorated the difficulties, by consulting each other and sharing their experiences. They also supplemented as needed, especially regarding ISAT, and they set up parent workshops.

*Can the curriculum providers or OMS meet the needs of experienced users for meaningful professional development? "Meaningful" means that the sessions address the problems raised in the previous paragraph. Also, can they provide classroom activities to rejuvenate and enliven the teachers' programs? Can they increase the teachers' repertoires of pedagogical techniques by sharing with them what they've learned from across the country and by providing time for teachers to share positive classroom experiences and pitfalls to avoid? How best can this wealth of knowledge be shared with new teachers and with the experienced teachers who are new to the curricula?*

The principal, specialist and teachers all admitted to very little contact with or knowledge about the OMS Math Facilitator. No one even knew the person's name. Many were familiar with the Area Coach's name, but stated that she had not helped out in classrooms or with planning. Even the Specialist said she only saw the Coach during professional development sessions, plus maybe one time in the building. There was much confusion not only about the roles of the Area Coach and OMS Facilitator but even who the people were.

*Might it not help relationships between the schools and OMS to have the Facilitators introduced to the staff at each school for which they provide a service? At least, wouldn't regular communication once a month or so via a newsletter or bulletin from the Facilitators be beneficial and practicable? (The Facilitators could even just e-mail to the principals or Specialists and have them share with the rest of the staff.) Would keeping more regular ongoing contact with the building personnel help facilitate implementation and provide a forum for discussion and sharing among schools as well? How can OMS and the Areas work together to alleviate some of the confusion and duplication of effort?*

### **Kalpana Chawla Elementary School**

Chawla was an Intensive Support Math school and in its third year of implementation in 2005-06. In 2003, the principal was convinced that the CMSI curricula would be good for students and went about getting a team together to write the application to become an Intensive Support school. Upon becoming an Intensive Support school, the principal urged the Local School Council to support the full rather than partial implementation of the new curricula by providing the necessary funds for this to happen. The school invited other interested teachers to participate in implementation provided they first attend summer 2003 training or make up training. At least 13 teachers participated in the OMS sponsored summer professional development. A few who did not attend the summer 2003 workshops, participated in professional development session(s) on the curricula at the school. This professional development was conducted by the Office of Math and Science (OMS) Facilitator and the Chawla specialist early in the 2003-2004 school year. Approximately 20 teachers implementing the curricula participated in vendor provided curricula workshops throughout the school year. The principal had told teachers that if they wanted the new

materials, they would have to attend the professional development. It seemed that this strategy worked to build up interest in the Initiative at the school level. Some bilingual teachers showed a great interest in implementing the materials, but the Spanish version of the materials came too late in the year for them to begin the implementation (something like January 2004).

In October 2003, a number of teachers commented on the difficulty they were having adjusting to the many facets of the new curricula. However, by late January 2004, 3 teachers' showed great depth of understanding of the CMSI curricula in their implementation of the curriculum in their classrooms. By the next spring, teachers noted that they and their students loved the new curricula; however, teachers noted difficulties with the curricula in terms of the reading level and basic math skills assumed of students. With test taking time around the corner, teachers noted the conflict they felt about implementing the curricula as is or supplementing the curricula, at least for the first year, with some basic skills drills. Their concern about the use of the curricula rose when the specialist provided them with test prep booklets. Teachers and the principal alike voiced this concern about the basic skills needs of students; however, at times both the principal and teachers voiced their desire to implement the curricula without supplementing. Teachers in the focus group readily agreed that they were conflicted about this and felt they were receiving mixed messages from the summer professional development providers who said supplement for 2 years, the specialist who said "The Facilitator says no!" along with "You be the judge!" and then also hands out test prep booklets, and the principal who says teachers need to implement the curricula and who supports the work of the Specialist as she hands out test prep booklets.

Teachers shared mixed views of the specialist: One teacher noted that the specialist almost weekly co-taught a class; others noted that they got a few minutes exchange of greetings in the hallway or by their classroom door but no substantive help from the specialist. Observations by external evaluators found the specialist often working as "glorified aide" passing out manipulatives or fetching missing material and rarely in a real co-teaching experience.

The second year of implementation looked much like the first. The specialist met with the principal in a more-or-less regular fashion although it was not with the intensity and frequency of the first year. The specialist continued to involve parents in the process of learning about the CMSI curricula by having Parent Programs—these, too, were less frequent than the year before. Parent participation in this program was at or above 20.

In addition, in 2004-05 the specialist continued to go to teachers' classrooms helping them as necessary. Occasionally, the specialist had brief opportunities to be on the agenda at faculty meetings. All but a few of the teachers were implementing the CMSI math curriculum with enthusiasm. Those not enthusiastic were still required to implement the curricula. Student work utilizing the CMSI was plastered on the walls throughout the building. Teachers and students were often abuzz with talk about mathematics and the processes they were using to solve problems. The Specialist noted that around testing time, teachers veered from the CMSI curricula to do test prep for about a week or two at most.

In 2005-06, the specialist position continued on a part-time basis with the specialist picking up other duties as specified by the administration. Because the specialist was now being entirely financed by the school, her responsibilities were not limited to math instruction, and she almost never left the school to attend CMSI meetings. The Parent-Math program occurred at most once this school year as it was hard to schedule an agreeable time between the specialist and the bilingual coordinator to hold the meeting. The Specialist become responsible for other school-related activities unrelated to math including being a field trip chaperone and science fair point-person. She tended to focus on the upper grades this year going into their math classes everyday and really trying to intertwine the ISAT with the CMSI curricula. As reported by the special education teachers, the specialist continued not to enter their classrooms. The principal and specialist continued to meet more or less as needed; their meetings were no longer on a formal or consistent basis as in the first two years of implementation.

The school lost a few really strong implementers of the CMSI math who left the school to become CPS reading specialists. However, the principal made sure to hire teachers who had been trained or who had

willingly attended training in the CMSI curricula. While the school had a low teacher-turnover ratio, the principal did hire four new teachers all of whom implemented the CMSI curricula.

