

Evaluation of the Math & Science Teacher Leader Institute Professional Development Partnership¹

End-of-Year External Evaluation Report
Prepared for the Office of Math and Science, Chicago Public Schools
By the PRAIRIE Group, College of Education, University of Illinois at Chicago

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I. Report Overview

Overview of the Institute

This report presents findings, analysis, and reflection questions based on the external evaluation of the second implementation year (i.e. second cohort) of “*Developing CPS mathematics and science teacher leaders through University-District partnerships*,” a Teacher Leader Institute (TLI) funded by the Illinois State Board of Education’s Math and Science Partnership (IMSP). The TLI is a professional development partnership between the Chicago Public Schools (CPS) Office of Math and Science, the University of Illinois at Chicago Math Department, and Loyola University’s Science Education Program. The aim of the partnership is *to extend and deepen the professional development of mathematics and science teacher leaders by equipping teacher leaders to provide direct, job embedded assistance to middle school classroom teachers.*

During the 2007-08 program year the Teacher Leader Institute aimed to provide an effective learning environment that would give participants the opportunity to:

- deepen their content and pedagogical knowledge in math and science;
- enhance their effectiveness as teacher leaders, particularly at the middle grade level;
- develop a professional learning community of math and science teachers and teacher leaders;
- design and conduct an action research project that would support participants in deepening their expertise, sharing new knowledge, reflecting on their practice as teachers and teacher-leaders, and taking on greater leadership roles in their schools.

Each year the TLI is offered to around 30 CPS science and mathematics teacher leaders. In its initial year (2006-07), participants included 15 Citywide Specialists and 15 Math/Science Magnet Cluster Lead Teachers. In the second year of implementation (2007-08), the composition of the Institute was modified to include classroom teachers and a range of in-school specialists, including Magnet Cluster Lead Teachers.² As a result, the 28 participants in this year’s Institute included 16 in-school math and/or science specialists and 12 middle grades classroom teachers. While all the specialists – with the exception of two who taught the computer lab at their school -- should have been freed from classroom responsibilities in their schools, in fact several during interviews and on reflection forms that they had full or part-time classroom teaching responsibilities. Of the 12 classroom teachers, 10 taught exclusively math and/or science in departmentalized classrooms, and two had self-contained classrooms. All were full-time classroom teachers.

¹ For further information, contact Dr. Janise Hurtig, jhurtig@uic.edu, 312-413-3367. 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.

² This decision was made in part because all of the current Citywide Specialists had already participated in the Institute the previous year.

The nature and range of participants' professional positions and leadership roles in their schools is relevant to an understanding of participants' learning, professional growth, and ability to use new content and pedagogical knowledge acquired during the Institute. For the sake of clarity, in this report we present findings based on participants' *actual roles* in schools during the 2007-08 school year, rather than their official positions, because we understand their experience of the Institute to be grounded in those roles. Thus, in this report we use the term "*in-school specialists*" to refer to participants who were freed from classroom responsibilities and self-identified primarily as math and/or science specialists or coaches; whereas the term "*classroom teachers*" refers to participants who were responsible for classrooms during the school year, regardless of other designations, and who referred to themselves and reflected on the TLI primarily in terms of that role.

Overview of the Report

This report is based on external evaluation for the IMSP-TLI that was undertaken by evaluators from the PRAIRIE Group, University of Illinois at Chicago, from August 2007 – July 2008. Unlike last year's evaluation, which encompassed both the two-week summer session and fall/spring monthly sessions, this report focuses principally on the school-year portion of the Teacher Leader Institute that took place from September 2007 through May 30, 2008. During that time participants attended monthly professional development sessions and received training and support in developing and conducting an Action Research Project. The reason for this limited focus is that the summer portion of the TLI was conducted in much the same way as the previous year.

While we do not systematically review findings from the Summer Institute evaluation in this report, in providing an analysis of the evaluation findings, we occasionally draw on feedback provided in a summer session Written Reflections Form to make comparisons to participants' perspectives on the professional development activities of the fall and spring sessions. Similarly, where relevant our analysis includes a comparison of this year's findings to findings from last year's evaluation of the Teacher Leader Institute. That comparison aims to contribute to an understanding of whether and how participants' formal roles and positions affected the nature of their expectations and experiences in the TLI.

