

Case Study Schools Implementing CMSI Curriculum, 2004-05: School Characteristics Related to Implementation

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In a July 18, 2005 data brief, we reported on the progress and process of implementation of CMSI materials in 14 case study elementary schools (11 using CMSI math and 3 using CMSI science curricula) and introduced a typology of the character of implementation. We also analyzed how the implementation related to school performance on standardized math and science tests. Findings from that data brief are summarized in Table One below.

Table One A: Typology of CMSI Math Implementing Schools in Relation to School-Level Performance on Math ISAT, 2004-05

	Low Implementing	Split Staff in Terms of Implementing	Implementing but Significant Test Prep Interruption	Strong Implementing
2 nd year voluntary		Stanton UP	Lange UP Chawla UP Makeba UP Child DOWN#	Goodall DOWN
1 st year voluntary	Pizan DOWN	Hepburn UP		
1 st year mandatory	Kahlo DOWN Hurston DOWN			Shelley DOWN

* UP represents an increase in ISAT scores and DOWN represents a decrease.

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Table One B: Typology of CMSI Science Implementing Schools in Relation to School-Level Performance on Science ISAT, 2004-05

	Low Implementing	Split Staff in Terms of Implementing	Implementing but Significant Test Prep Interruption	Strong Implementing
2 nd year voluntary		Ocampo UP		Ebadi DOWN Mead UP

* UP represents an increase in ISAT scores and DOWN represents a decrease.

In this data brief, we now examine school-level factors within these case study schools and their relationship to this implementation typology. In other words, we consider school characteristics, such as workforce development, infrastructure and culture, in relation to the CMSI effort. Do these factors vary between schools that fall into the different cells in the typology above? If so, how? How do the findings in first year implementing schools in 2004-2005 compare to findings in schools where implementation of CMSI materials was initiated in 2003-2004? How did teacher attendance at curriculum-specific professional development relate to implementation? What insights can we draw from these findings to inform future resource allocation to strengthen math and science education in the Chicago Public Schools?

Findings: First Year Implementers

After systematically comparing the case study schools, we find a key set of school-level factors that differentiate the three “Low Implementing” schools (and these also all showed a decline in school composite math ISAT scores)—from the other schools that demonstrated higher levels of implementation of CMSI curricula.

These “low implementing” schools

- Were all in their first year of using CMSI materials
- Were all schools with very low ITBS math 2004 grade 3-8 student scores (<30% students at or above norm), and thus were all on probation¹
- 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).

These findings offer comparisons to previous evaluation findings on schools initiating the implementation of CMSI curricula for the first time in 2003-2004. During 2003-2004, schools that found challenges in implementation of CMSI materials were those that had characteristics similar to those of the 2004-2005 low implementing schools described above.² These schools,

- Did not have teachers with experience teaching the CMSI curricula materials
- Employed a CMSI-trained Specialist; however she/he was not working with teachers in classrooms or using pre- and post-modeling meetings to discuss the implementation process
- Had a principal who supported the initiation of the school’s use of the CMSI curriculum but then showed minimal support for the implementation.

Findings: Second Year Implementers

In August of 2004, our evaluation team summarized findings for case study Readiness and Intensive Support schools at the end of the first year of CMSI curricula implementation. Following these schools into their second year of implementation in 2004-2005, it is encouraging to note that all of these schools began finding more success in using CMSI curricula. All 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. Supports to the deepening of implementation in these schools included

- The CMSI materials were in the building from the previous year and thus were readily available
- The employment of a CMSI trained Specialist for at least 50% time for at least half of the school year

While the deepening of implementation in the second year CMSI schools is positive, the loss or lack of school-based Specialist positions for 2005-06 makes the extent to which both second- and third-year implementing schools will improve open to question. The vast majority of case study schools entering their third year of implementation will no longer have a CMSI-trained Specialist to assist teachers. Similarly, the first year case study schools identified as “low implementing” will continue to operate without a freed teacher or Specialist to support the use of the materials. With a lack of on-site support (from a Specialist or principal) it is likely that the “low implementing” schools from 2004-05 will remain low implementers in 2005-2006. At the same time, the influence of the loss of a Specialist in third year implementing schools is difficult to predict. The interaction of these and other factors, such as principal support, in-classroom coaching, and materials management, and their influence on the 2005-2006 implementation will be important to monitor.