Teacher professional-development attendance for CMSI dropped in its third year of implementation. This can partially be attributed to the familiarity and comfort with the curriculum as the teachers entered their third year of teaching the CMSI curriculum and also the long distance necessary to travel to professional development sites. However, the Specialist facilitated in-school math professional development mainly concerning how to prepare their students for the ISATs using the CMSI curriculum.

As their third year of implementing the CMSI, the teachers reported a greater familiarity and understanding of the curriculum and stated that neither they nor their students would want to return back to the “old way” of math instruction. Regarding supplementing, which had been an issue since the CMSI began at this school, teachers reported that they did supplement in areas in which they knew their students would struggle. Both the principal and the specialist seemed to be more lenient in allowing the supplementing stating that as long as its “in moderation” (which it was) and it was aimed to cover basic skills and prepare for the ISATs it did not affect the CMSI implementation.

Whereas in previous years, the facilitator and the math coach had bigger roles in the CMSI implementation at this school, this year the coach and the facilitator only visited the school once to discuss pacing. No one in the school complained or had a problem regarding this isolated visit stating that because they were in their third year of implementation, they were comfortable with the curriculum and that schools in their first year of implementation would need the help of these support people more so than their school.

### **Miriam Makeba Elementary School**

Miriam Makeba School began using CMSI math curricula as a partial implementing Intensive Support school in 2003-04 and then moved into full implementation mode in 2004-05. While most teachers were working to use the CMSI material during 2004-05, there was significant focus on preparing their students for standardized tests.

During the partial implementation in 2003-04, the first-wave teachers had all of their CMSI curricula materials at the start of the school year and most had been to summer professional development. There was positive implementation of the new materials by the first-wave teachers. The 2004-05 school year proved more challenging in terms of implementation as the large group of second-wave teachers joined the effort. The second-wave teachers varied in their views about professional development and were not as positive as the first-wave teachers had been.

In 2004-05, the specialist was able to get into classrooms and work with teachers—modeling or co-teaching. Then her efforts shifted and the school focused attention on test preparation. The specialist helped some of the classes with test prep exercises that students were working on in the computer lab. Then later in the spring, the specialist began pulling students in grades 8 and 6 out of the classroom to work on basic skills they needed for the ITBS math test. These strategies were different than what she had done the previous year and were part of a plan she made when the principal talked to her about interventions to help with the testing.

Yet despite these test prep interruptions to teaching the CMSI math, many of the second-wave teachers were becoming more proficient with the new materials. Some of the first-wave teachers were still finding challenges—especially those who looped with their students and had to learn a new grade-level curriculum.

The principal at Makeba did not observe math teaching or make efforts to include much math professional development in restructured day activities. Teachers and the specialist were clear in voicing their understanding that math was not of high priority for the principal. She was focused on reading and improving test scores in that area.

The specialist had good relationships with the Area Coach and OMS Facilitator whom she engaged when her teachers needed additional coaching or she needed support. At times the Area and OMS staff worked with the specialist to help her find ways to cope when the principal did not support her fully.

In 2005-2006, the specialist position was not continued at the school-level and the former-specialist returned to the classroom. Due to the intervention of OMS and the Area office, further CMSI development at Makeba was influenced by the involvement of a City-wide Specialist who was assigned to the school. Because the City-wide Specialist was assigned to the school and not something the principal sought on her own, the relationship between the City-wide Specialist and principal was strained. Similar to the prior year, the Area and OMS staff worked together to support the City-wide Specialist when the principal was unsupportive. Together, they tackled issues such as implementing a school wide schedule that allowed for 60 minutes of math instruction. Although the relationship between the principal and CWSP was rocky at the beginning, by the end of the year, their relationship improved as the principal credited and appreciated the work of the City-wide Specialist on such things as ordering materials and stabilizing CMSI.

New materials were not in the school at the start of the 2005-06 school year. Therefore, the City-wide Specialist devoted large portions of her time at the beginning of the school year to ordering and distributing materials.

Throughout the year a new teacher leader emerged at the school and became involved in ordering calculators for the entire school in collaboration with the City-wide Specialist. She also identified this teacher as a leader in an interview and the SIPAAA noted this teacher as a person who would take on leadership responsibility for math around materials in the future.

New teachers found professional development very useful because when they went, their questions were answered and they found opportunities for collegiality. More experienced teachers were less interested in attending because they found it repetitive and instead relied on their own experience from previous years. Analysis of OMS professional development attendance records for Makeba indicated most attendance was by new users in 05-06. The City-wide Specialist thought experienced teachers attendance was inadequate. These suggest that the challenge of getting teachers to attend professional development at this school persisted from the previous year.

Teachers did not have opportunities to discuss math. Teachers and the City-wide Specialist reported there were no grade level math meetings. Some teachers in focus groups felt they had little voice in the school and the school did not operate as a team. Some teachers and the CWSP reported they had to work around the principal to get things done on CMSI. They also reported teachers feared the principal's reprisals. All this seems to indicate a low level of trust in the school and few opportunities to discuss math.

The size of this school as well as its constant influx of new immigrant students added to the complexity of fit between this school and the CMSI. The City-wide Specialist was continually ordering new materials throughout the year due to the influx of new students; new classrooms were haphazardly added this year and in the recent past years made navigating through the school difficult. Furthermore, due to the size of Makeba, reaching each teacher at the school was difficult especially for the City-wide Specialist who was at the school a limited number of days per month.

The future of CMSI at the school based upon SIPAAA planning and the principal data indicated the principal would continue to pay for materials and partially pay for the City-wide Specialist position. The City-wide Specialist ordered materials for the 2006-07 school year in the spring. The principal intends to include observations of teachers during math in the future. If the City-wide Specialist continues in the school, her familiarity with the issues of the school, her modeling and growing recognition among teachers, her growing relationship with the principal, and her relationship with OMS will help provide crucial support to the initiative.

However, obstacles such as the lack of trust in the school, lack of teacher grade level meetings, low professional development attendance, and lack of support from the principal may be continued sources of constraint for CMSI; these may remain with the school as long as the principal is in charge.