II. Evaluation Methodology

The evaluation for this report was organized to address the following key programmatic themes and evaluation questions:

1. *Quality of the Institute's Professional Development Sessions:*
 - What was the quality of the Institute's organization and instruction?
 - Did the Institute instructors provide an effective learning environment for participants?
 - Did the Institute's schedule and organization support regular participation?
 - How did the quality of the Science Session (Fall 2007) compare to that of the Math Session (Spring 2008)?
2. *Deepening and Use of Participants' Content and Pedagogical Knowledge:*
 - Did participants deepen their content and pedagogical knowledge? If so, in what targeted areas?
 - Did the Institute meet participants' expectations in the areas of content and pedagogical knowledge?
 - Have participants begun to apply new content and pedagogical knowledge in their roles as teachers and/or teacher leaders and, if so, in what ways?
3. *Developing Math and Science Teacher Leaders:*
 - Did the Institute contribute to participants' role development as math/science teachers? As math/science teacher leaders?
 - Did the Institute contribute to participants' ability to support math and science inquiry in schools and classrooms? If so, how?

- Did the Institute meet participants' expectations in the area of leadership development?
4. *Developing a Professional Learning Community:*
- Did participation in the Institute contribute to building a professional community of math/science teacher leaders? If so, how?
 - Did distinct communities emerge based on professional roles?
 - Did participants tap into this community in their roles as teachers/teacher leaders? Do they plan to do so in the future? In what ways?
5. *Organization and Value of the Action Research Project*
- Did participants receive the necessary support from TLI and their schools to design, conduct, and complete the Action Research Project? What obstacles, if any, did they face?
 - Did or will participants apply knowledge learned through their Action Research Projects in their roles as teacher leaders and/or classroom teachers? If so, how?
 - Did or will participants use the results of their action research projects to make changes or affect policy in their schools? If so, how?

In order to respond to these research questions, the evaluators collected and analyzed qualitative data from a range of sources, as follows:

1. Written reflections completed by participants at the end of the Summer Institute (see Appendices 1 and 2 for the Summer Institute Written Reflections form and End-of-Year Written Reflections form, respectively).
2. Observation of fall and spring Institute sessions – one full-day science session, one full-day math session, and one full-day Action Research session – including debriefs with session instructors.
3. A sequence of short, targeted interviews – conducted in January, March, and May 2008 – with four participants (see Appendix 3 for targeted interview protocol). The four included two classroom teachers and two in-school specialists. The purpose of the sequence was to document developments in participants' knowledge, practices and perspectives over the course of the Institute.
4. In-depth interviews conducted with four participants in May 2008 (see Appendix 4 for in-depth interview protocol). The four included two classroom teachers and two in-school specialists. Interviewees were selected from among participants with high attendance rates, to represent the principal participant roles. The purpose of the interviews was to get a sense of the overall impact of the program at its conclusion.
5. Focus group discussions with Institute participants, conducted during the final week of the Institute. Four focus groups were convened: two groups of in-school specialists, and two groups of classroom teachers (self-contained or teaching math and/or science in the middle grades). (See Appendix 5 for focus group protocol.)

Additional information about Institute processes was acquired through attendance data, periodic meetings, and ongoing communication with the OMS Teacher Leader Institute Coordinator.

III. Findings, Analysis, and Questions for Reflection

The purpose of this report is to provide formative feedback on the organization and delivery of professional development, as well as on the acquisition and use of new knowledge and development of professional roles by participants, such that Institute developers and instructors can continue to improve the Institute's structure and content. With that purpose in mind, we have organized findings and analysis into five thematic sections, with questions for reflection at the end of each section, as follows: (1) Quality of the Institute, (2) Deepening and Use of Content and Pedagogical Knowledge, (3) Developing Math and Science Teacher Leaders, (4) Development of a Professional Learning Community, and (5) Uses and Value of the Action Research Project.