¹ One school was a voluntary implementer of the materials while the others were mandated to do so by their Area office.

² The 2003-2004 schools experiencing challenges in the implementation of CMSI materials also had in common a lack of teacher leaders working to promote use of curricula, mistrust between administrators, teachers, and parents, and a lack of alignment between school goals and those of the Initiative (See Wenzel et al., August 31, 2004 Report D: Exploring Implementation-- Intensive Support & Readiness School Stories).

Professional Development Attendance

Professional development is provided free of charge to all CPS elementary teachers implementing the new math and science curricula. As a major pillar of the CMSI, it is important to make special mention of how teacher attendance at curriculum-specific professional development relates to school implementation success.

We accomplish this by laying professional development attendance over the implementation typology introduced in Table One above. Are there any patterns in professional development attendance by type of implementation school? Table Two below summarizes the professional development attendance during summer 2004, school year 2004-05 and summer 2005 from the schools clustered in each type. For the second year implementing schools the summer 2003 attendance is also reported. (School year 2003-04 data is not available.)

To allow comparisons across schools, we examine how many teachers from math implementing schools attended most of the professional development workshop series offered in a given summer or spring session (typically 75% of the sessions -- with the exception that for science summer 2004 we used 4 of 5 of the 3-hour sessions or 80%). We then standardized this number to take into consideration the size of the school by creating a ratio of the number of teachers attending most (greater than 75% of) sessions with the student population of the school. The resulting indicator is shown as a ratio (x over y) that suggests that for every y number of students (y in the denominator) there have been x teachers at that school (x in the numerator) who attended most of the available professional development sessions offered in math or science. If the ratio was less than 1 teacher out of 100, we represent this as "<1/100". Summer 2003 (S03), Summer 2004 (S04) and School Year 2004-05 (SY45) figures reflect teacher attendance, while Summer 2005 (S05) reflects registration only.

Table Two A: 2004-05 Professional Development Attendance in the CMSI Implementation Typology for Math Implementers

	Low Implementing	Split Staff in Terms of Implementing	Implementing but Significant Test Prep Interruption	Strong Implementing
2 nd year voluntary		Stanton S03 1/36 S04 1/75 SY45 <1/100 S05 <1/100	Lange S03 1/68 S04 1/51 SY45 <1/100 S05 <1/100 Chawla S03 1/99 S04 1/44 SY45 <1/100 S05 1/44 Makeba S03 1/96 S04 1/78 SY45 <1/100 S05 <1/100 Child S03 1/89 S04 1/56 SY45 <1/100 S05 <1/100	Goodall S03 1/83 S04 <1/100 SY45 1/48 S05 1/53
1 st year voluntary	Pizan S04 <1/100 SY45 <1/100 S05 1/25	Hepburn S04 1/85 SY45 <1/100 S05 1/38		
1 st year mandatory	Hurston S04 <1/100 SY45 1/63 S05 <1/100 Kahlo S04 1/95 SY45 <1/100 S05 1/51			Shelley S04 1/33 SY45 <1/100 S05 <1/100

Table Two B: 2004-05 Professional Development Attendance in the CMSI Implementation Typology for Science Implementers

	Low Implementing	Split Staff in Terms of Implementing	Implementing but Significant Test Prep Interruption	Strong Implementing
2 nd year voluntary		Ocampo S03 <1/100 S04 1/96 SY45 1/74 S05 <1/100		Ebadi S03 1/51 S04 1/47 SY45 1/42 S05 <1/100 Mead S03 1/25 S04 <1/100 SY45 1/81 S05 <1/100

A few patterns emerge from the professional development attendance data. We describe these below and offer some possible interpretations of why these patterns occur.

- *Second year voluntary schools:* As a group, these schools show good teacher attendance at professional development relative to school size during their first opportunity for workshops in Summer 2003 and also for Summer 2004 workshops. All of these schools are implementing the CMSI curriculum during 2004-05—despite a few of these schools having had significant challenges during the 2003-04 year. However, in terms of professional development attendance these schools show a more mixed pattern in terms of School Year 2004-05 attendance and Summer 2005 registration. During these later time periods, science implementers and one of the math implementers (who was considered a strong implementation school) were showing stronger attendance levels.
 - *Possible interpretations:* This pattern makes it possible to speculate that the conditions in the voluntary Intensive Support schools supported teacher attendance in summer professional development. It also suggests that science implementing schools and the strongest math implementing schools are the types of schools with best conditions to allow teachers to join in with school-year professional development. It also supports the idea that significant teacher attendance in workshops across 2 summers may have enhanced the implementation success of the former Intensive Support schools.