#### **Vignettes: Second-year Voluntary Implementers (Former Readiness Schools)**

### **Christine de Pizan Elementary School**

Christine de Pizan was a former Readiness School where teachers had great difficulty implementing the CMSI curricula in 2004-05 and then again in 2005-06. The major additional support in the school in 2005-06 was the movement of the two teacher leaders who helped engage the school with the CMSI from teaching to freed specialist positions. However, neither of these new specialists seemed to act as traditional CMSI specialists as each seemed to provide a pullout approach to supplement the math or science implementation supposedly happening in the classrooms. For example, the math specialist had math computer games that she utilized with students from K-8 for 40 minutes each week. In addition to these special pullout sessions, teachers are still supposed to teach math and science. For many teachers, implementation began this year.

Certainly attendance at professional development made the school look like their first year of implementation, as well. Even though only about half the teachers attended and only a little over half the scheduled time, Pizan teachers still more than tripled the amount of hours they attended professional development in 2005-2006, as compared with the previous school year. Moreover, most teachers attended professional development during the summer, and in 2005 they attended more than two and half times the number of hours they had in 2004! A majority of the staff attended professional development sessions for new users. This includes the math specialist, for whom the 6-8 adopted curriculum was new. The math specialist explained that much of the professional development was repetitive and so she stopped going, but she further explained that professional development was good for teachers new to the curricula. The specialist did acknowledge that the teachers need more professional development in measurement and geometry, especially regarding shapes such as trapezoids and parallelograms.

*How can the curriculum providers or OMS meet the needs of experienced users for meaningful continued professional development? How can they share these teachers' expertise with the new teachers or experienced teachers who are new to the adopted CMSI curricula?*

Casting the situation in a totally different light, however, were other statements made by the specialist in response to questions about the level of implementation.

I would rate us an 8...based on the professional development we've had, based on the material they have, the usage of the lab time...Now, they are more comfortable in teaching as compared to last year. We didn't have everything and it was new to us...They are actually using the materials. Last year, it was "maybe," "some," "if"—now everyone is using them...No, I don't have anybody who says they're just not going to do it, but I have few who want to supplement with other materials because they're used to skill and drill, and it's hard for them to see the kids can really get it with the spiral effect. So they like to do their skill and drill a lot, but they're still doing the program. They send a lot of the other stuff home for homework. That's how they supplement.

While the specialist's overall rating was undoubtedly overly generous, she did acknowledge that most teachers had at least some contact with the material last year, but this is the first year for full implementation. Thus, many "first year" problems surfaced here, as well, including supplementing and resistance to the whole concept, plus homework and parent difficulties. Plus, the specialist admitted she had no idea how long teachers taught math each day or how much per week. She did know they spent the entire morning on reading, so all the students came in the afternoon to the math computer games room for their 40 minute sessions. At that, the situation for math was a lot better than for science. The science specialist only saw for labs those classes whose teachers volunteered. There was no evidence that the situation would be dramatically different next year, unless there was a new principal or more "outside" intervention.

*What advice can OMS give these self-selected Specialists, who are trying to implement the CMSI curricula? How best can the Area and OMS work together to help these types of schools?*

The math specialist attended monthly meetings presided over by the Area Coach and described their relationship as follows: *We communicate regularly via e-mail and on the telephone and he is very supportive. He comes out and assists me with workshops that I need to give to the teachers.* In contrast,

the Specialist had this to say about the professional relationship with the OMS Facilitator and how OMS can help:

No relationship...I don't know what they could do to make my job better but I guess as far as communication they can identify themselves to let us know who is who over there in their department [OMS] and maybe give us a phone call once a month to see how things are going and even let us know what they should be doing to assist us that way we will know what we can look for from them and that's enough.

*Once again, how could OMS and the Areas work together to reduce confusion and avoid duplication of effort? Should regular communication with the schools they serve, at least monthly, be standard practice for the OMS Facilitators? What kind of communication and would this really help implementation?*

### **Katherine Hepburn Elementary School**

Katherine Hepburn School, a former Readiness School with a student population near 600, had a history of some commitment to the CMSI curriculum for K-6. While the school administration described the move towards adoption of the CMSI as a shared decision, there was a disagreement among the teachers regarding the issue of how much input they had. Regardless, there was no question that all K-6 teachers were supposed to follow the CMSI curriculum.

In 2005-2006, the administration found some resources to move a soon-to-retain teacher into the position of Specialist. Prior to this, there was no lead teacher or specialist supporting CMSI. Though an experienced teacher, the new specialist had little experience with the selected curriculum and math in general.

In 2005-06, during a Focus Group, teachers stated that almost no one went to professional development any more. Official OMS attendance data support this assertion—during the year only one teacher attended professional development for experienced users, and no one but the newly appointed specialist attended for new users. Only a few had attended for math in the summer of 2005 and most people who attended any professional development during summer 2005 or during the 2005-2006 school year attended science, not math. Moreover, the very few teachers who did attend any professional development averaged just about 50% attendance compared to the scheduled hours.

No special education teachers attended professional development. This was not surprising, as both the specialist and the assistant principal specifically noted during interviews that the special education teachers were exempted from the requirement to teach the CMSI curriculum.

Teachers had several complaints, not only about the lack of any meaningful professional development for anyone other than new users (for whom it was helpful), but also about the math curriculum itself. The participants in the research were quite familiar with the CMSI materials, but were not enthusiastic about its capacity to lead them to success for their students. Many teachers appreciated the manipulatives and the overall strategy of the CMSI curriculum. However, there was general agreement among the key players at Hepburn that certain challenges prevented them from 100% implementation. Particularly, these included the lack of time to carry out the full program—many just skipped the games, for example. All participants mentioned that the pacing was unrealistic and that they did not always have 60 minutes per day for math. All also noted the need to supplement for several reasons, especially for ISAT test preparation, because of the dearth of suitable assessments and homework within the curricula, and—very big with Hepburn teachers—the lack of ability to integrate the math and science curricula with each other, or, more importantly, with all the disciplines. They further feel that the CMSI curricula, math in particular, are parent-unfriendly, especially regarding the matter of homework.

As stated in the previous paragraph, many teachers supplemented for ISAT. In an ironic twist, those supporting implementation of CMSI were dealt a blow last school year. The one teacher who most openly expressed opposition, and who admitted to dropping CMSI for two months in preparation for ISAT, was the only teacher for whom students' scores went up in 2005.