Theme 1. Quality of the Institute: Instruction, Organization, and Scheduling

Feedback from TLI participants in the form of targeted and in-depth interviews, focus group discussion, and end-of-year written reflections, indicates that almost all participants were generally satisfied or very satisfied with the Institute, and most participants considered the quality of the mathematics, science, and action research sessions to be high or very high. In written reflections completed by 13 of the 28 participants, 10 rated the science sessions as “effective” or “extremely effective”; 12 rated the mathematics sessions as “effective” or “extremely effective”; and 11 rated the action research sessions as “effective” or “extremely effective.” In this section we report on three facets of the sessions’ quality: instruction, organization, and scheduling.

(a) Instruction

Overall, participants expressed satisfaction and often enthusiasm regarding the *quality of instruction*, across all three Institute components of Mathematics, Science, and Action Research. Facets of instruction that several participants described appreciating in interviews, focus groups and written reflections included: the use of case studies, instructors’ modeling of inquiry-based teaching strategies, the inclusion of hands-on activities and labs, and clarity of instruction or pedagogy. Participants also linked the instructors’ practices to their comprehension of content: several noted that the hands-on activities helped them to better understand the concepts being presented; and a few related the small-group work and sharing to their understanding of the pedagogical concept that there were many ways to explore or solve a problem.

Eight of the 13 respondents to written reflection questions found both the math and science instruction effective in various ways. The other five found the quality of instruction for the different Institute components uneven. Three classroom teachers and three in-school specialists praised the instruction during the mathematics session, but said that the science session included too much lecture and not enough interactive or collaborative work. Similar views were expressed in the focus groups. Two other respondents to written reflection questions indicated that the science instruction was effective, while stating that too much time was spent during the math sessions “working like students.” (Interestingly, this view was expressed by classroom teachers.)

Participants also expressed appreciation for the various *instructional materials and resources* that were made available to them. In their written reflections, the 13 respondents made particular mention of the Climate and Weather book from the Science sessions (though other books were mentioned as well); and the graphing calculator and case studies from the Mathematics sessions. Classroom teachers and in-school specialists noted that they shared knowledge of the graphing calculator and case studies with their colleagues. The value of the graphing calculator was also mentioned by interviewees and in focus group discussions. However, nearly all participants indicated they would benefit from having more training on the graphing calculator, including concrete ways to incorporate its use in lessons

In written reflections, two classroom teachers reported that the Connected Math Program materials were useful. In focus groups and interviews, several participants also cited the value of working with the Everyday Math materials in the break-out sessions. Several comments were also made during the focus groups about the usefulness of the Math Thematics materials. Finally, several interviewees expressed appreciation for other resources provided, such as access to university libraries for ideas for their action research projects and literature reviews, as well as online resources related to grants and other ways to get classroom materials.

(b) Organization

In terms of how the Institute *as a whole* was organized, participants generally felt the balance of lecture, hands-on activities, and research was effective. In interviews and written reflections participants stressed the value of working with their colleagues – whether in problem-solving using CPS-supported math curricula, conducting science experiments, or sharing ideas about conducting and applying the results of

action research – and would have liked more small group work and group discussion during the science sessions, and less lecture (see Instruction section above).

In terms of the balance among pedagogical, content, and leadership knowledge covered during the Institute, several participants – both classroom teachers and in-school specialists – indicated that they had expected a component explicitly addressing leadership, or a greater proportion of time devoted to leadership rather than content and pedagogy, and were disappointed that this was not the case. For instance, one classroom teacher described wanting to learn how to build support for inquiry-based instruction among other teachers in his schools. An in-school specialist noted that “it would have been useful to have “actual scenarios with actual coaching.”

Another suggestion raised in focus groups and written reflections was the idea the Institute be organized around participants’ content-area specialization. Two teachers and an in-school specialist suggested dividing working groups into a math group and a science group. Suring focus group discussions both a math specialist and math teacher proposed that the math and science sessions be separated. (Indeed, one magnet cluster lead teacher with classroom responsibilities indicated in their written reflection form that they did not attend the science portion as they did not teach that subject matter.) In contrast, one classroom teacher said, “Integrating math and science is inevitable. We really can’t have one without the other,” and another spoke of the value of a science lesson that integrated math.