- *Low implementing schools:* In the case of the low implementers, the professional development attendance pattern is not clear cut. These schools varied in how strongly teachers partook of professional development between Summer 2004 through Summer 2005. For example, Hurston showed good attendance for Summer 2004 with promising registrations for Summer 2005 whereas Kahlo did not have teachers attending summer sessions as much as they did attending School Year 2004-05 sessions.
 - *Possible interpretations:* Given that all of the low implementers were also in their first year of implementation, it could be hypothesized that even with solid professional development attendance in the first year, there can be many school-level conditions that can thwart implementation of CMSI curriculum. This would be further supported by findings that some of the Intensive Support schools new to implementing in 2003-04 had strong professional development attendance in Summer 2003 and yet also had great implementation challenges during 2003-04 (Stanton, Mead, Goodall).

Implications

Taken together, what do these findings suggest to the Chicago Public Schools and others as they work to improve math and science education through the use of standards based curriculum? We see four key themes deserving of consideration and further discussion.

A. Evaluation findings continue to reiterate the importance of in-school teacher leadership and support as a critical cornerstone of the deepening of implementation of CMSI materials.

There is a need for first year implementing schools to have a well-trained freed teacher to support teachers in their use of new standards based math and science curricula. In some cases, a well-trained principal can serve as a support person to teachers' implementation. However, the benefits of having a well-trained Specialist providing meaningful in-classroom support are evident in the stories of implementation in the evaluation case studies.

The benefit of these positions is dependent upon school climate as well as on their personal qualifications in leadership, content and personal skills. Evaluation work has made it clear that even a trained freed teacher can fail in their work supporting implementation if they do not get into teachers' classrooms and dialogue with them about the implementation process, if they do not have adequate content knowledge

or if they do not have the support and backing of a well informed principal.³ Finding creative ways to continue to enable and support knowledgeable, appropriate in-classroom support is the key to moving the success of the Initiative into the schools considered “low implementers” of CMSI materials.

B. Evaluation findings show support for the original opt-in, multiple supports CMSI model

The original CMSI model was designed to encourage an opt-in approach for schools that were given “intensive support” to initiate the use of OMS supported standards-based materials. In the second year of implementation of CMSI materials, these original Intensive Support schools have all moved into implementation levels showing increasing levels of success. This progress suggests to evaluators the merit of the original Office of Math and Science model for district wide school improvement. This model should be revisited and considered as the district considers future options. At the same time, ongoing attention should be paid to the extent to which the growing success of this original set of CMSI schools can be shared with other schools in the district through site visits, shared professional development, etc.

C. Evaluation findings reveal some patterns of a positive relationship between professional development attendance and the character of implementation but shows that professional development is not sufficient for success.

The lack of clearer patterns in the professional development attendance data could be due to several factors. In the first place, the lack of great variation in professional development attendance between high and low implementation schools suggests that while professional development in curricula is important, it is not a sufficient factor that alone can promote a schools’ success in using the new math and science curricula. Factors such as the extent of in-classroom support and the lack of the timely arrival of materials could make the translation of professional development training into improvements in classroom practice difficult and uneven. This is considered in more detail in D below.

D. Evaluation findings identify some institutional barriers to successful implementation

Challenges in implementation for Intensive Support and Readiness schools in the 2003-2004 year discussed in 2004 evaluation reports are similar to a number of the challenges found in 1st year/low implementing schools in 2004-05. These findings reaffirm the importance of several critical supports that must be in place for successful implementation to take place. In-school supports, such as principal leadership and in-classroom mentoring are a key aspect of this. The timely arrival and organization of complete sets of instructional materials are additionally important. School climate variables, such as levels of trust among the staff and the alignment of school instructional goals with those of the CMSI, also appear to play a role in the character of implementation. Critical questions remain about the manner in which these critical supports can be identified, improved and built in schools as a prerequisite to deepening implementation.

³ For more detailed findings about the Specialist role see Hallman et al, Report C: The Specialist Report, August 30th, 2004 and the vignette descriptions in Wenzel et al, Report D: Stories of School Implementation, August 31st, 2004.