The administration, specialist, and some of the teachers were all somewhat familiar with both the Area Coach and the OMS Facilitator. The administrator and specialist were much more positive, however, about these individuals' support roles. They did stay in contact via phone and email and were available for consultation, but the teachers all said that they had received no feedback about teaching from anyone, either in the school or from outside. They knew the Area Coach and the Facilitator and had seen them in classrooms, but just for "walkthroughs" to see if the teachers had everything in place, as prescribed. They would like to have interaction with someone with expertise in the curriculum, including pedagogical experience. They wanted to "debrief" after an observation and get valuable advice and information. So far, there had been no response to this need, they all claimed nor was it clear they had asked anyone specifically for this type of assistance. Moreover, despite their claim to support CMSI implementation, and, indeed, their earlier push for it during the previous years, the administration had not provided any feedback from observations. They had not made a point of observing the teachers during math and/or science. There was no evidence that there would be any more structures or more effective methods in place or more commitment to classroom observations and expert feedback in 2006-2007.

*How can the curriculum providers or OMS meet the needs of experienced users for meaningful professional development? "Meaningful" means that the sessions address the problems raised in the second paragraph. Also, can they provide classroom activities to rejuvenate and enliven the teachers' programs? How can the school be provided with information, including data, to show positive impacts on students' achievement, to help them see the necessity for what are called "games" by many using the curriculum—that they aren't just fun add-ons for when you have extra time, but are an integral part of the whole structure? How can they increase the teachers' repertoires of pedagogical techniques by sharing with them what they've learned from across the country and by providing time for teachers to share positive classroom experiences and pitfalls to avoid? How best can this wealth of knowledge be shared with new teachers and with the experienced teachers who are new to the curricula?*

*What concrete positive advice can they give the school regarding the issue of time for the full implementation of the Math program as intended? Can OMS help them restructure their school day and should they do so? Can the teachers—and administrators—be given enough information to provide both the incentive and the knowledge to implement the curriculum as intended, especially regarding amount of time designated for Math each day? Or, better yet, can they be provided with ways to integrate Math more fully into all their daily multidisciplinary activities, whatever the focus of the particular lesson may be? Also, how can the providers and OMS help the school find ways to answer parents' criticisms and complaints?*

*What advice is available regarding the issue of ISAT preparation especially in the case of items in the curriculum not being covered until after ISAT testing if one were to follow the pacing charts and scheduled sequence. This is quite important in an educational climate where schools are judged by standardized test scores. Are there any suggestions to help the teachers deal with these real classroom issues, especially when those who are not implementing have much higher student success rates?*

*How best can OMS or the curriculum providers give feedback to the teachers regarding classroom experiences? Is there any way to provide specially trained observers to help? In what ways can OMS and OSS work together to help the Special Education teachers and students become a part of the CMSI community?*

### **Vignettes: Second-year Mandatory Implementers (Probation Schools)**

#### **Frida Kahlo Elementary School**

In 2004-05, Kahlo Elementary was a school on probation in its first year of implementation of CMSI math materials. The school had two math specialists, one funded by the district and the other funded out of the school budget. While these two specialists could be described as a potentially strong support to implementation of the CMSI at Kahlo, there were many barriers to their success. Trust between the intermediate/upper specialist and the principal was low, with the two often not speaking to one another. The principal thought that the primary Specialist had exceptionally low skills stating "I really don't even want that position with the person who is in it." At the same time, these specialists were assigned many

other responsibilities in the school that made it difficult for them to focus on math. The Specialists were responsible for the ordering of all materials across subjects and discipline. In addition they had been responsible for monitoring the lunch room and a plethora of other activities in the school.

Teachers, the specialists and the principal indicate that implementation of the CMSI math materials was very, very low in the school. "We really don't use [the CMSI curriculum]," one teacher stated. "Out of the three teachers at our grade level, only one of us has opened the book all year." Similarly, most teachers reported having used only an activity or two across the entire 2004-05 school year in their classroom while primarily relying upon their old math text books. Three teachers in the building report attempting to implement all of the math materials.

In addition to not having materials in a timely manner in 2004-05, the principal was reluctant to provide accountability for the Initiative at the school because of its mandatory nature at her school, because she perceived that her teachers were not ready for the reform-based curricula, and because she believed in a certain way of teaching rather than in implementing materials.

At the end of 2004-05, there was little evidence that implementation of CMSI math materials had taken place in any deep or meaningful way at Kahlo.

In 2005-06, Kahlo remained on probation during its second year of mandatory CMSI implementation. However, implementation greatly improved in the school over last year because teachers had the books at the start of the school year, more teachers used the curriculum in their classrooms, teachers attended professional development, and the principal paid for substitute teachers. The principal explained, "Last year was hectic; this year we know what we are doing."

Furthermore, teachers reported students enjoyed the activities. Fifteen out of 26 teachers of math across grade levels reported they liked aspects of the curriculum such as development of thinking skills, links between the math and every day concepts, the focus on specific skills, difficult concepts and hands-on activities. One veteran teacher lamented it's late appearance in her career, "It's unfortunate that this program couldn't be implemented the number of years that I've been teaching." A group of 6<sup>th</sup> grade teachers worked together to plan instruction indicating some commitment, ownership, and leadership by teachers. Nine teachers from K-7<sup>th</sup> grades indicated they used the CMSI everyday. Three teachers from 1<sup>st</sup> through 6<sup>th</sup> grades, used it 2 to 4 times a week. All of these things indicated some teachers used the curriculum, and it began to gain a base of support among some teachers across grade levels.

At the same time, teachers seemed greatly strained as they went through the growing pains of their first real year of implementation without more in school support. Some found assessing students and time management difficult along with supervising students in group activities. Others cited the lack of student practice as an obstacle. Eight out of twenty six teachers across grade levels reported they used test prep books to supplement. Another eight out of twenty six across the grade levels reported they supplemented with other materials usually on basic skills. Finally, the teachers reported there was almost no support in the school outside of material delivery and information on attending professional development provided the one remaining Specialist in the 2005-06 school year. Generally, teachers agreed that attendance at professional development was a good source of support, and teachers indicated they wanted more in school training and teacher workshops.