(c) Scheduling

About half the participants indicated that the Institute schedule was fine. The other half described challenges they faced as a result of the scheduling of fall and spring sessions. In interviews, focus groups, and written reflections, they noted that scheduling full-day sessions on school days affected their attendance. This was particularly true for classroom teachers. Nine teachers described instances of school administrators refusing to allow them to leave their buildings to attend the TLI workshop due to lack of “coverage” or because of other school activities. Two in-school specialists described the challenge of conflicting demands, such as instances when Area meetings coincided with TLI sessions.

While some participants expressed satisfaction with OMS’s support for their absence from school, others, primarily classroom teachers, encountered problems. Some expressed appreciation for the reliable provision of substitutes, while others considered having a substitute teacher a “lost day” that adversely affected their lesson pacing. In one focus group discussion, teachers suggested that arrangements be made so that the same substitute teacher would be used whenever they attended the Institute.

In interviews and focus group discussions, participants suggested several ways of modifying the TLI schedule to address the kinds of challenges described above. These included:

- Scheduling TLI sessions on CPS professional development days, and having OMS ensure that principals agree to allowing participants to attend TLI sessions on CPS professional development days
- Scheduling more TLI sessions in the summer
- Scheduling more TLI sessions on Saturdays

Analysis:

(a) Instruction: Overall, findings regarding instruction at this year’s Institute were comparable to those of the summer 2007 session and last year’s Institute, suggesting that differences in participants’ professional roles (and expectations for the Institute based on those roles) did not affect how they experienced the delivery of material by the instructors. The dominant theme across the various sessions was that participants found particular value in small group activities and discussion with report-back to the group: they valued the time to learn from their peers, while appreciating the extent and depth of expertise of the instructors.

(b) Organization: The suggestion that the Institute provide *separate* math and science components was not proposed by last year’s participants, even though they were not all joint math/science specialists or teacher leaders. This difference suggests that perhaps this year’s constituency was more deeply grounded in one or the other content area and, given multiple pressures on their time, would have preferred to focus more narrowly on that area. For instance, some classroom teachers wanted to focus on the subject they taught, much as some single-subject specialists preferred to focus on their area of specialization. However, this perspective was countered by a less-frequently expressed view of a few teachers that it was worthwhile being exposed to the content area they did not teach, or that it was valuable to learn ways in which the two subjects can complement each other or be integrated through instruction. While these views may at some level have to do with personal propensity, it is also possible that they are influenced by the participants’ roles. One can imagine that teachers with self-contained classrooms, or specialists who support both content areas, might be more interested in math-science integration, whereas middle grades math teachers or in-school specialists might prefer to focus exclusively on their content area, as with science teachers and specialists.

(c) Scheduling. The concerns that close to half of this year’s participants expressed regarding the fall and spring Institute schedule – in particular challenges they faced attending full-day sessions during the school day -- were similar to concerns expressed last year by participating Magnet Cluster Lead Teachers. Since consistent attendance is crucial, not only to individual participants’ knowledge acquisition but also to the development of professional learning community among participants, scheduling issues pose challenges to the Institute’s effectiveness. In addition, the numerous reports from TLI participants of principals’ reluctance to support their participation, along with reported scheduling conflicts between TLI sessions and other required activities, such as Area meetings, may diminish the positive investment on the part of school and area administrators in the TLI, and even the participants themselves.

Questions for Reflection

- Given the diversity of participant roles and their desired uses of the Institute content, should instruction during the Institute sessions be differentiated according to participants’ roles?
- Alternately, given that diversity of roles and apparent interests, should there be more explicit integration of math and science instruction?
- Given the Institute’s stated emphasis on supporting teacher “leaders,” should an explicit component addressing leadership be included? Or can the leadership dimension of the TLI be infused or integrated into the instructors’ presentations?
- Given the importance of regular attendance to the TLI, how might the schedule be changed to best accommodate participants’ other responsibilities in order to support regular attendance?