The principal, specialist and teachers all indicated reading was a priority at the school. Weekly teacher meetings and in school professional development days were mostly devoted to reading. When allocating school resources in the SIPAAA, the principal stated the majority of money would be used to support the reading program. The principal also claimed to not have enough money for a math specialist due to the declining school enrollment, indicating the budget climate at her school influenced her decisions on CMSI resource allocation.

The school administration had one specialist in 2005-06. However, the specialist had other significant duties. The specialist was the branch administrator at an annex building and was responsible for a number of school duties such as aligning the curricula to the standards, filling in for absent teachers, and being

responsible for discipline at the branch among other things. The specialist's main work with CMSI was making sure teachers had the necessary material for math and science and making sure teachers were aware of professional development. The specialist was uncomfortable modeling in classrooms and, therefore, did not work with teachers in classrooms to model instructional practice. Teachers identified the specialist as someone who helped on materials management and professional development. The specialist was unsure if her job description would include acting as specialist or not. However, in school planning documents for the SIPAAA toward the end of the school year, school members identified a need for a school math specialist.

OMS and the Area were involved at Kahlo. The Math Facilitator worked directly with a group of 6<sup>th</sup> grade teachers, and these teachers found it very useful, in part because it relieved their fears about ISAT prep. The Area Coach had frequent contact with the principal and specialist. Both identified her as a source of support for the CMSI. In fact, the specialist identified her as her only support for CMSI matters.

The only help I really get is my area math and science coach. She is always available. When she gets a message she will call me back and come out and see what I need and help me. She is my resource.

In the middle of the school year, the Area Coach recommended to both the principal and specialist the teachers should have weekly math meetings, and the specialist should spend more time in classrooms. However, by the end of the school year, neither of these things happened at Kahlo. The Coach also recommended the principal hire a math specialist the following year.

The principal supported teachers implementation of CMSI by encouraging their attendance at professional development, by paying for substitute teachers, and by buying CMSI curricula materials. The principal observed teachers during math time and included these observations in her evaluation of teachers. The principal explained that these were measures to provide accountability for the initiative. For example, the principal noted the following about the teachers behaviors and her reactions to them:

Fifty percent [of my teachers] don't go to in-service; [they] call in sick; [they] are not happy with it; they tell me they don't like the program and go back to old math books. I then have to have an oral discussion with them—that is one part of a write up. Ten percent of the fifty percent, I've had an oral discussion with them because they don't implement.

When teachers were asked about the effect the principal had on implementation or any support they received from her, they made no comment on any of the principal's actions and often stated support in the school was inadequate or nonexistent. "If it wasn't for talking with my colleagues, there would be no discussion about math."

Teachers indicated parent involvement at the school was low, and teachers wanted parents to be trained on the curriculum. A change in student demographics as well as enrollment at the school brought an influx of Spanish speaking families to the school. These parents seemed involved as we observed their attendance at a school LSC meeting. The Kahlo student population decreased by nearly 100 students from 03-04 to 04-05 school years, leaving less money for school programs. The principal projected losing 5 ½ teacher positions and two aids for the 2006-2007 school year due to decreased enrollment as another CPS school opened nearby. The principal cited these budget constraints as the reason she would not fund a specialist in the future.

### **Zora Neale Hurston Elementary School**

Hurston school was mandated to implement CMSI materials by the Area Instructional Officer for the 2004-05 school year. The first year of implementation was characterized by conflicting stories from various staff members with administrators voicing support for the implementation but teachers noting they did not have curricular materials they needed to teach nor did anyone observe their attempts to use the CMSI math curricula. There were budget constraints that did not allow all teachers to attend professional development, and perceptions on the part of the teachers that the materials were not appropriate for Hurston children. Teachers also expressed resentment that the Area Math Coach was in the school asking them about

implementation when many of the teachers did not have complete sets of materials or had not yet received the materials at all. Only one teacher at Hurston had experience with the CMSI materials prior to implementation at the school in 2004-05.

The Hurston principal stated that due to the late notice from the Area that the school would be mandated to implement the materials, she was unable to arrange the budget such that all teachers could be paid to attend the CMSI professional development sessions. Instead, a smaller number of teachers were chosen to attend, one per grade level and a few special education teachers. These teachers attended in the summer of 2004 and throughout the 2004-05 school year. This approach was met with suspicion and resentment by some Hurston teachers who suspected that the principal was “playing favorites” by choosing teachers she liked to attend the school-day sessions despite the fact that other teachers expressed interest in attending.

In 2005-06, Hurston allocated funds for replacing used curricular materials and procuring substitute teachers so that teachers could attend professional development. Still teachers gave conflicting stories on whether they have the materials they needed to teach using the CMSI curricula. There were reports of teachers needing to share one math kit per grade and that classrooms did not have working computers so students could not access some of the resources available on line.

Hurston School does not have a high teacher turnover rate. Some of the same teachers who were skeptical about the CMSI curricula in 2004-05 remained vocal with the same criticism in 2005-06. The teachers did not agree that the students should have to go through all the steps and skills that the program proposed. The teachers do not agree with the assumptions by the curriculum developers that all the students have the skills to proceed with the lessons and believe that the program does not allow them to elaborate on the skills the students need. Teachers believe the lessons are taught in isolation without giving students the background information and building on what they know. They question the spiraling component of the curricula or its gradual affect on student learning.

Many teachers still have not attended professional development. The administration claimed they encouraged their teachers to attend professional development. Teacher shared many reasons why they did not attend professional development. Summer workshops were an infringement on their time; however, if they didn't attend, they were reprimanded for not going. The administration found it difficult to staff the school with substitutes when the teachers were out of the building. . Some teachers were not able to go to workshops once a month in the evenings or Saturdays because they were attending university coursework offered by CPS for mathematics and science endorsements. Special education teachers did not think that professional development was directed to special education students enough.

The school-wide schedule includes grade-level common planning times to discuss the different problems or concerns teachers may have around mathematics instruction. Yet, teachers do not report having many opportunities to meet as teams because “preps” were often cancelled.

The principal said he observed most teachers on a daily basis as he walks through the building. The Area Coach suggested that the school's administration should better monitor mathematics and science instruction. Teachers concurred that the administration was checking to see if they were using the mathematics materials. However, the administrators gave them general feedback, but not specifically talking with them about how they should best use the math curricular materials. The school's leadership team had no mathematics or science specialist. The assistant principal was assigned to work with teachers around mathematics instruction, but this support was limited; he does not have an endorsement in math.

Hurston administration relies heavily on the Area Coach for support and guidance. He is the first they consult if they have a question about the CMSI. The Area Coach supports the implementation of the math curriculum at Hurston by providing information and in-services to the faculty. He tries to answer any questions the administration has, and is part of the Area Walkthroughs, which results in the principal receiving a report on the school's progress. The teachers do not think the Area Coach provides support to the school though they acknowledge that he has briefly observed a lesson on a Walkthrough or has asked about the use of the materials.

Most of the teachers are going through the motion of teaching the materials only because they are mandated to do so. The administration and the Area Coach tell the teachers not to supplement. Yet, all parties know that the teachers use their old mathematics textbooks and the administration provides them with Test Prep materials for ISAT testing.

The school lacks leadership both internally and externally in mathematics to move the teachers or the Initiative forward and lacks the sense of trust necessary for teachers to take chances when learning from each other. While the teachers say they can raise issues they have about the program with the administration, but they do not receive definitive answers in response to their issues. The teachers believe a math specialist would help the school and place mathematics education at the center with reading.

### **Mary Shelley Elementary School**

Shelley is a school on probation in its second year of implementation of CMSI math materials and first year of science materials. Supports in the school to implementation of the CMSI were the commitment of the principal and the school's math and science specialist to providing both accountability and support to teachers and the support of the Area Math Coach. Barriers to implementation were the lack of necessary materials, scattered teacher resistance and the instability of professional relationships among the staff.

The principal of Shelley had been at the school for more than 15 years. He was committed to the improvement of the school, both in word and action. He had focused on encouraging weak teachers to leave the school. "It is like a puzzle," the principal explained. "If you do not fit into this puzzle, you do not belong here. If you are not happy here, you do not belong here—you are just going to make the kids unhappy...if you are unhappy then you will not do an effective job..." He expected the staff to take the CMSI seriously and had included attendance at professional development sessions in teacher evaluations.

The specialist joined the school two years ago, when the principal was told to use school funds to open the position. He was working as a math coordinator at another school and came to Shelley in the fall of 2004. The principal asked the specialist to oversee both the math and science programs beginning fall 2005. The specialist spent his time in 2005-2006 on an irregular visitation schedule to teachers' classrooms. Personal illness and scheduling conflicts inhibited the specialist from monitoring the implementation of CMSI materials consistently.

The specialist was "unable to fairly gauge" the progress of implementation in the school. Use of CMSI math and science materials was occurring in most of the classrooms in the building, although the level of implementation varied. The depth and breadth of implementation was particularly variable for seasoned teachers who had developed confidence in their own experiences with math and science and resistance to the CMSI approach.

The Area Math Coach was reported by the principal, specialist and teachers to be an important support to implementation of the math materials. She was reported to play a critical role in the selection of the math curriculum that was most appropriate for the school and that she came to the school regularly to assist. According to staff members, she was accessible and responsive to the teachers' and the specialist's needs. The specialist stated

Our Math Coach over here is superb...she comes when she does not have to. She talks to me...she comes in and talks to [the principal]. She has walked through and talked to teachers...she goes in rooms where I am having difficulty pulling the teacher out of the traditional ways.

With a few exceptions, positive, generally trusting relationships in the school were another support to the potential success of the implementation of CMSI math and science materials at Shelley. The atmosphere of the school was positive and the staff respectful to one another.

The lack of necessary materials, scattered teacher resistance, and unstable professional relationships among particular staff members were barriers to the CMSI at Shelley. Midway through 2005-2006, teachers still did not have all the materials they needed to implement the math and science curricula. The principal

reported that delivery of the materials was delayed because they were ordered late and shipped to the wrong address. When the materials arrived, some teachers complained that there, simply, “is not enough time” in the school day to retrieve the materials from the Specialist and set up. Consequently, an abundance of materials remained in the Specialist’s room unused.

To the best of their abilities, the teachers performed their duties most of the year without the appropriate materials. They learned to improvise and gather materials from a vast array of sources. The teachers reported that although they generally like the curricula, they often “go with the flow,” supplementing and supplanting as necessary.

At the same time, professional development was reported to be problematic because of the timing of teacher attendance and the nominal stipend for attendance. Teachers complained that they have to “jump through all kinds of hoops” to attend professional development, from searching for substitute teachers to rushing to get to a session across town on time, while being paid \$26 dollars/hour. The teachers claimed that these factors contributed to the unprofessional nature of professional development. These factors compromised trust in the CMSI and increased teacher resistance.

The final barrier to implementation of the CMSI at Shelley in 2005-2006 was the instability of professional relationships among particular staff members. Three key actors in the school were engaged in a volatile relationship: the specialist, the only seasoned, math-endorsed teacher in the school, and the technology teacher. The math and the technology teachers were both self-motivated, independent, traditional teachers. In other words, they had deep trust in their own abilities and appreciated being accountable to themselves. The two traditional teachers viewed the specialist, who had been charged with consistent classroom monitoring and observation, as a threat to their own expertise and their jobs. Accordingly, the math teacher often would not allow the specialist to come into her class to observe or model. The technology teacher, who ran the computer lab, frequently locked the lab when the specialist attempted to oversee the technological portions of math lessons.

A probation school with a complex school environment, Shelley had both supports and barriers to implementation of the CMSI. There were positive indications that teachers were all attempting some use of the materials and that the principal and specialist were providing leadership for the Initiative. At the same time, however, barriers of teacher resistance and trust in the CMSI approach were barriers to overcome.