Theme 2. Deepening Participants’ Pedagogical and Content Knowledge: Learning and Use

In this section we report first on the pedagogical knowledge participants reported acquiring and then on ways they said they have used new knowledge in their roles as teachers and/or teacher leaders. We then describe the kinds of content knowledge participants said they had acquired and used – first in the Science session and then in the Mathematics session. We also identify knowledge areas participants reported they had hoped or expected would be covered during the Institute but were not.

(a) Deepening of Pedagogical Knowledge: Mathematics and Science

Most participants described acquiring new *pedagogical* knowledge in both mathematics and science, some of which they had begun to apply in the classroom with their students, share with their colleagues or, in the case of a few in-school specialists, use in supporting teachers in their school.

Learning: In interviews and focus groups participants described learning several new pedagogical strategies during the Institute. The approach most commonly mentioned was encouraging multiple approaches to problem-solving. (In their written reflections, respondents associated this pedagogical approach with the Mathematics session.) As one teacher put it, “It’s not about getting the right answer, but how you got to the answer.” A few participants said they thought this approach could help with differentiated instruction. One respondent to the written reflections questions suggested that the sessions could have included more ways to “engage slower students.”

Other new instructional approaches participants mentioned learning included: ways to structure cooperative learning; giving students time to explore, or “struggle” to find answers; and encouraging students to take more of a leading role in their own learning.

Use: Institute participants were asked whether they were using or planned to use any of the pedagogical knowledge they had acquired in their roles as teachers or teacher leaders. Pedagogical practices participants said they were using in their classrooms as a result of their experiences in TLI sessions included:

- Having students do more collaborative work in small groups
- Pacing to hit different skills in one lesson
- Having students do more hands-on projects and using more manipulatives
- Having students explain and demonstrate different problem-solving strategies
- Mixing students with different ability levels

The most common venue participants identified for sharing teaching strategies was grade level meetings. All but one of the in-school specialists said they met with teachers about what they were learning in TLI. They described drawing on what they had learned to help teachers develop lesson plans, to model lessons, and to discuss observations. (The exception was one specialist whose role was limited by the principal to modeling for teachers in their classrooms.) The Institute activity specialists mentioned most frequently as improving their ability to support teachers was their own participation in hands-on activities during the sessions.

In-school specialists described several kinds of change in their work with other teachers as a result of pedagogy learned in TLI. A few noted that they were now modeling in ways that gave teachers a bigger role in their own learning – for example, by having teachers do activities themselves rather than just hearing something brought back from a workshop.

In addition to applying new pedagogical knowledge to their work with teachers, several specialists described ways their participation in the TLI led to making curriculum decisions and implementing curriculum. For instance, one teacher and one in-school specialist who had not previously used CPS-supported math materials were now using or planning to use them in their schools. A few specialists also noted that they were able to use what they learned in TLI-breakout sessions to better assist teachers who were not getting necessary professional development in using Connected Math and Everyday Math in their schools.

(b) Deepening of Content Knowledge: Mathematics

Learning New Content: In their written reflections, 12 of the 13 respondents identified math content they found useful, although three also commented that the overall level of the material was too low for them. Most identified new strategies for thinking about or delivering the content to students, such as new strategies for approaching proportional reasoning or algebra, or for solving problems. Only two

respondents reported learning new math content; however, they were not specifically prompted to do so by the question.

In interviews and focus groups, four participants – two teachers and two in-school specialists – indicated that they were already strong in the content area (mathematics) and did not gain any new content knowledge during the Institute. They did cite benefits, however, to reviewing familiar content. These included reinforcing their existing knowledge, making them look at content more deeply, and giving them additional ideas to use with teachers or in the classroom. They, along with other participants, said they had learned different ways to present math concepts with which they were already familiar.