### **Vignettes: First-year Mandatory Implementers (Probation Schools)**

#### **Jewel Plummer Cobb School**

Jewel Plummer Cobb school is in a changing neighborhood and has lost a number of students over the last few years. Cobb served a little more than 300 students. It was a school on academic probation with little history of CMSI participation until 2004-2005. That year, two teachers started implementation, only one fully. That one teacher’s students did far better than anyone else’s on standardized tests. That success convinced the principal that the curriculum worked and he ordered full implementation throughout the building for 2005-2006. The principal’s enthusiasm and commitment was so great that he was paying for all teachers to go to professional development whether during the week with substitutes or on the weekend with stipends. The principal attended professional development for administrators, so he could better observe and assist the teachers and the students, as well as talk to the parents knowledgeably about the curricula. The principal was greatly assisted in the effort to implement the adopted math curricula by the presence of a City-Wide Specialist. Despite only being in the building part time, the Specialist provided invaluable help, not only with supplies and the logistics of getting teachers to professional development, but with math expertise and being a real consultant and critical observer in the classrooms. He was involved with co-planning, as well as assisting and even teaching (demonstration lessons) in the classrooms. The Area Coach supplemented this “outside” support as well, maintaining frequent contact with both the principal and the City-Wide Specialist.

Despite full commitment from the principal and strong outside support, Cobb school was still experiencing some of the usual first year difficulties. There was some resistance from the students, especially the older ones, as well as the parents. Some of the teachers were still not persuaded the spiraling and the lack of

“skill and drill” worked. Even with substitutes or stipends, professional development attendance was not 100%. Cobb teachers tended to attend less as they get more experience.

Two other factors played a major role in impeding or constraining implementation of CMSI math at Cobb school—time for Math during the schedule each day and classroom management or discipline issues. The principal was working on both these issues vigorously. He manipulated everyone’s schedule to make sure they had at least 50 to 55 minutes per day for math and then planned to do everything possible to assure each teacher has 60 minutes in 2006-2007. He replaced some teachers (even mid-year) and given a lot of extra support to a couple of others regarding the issues of classroom management and discipline, which had been factors holding back full implementation in some classrooms, particularly because of the use of manipulatives.

While retention of teachers in this first year was not an issue for implementation since most teachers were new to the curricula, turnover, especially midyear, did have some consequences. In the second semester evaluation focus group, a new teacher hired in December was one of the most negative about the adopted CMSI material. Still, teachers with a few months more experience with the curricula shared their experience and made suggestions about how to use the materials in more positive ways, noting that such results usually improve as students become more familiar with the CMSI way of doing things.

While the principal would like to continue to pay for professional development for all teachers next year, it was not known at this time whether the school will be able to do so in 2006-2007 or not. Further, would the more experienced teachers continue to go? All evidence seemed to indicate that “outside” support (OMS and the Area) will continue to be critical for the school this upcoming year. After all, almost all grades had only one teacher, so there’s no internal support system except for grade clusters.

*What can OMS do to strengthen the outside support and help the principal succeed even more in 2006-2007? What advice does OMS have to give administration and teachers regarding the issues raised in the previous paragraph? What assistance can OMS and the curriculum providers give teachers and administrators regarding the issues of time and classroom management? How can OMS help meet the professional development needs of more experienced users of the curriculum? How best can OMS and the Area collaborate to help the school, especially if the school budget does not permit pay for professional development attendance? How can OMS help bring the parents on board? In what ways can OMS and OSS work together to help the Special Education teachers and students become more a part of the CMSI community?*

### **Rita Moreno Elementary School**

Rita Moreno School was in its first year of mandatory implementation of CMSI math curricula in 2005-06. The school’s plan was for the math curricula to be used by one teacher per grade in 2005-06 and then all teachers would use the curricula by 2006-07. The principal voiced some support for the use of the math curricula and told teachers they must attend professional development workshops. However, the principal admitted that only three of the teachers attended this professional development.

Moreno also had a City-Wide Specialist who viewed his role as making sure teachers had all their math materials, taught the program, and were attending professional development. His initial meeting with the principal consisted of learning how many teachers taught math and gaining access to them. He gave the principal a copy of his tentative schedule for the year; they went over it together. He expected to visit Moreno every month for one-week intervals. He provided about twenty-five days of school-level support for the year.

The City-Wide Specialist thought that the manner in which the school was departmentalized and rather small would allow him to work well with teachers in their classrooms and then have opportunities to pre-conference, visit, and post-conference. However, the official school schedule and the reality of what happened at Moreno School were quite different. The school schedule the specialist received at the beginning of the year did not include many meetings that the teachers needed to attend. Therefore, often when he went into the school for classroom visits, he could not find the teachers he thought would be

teaching math. Except for one teacher, no one asked the City-wide Specialist to model a lesson. Most of the time the specialist visited classrooms more as an observer rather than being able to coach the teachers.

The school had grade level teams of teachers and those teachers teaching math were active on these grade level teams. However, the math teachers acknowledged they had great difficulty as far as meeting together as a math group. Yet even if they would have met, their commitment to the CMSI curricula was low. There were many reasons the teachers cited for their mistrust of the CMSI curricula.

First, teachers were concerned over their students low achievement test scores. They did not trust that the CMSI curricular materials addressed what the students needed to know for the test. Some staff members thought that the curricula should have had a stronger focus on basic skills. A few teachers envisioned the integration of the CMSI curricula with traditional math curricula. One teacher believed that the students that attended Moreno could not think abstractly at the level that the CMSI curricula required. Four teachers did not believe the students were familiar enough with the materials to learn the concepts. Another teacher stated that she saw too many gaps between the correlation of ISAT responses and the CMSI curricula books.

Second, at this school teachers were committed to integrating lessons across math, literature, social studies and science, etc. When they worked with colleagues in the grade level team meetings in the departmentalized middle grades, they felt divided in terms of using the CMSI math curricula and finding math materials better integrated with other subjects. According to the teachers, the CMSI curricula was strictly ordered and scripted which made it very difficult to integrate with other subjects. The City-wide Math Specialist acknowledged that Moreno's focus on multiple-integrated programs drove their curricula decisions and practices.

Third, a couple teachers believed their students did not relate to the content of the stories in the math books because of their culture. One teacher stated that the books did not put the concepts in the context of the students' reality or the other curricula in the school and did not motivate them to learn nor do the activities. The teachers tried different strategies to not only familiarize the students with the materials, but themselves. Two teachers believed the students had difficulty understanding the math language used because they did too. The principal understood the teachers' concerns because he questioned the students' levels of exposure to this math program's particular approach but he did not believe there should be excuses for not exposing the students to the curriculum.