In a debrief with the TLI mathematics instructors (university partners), they described ways they have or have not modified their instruction to accommodate the backgrounds and differing roles of this year's Institute participants, some of whom they found had less expertise in the content areas than the previous year, and many of whom were primarily interested in what they could apply in their own classrooms rather than in mentoring other teachers -- as was the primary focus of last year's cohort. While the mathematics instructors said they were not changing the way they organized and delivered the workshop content, changes they described making included covering less material, going into less depth around specific problems or concepts, and pacing the sessions more slowly, recognizing the risk that those who were stronger in the content area might not get as much out of the sessions – as was apparently the case based on participants' self-reports.

Using New Content Knowledge: Ten of the 13 respondents to written reflections identified new math content or concepts they have integrated into their teaching or mentoring, ranging from the use of algebraic examples or the integration of algebra and geometry, to the use of different methods to solve problems. (The three who did not report using new content were science teachers or specialists.) When participants were asked in interviews and focus groups if and how they were using new math content knowledge in their teaching and mentoring, most responded by describing new pedagogical strategies they were using to teach already familiar content to their students or present it to their colleagues (see previous section on use of new pedagogical knowledge). Four teachers noted that as a result of the deepening of their content knowledge (which one teacher described as “enrichment”), they were able to explain math problems, concepts, or ideas in different ways.

(c) Deepening New Content Knowledge: Science

Learning New Content: Some Institute participants identified specific science content as being interesting or useful, while others expressed appreciation for learning how to set up and conduct labs. Of the 13 respondents to written reflections, three classroom teachers noted the science content was not useful because they were math teachers, and one noted they did not attend the science portion for that reason. Four in-school specialists found the earth and environmental science or astronomy useful, and another two found different aspects of the lab activities useful, as did three teachers. In targeted and in-depth interviews, several participants – both classroom teachers and in-school specialists – said the TLI sessions increased their science content knowledge, as their science backgrounds were not strong. They reported the IES texts to be very helpful, as they learned how to set up labs and model lessons.

Like the mathematics instructors, the science instructors recognized that this year's participants had, overall, considerably less knowledge of the subject matter. One instructor noted that last year the participants were more “supervisory people” with a greater level of science knowledge and greater familiarity with the materials, whereas this year for some people it's their first exposure. Despite this difference in the cohorts, both science instructors said they were teaching the content the same way as last year. One of the instructors described emphasizing depth over breadth, because of the content-orientation of the IES curriculum and because of the demands of the TLI as a program. The other instructor noted

that “the tips for the classroom are the same, whether you are providing professional development to a teacher or a coach.”

Using New Content Knowledge: In interviews, focus groups, and written reflections, classroom teachers (science teachers or with self-contained classrooms) reported using lessons drawn from TLI sessions on topics such as density, sundials, recycling, Lake Michigan pollution, and global warming. One science teacher reported being unable to use the content because they had already covered it in their classroom. In written reflections, the math teachers described applying some of the small group techniques, such as role identification, encouraging students to draw on prior knowledge, and making content relevant to real life.

Several in-school specialists said they shared lesson ideas with science teachers in their schools, including ideas for integrating science and math instruction. For instance, in the second targeted interview with a math specialist, s/he commented that, “I got a lot of activities out of it, especially science, things I could turn around right away, to integrate science and math in the classroom.” In written reflections, one teacher with a self-contained classroom similarly reported drawing on the science material to integrate math and science lessons, and a math teacher noted trying to incorporate science into his/her math classroom.

Analysis: The range of ways participants described using the new pedagogical knowledge appears to be indicative of the range of roles and practices that can constitute being a “teacher leader” – from being effective in the classroom, to sharing new knowledge with colleagues, to supporting teachers as a coach or mentor, to effecting curricular changes at the school level.

Findings suggest that a key factor contributing to participants’ assessment of the value of the math and science sessions was the immediate relevance of the content to their classroom. Several classroom teachers expressed disappointment with the content presented, or commented on its lack of applicability for them. These included math teachers who said they do not teach science, science teachers who said they do not teach math, and teachers with self-contained classrooms who said the material presented was not taught at their students’ grade level. By contrast, last year’s participants did not seem to have the same expectation that the content be immediately relevant to classroom practices, most likely because the majority of the participants were “freed” from classroom responsibilities and assessed the value of the content in terms of their role as supports to teachers.