Fourth, a couple teachers were angry that at the school level they did not have a choice to decide if they wanted to be part of the CMSI. One teacher was also disappointed that OMS promised Moreno free books and other materials but did not follow through. The Area Coach and her AIO were influential to Moreno's implementation, according to the City-wide Specialist.

Finally, Moreno's schedule may not have worked well with the CMSI curricula program because these math lessons needed a minimum of an hour. At Moreno, math instruction was allocated daily about forty-five minutes. They did not teach math five days a week for an hour a day.

Despite this mistrust of the math curricula, some teachers were using the materials. However, the Area Coach characterized the manner in which the teachers implemented the program as a very direct instruction oriented format. Teachers supplemented CMSI curricula. This occurred even after the principal got rid of all the non-CMSI math textbooks that the school owned. The teachers just continued to supplement the curriculum with other materials by purchasing them with their own money.

The principal tried to address teachers' attitudes toward the program from one of compliance to believing the curricula to foster effective math instruction. The principal spoke of the program as best practices and research based. Further, he suggested that if the teachers had concerns about the program they should have gone to the training and presented those concerns there. According to the principal, participation in professional development was mandated and school math meetings focused on pacing, alignment with the Illinois Standards Achievement Test (ISAT), and implementation strategies.

Still only a few staff members went consistently to professional development workshops, while others did not go at all. The teachers mentioned that attendance at professional development would have increased if they were at a convenient location, differentiated the content of the workshops, and coordinated them around the CPS master schedule. They mentioned receiving email reminders by the principal, specialist, and Area Coach to attend professional development. They also received paid stipends and having substitutes for their classes.

### **Attachments**

## **Attachment A,**

### **Review of Previous CMSI External Evaluation Findings on School Implementation**

While there were many processes and factors influencing the success of schools' implementation of CMSI curricula, there appeared to be some conditions more common in schools which were finding relatively more success than others.

#### **Voluntary Intensive Support Schools**

For those schools that volunteered to use the CMSI math or science curricula and that received intensive support from OMS in 2003-04, there was variation in the extent to which their teachers were using the curricula. Some schools struggled to get teachers to use the materials while others found more success. The schools that were more likely to experience successes in implementation during this first year of voluntary implementation were more likely to have:

- positive experiences with professional development both within and outside of their classroom,
- strong principal support for the CMSI,
- some teachers with experience teaching the curricula,
- some teachers serving as teacher-leaders,
- a school community with trusting relationships, and
- a good "fit" between the school and the Initiative.

These same schools that volunteered to use these curricular materials moved into a second year of implementation in 2004-05. By the end of their second year, it was encouraging that all of these voluntary schools were using the CMSI curricula to some extent. The level of use varied with some schools still experiencing a "Split Staff" -- with many teachers using the materials most of the time but up to a half of the teaching staff resisting regular use of the curricula. At other schools, all but a couple teachers were regularly using the materials. However at these schools, almost all teachers were supplementing the CMSI curricula with other curricular materials designed to prepare their students for taking CPS' standardized tests or for reviewing and drilling on basic skills. We categorized these types of schools as "Implementing but Significant Test Prep Interruption" schools.

In this second year, all schools moved to a higher level of implementation evidenced by the number of teachers using the materials as their primary source curriculum in mathematics or science and the amount of time during the year that they used it.<sup>8</sup> Supports to the deepening of implementation in these schools included the resources noted above but also:

- CMSI curricular materials in the school building from the previous year; thus readily available
- employment of a CMSI trained specialist for at least 50% time for at least half of the school year
- teachers who attended CMSI curricula professional development, especially during summers of 2003 and 2004.<sup>9</sup>

#### **Mandated Probation Schools**

In 2004-05, three case study schools were in their first year of mandated use of CMSI curricula. Two of the three were making very little use of the curricular materials; these two also showed a decline in school composite math ISAT scores. Examination of these schools suggests some obstacles likely to be related to their difficulty using CMSI curricula. These schools:

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<sup>8</sup> However as we noted in the earlier report, the quality of the implementation was difficult for this study to assess and to the extent it could be assessed this quality varied.

<sup>9</sup> The October 2005 cross case report on school implementation found that during the summers of 2003 and 2004, almost all of the voluntary second year implementing schools had at least 1 teacher per 100 students attending most of the relevant CMSI curricula professional development offered. The level of teachers attending these workshops during the school year was considerably less.

- were in their first year of using CMSI materials
- were schools with very low ITBS math 2004 grade 3-8 student scores (<30% students at or above norm), and thus were on probation
- did not have teachers with experience teaching with the CMSI curricula materials
- did not employ a CMSI-trained specialist to help teachers with the new curriculum
- did not have a principal who participated in CMSI curriculum professional development
- did not have complete sets of CMSI curricular materials in the building until well after the start of school (some as late as January 2005).<sup>10</sup>

During winter 2005, external evaluators visited 44 probation schools and created a typology of how probation schools implemented CMSI curricula based on interview data with key school leaders. Schools were characterized according to how their leaders dealt with the CMSI, what CMSI curricular materials were available to teachers, the extent to which teachers attended professional development, whether the principal monitored teachers' use of curricular materials and held them accountable for their teaching of math, and the level of use of the CMSI curricula by teachers at the school. While the sample of schools studied was not selected so to allow statistical generalization from the findings, evaluators uncovered and created a typology of the variation in how probation schools were using CMSI curricular materials.

- Approximately a third of the probation schools were dedicating some freed teacher-leader's time and attention to the CMSI implementation, sending most teachers to professional development workshops and finding some teachers using the materials.
- Another third of the probation schools had a principal or assistant principal providing leadership for CMSI implementation, sent fewer but some teachers to professional development and had some teachers using materials.
- Another third had no one leading CMSI implementation, uncertainty if there were even curricular materials in the building and no teachers using materials—even though some teachers were attending professional development.

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<sup>10</sup> Curricular materials were not in these schools on time for a variety of reasons. There were often conflicting reasons given by different staff involved. The blame appears to be spread across the principals (not allocating funds), Specialists and school administrators for making errors or not placing orders in time, and publishers for not delivering what was ordered or falling behind schedule.