The findings also point to a potentially significant discrepancy between the Initiative’s emphasis on the deepening of content knowledge as a means of supporting teacher leadership development, and most participants’ primary interest in learning and using new teaching strategies, such as those that had been modeled by the instructors.

Questions for Reflection

- How can TLI instructors strike a balance between deepening participants’ knowledge of a small amount of content that may or may not be directly usable, with participants’ interest in exposure to more, or more immediately relevant, content?
- Should instruction be differentiated according to participants’ levels of proficiency in their content areas?
- How can TLI determine what kinds and levels of content knowledge are most compelling to participants with different roles?

Theme 3. Developing Teacher Leaders in Math and Science

Regardless of their professional roles, Institute participants recognized that a purpose of the TLI was to support their development as “teacher leaders.” In interviews, focus groups, and written reflections, participants explored the theme of teacher leadership in several ways. They identified new leadership

skills they had acquired, described leadership roles they were taking in their schools, and made mention of career decisions related to their development as teacher leaders in math and/or science. These are described below.

New leadership skills acquired: In both targeted and open-ended interviews, in-school specialists described several leadership skills they had learned, such as:

- The need for the leader to model and earn teacher buy-in (“Teachers don’t believe. Once you demonstrate for them and show them, they can do it. You have to lead by example.”)
- The importance of collaboration (“There are many experts here... we’re here to share our expertise with one another.”)
- Strategies to lead teachers to solve their own problems, through questions and modeling (“I learned to be seen more as a facilitator, empowering teachers to lead, instead of imposing information from the top down.”)

New leadership roles and activities: Several participants described roles or activities they had embarked on at their schools as a result of participation in the TLI. In interviews, three classroom teachers cited instances of bringing ideas for use of CPS-supported math materials to their principals or other teachers. Various classroom teachers noted they are trying to promote more collaboration by organizing or helping re-shape grade level or content area committees.

Other participants described new roles that had been assigned to them by their principals as a result of their participation in the TLI. For instance, a classroom teacher reported that she was asked by her principal to present on math teaching strategies at school professional development sessions. A math specialist commented that a principal now consults her on what she thinks is important for professional development in the school.

While all participants we spoke with were interested in and had expected to learn new leadership skills in the Institute, a few classroom teachers qualified their responses to questions about teacher leadership by noting they had neither the time nor the authority to take on different roles in their schools. One teacher (with a self-contained classroom) said, “I’ve presented at some staff development sessions, but my role won’t change, I’ll still be a classroom teacher.” Others specified initiatives they had taken in their buildings. These teachers, like those who referred only to changes in their own instructional practices, indicated that possibilities for making changes in other teachers’ practice, or influencing policy decisions, were limited by their classroom responsibilities. Two with “lead teacher” titles who also had full-time classroom responsibilities expressed concerns about how to effectively act as leaders with the constraints on their time.

Individual career development: In both in-depth interviews and focus groups, five participants cited TLI as a contributing factor to their career development. These included: a science specialist planning to get a math endorsement; a math teacher planning to get a science endorsement; a classroom teacher being invited to teach 8th grade algebra; an in-school math/science specialist deciding to work on her Type 75; and a classroom teacher indicating s/he was “looking forward” to becoming the grade level chair.

In interviews and focus groups suggestions were made to improve TLI’s approach to leadership development. These included revising the program structure to include a component specifically addressing leadership. In-school specialists said it would be useful for such a component to focus on practice rather than theory, with specific guidance on mentoring, coaching, and getting teacher buy-in. Both specialists and teachers said a leadership component should take into account realistic expectations for those with classroom responsibilities.

Analysis:

As the evaluation findings suggest, no clear definition of a “teacher leader” emerged from the data. There were, however, strong indications of participants’ disappointment in the lack of an explicit leadership component in the program. Nonetheless, while several classroom teachers described initiatives they have

taken in their schools as a result of their participation in TLI, they did not seem to perceive these to be examples of “teacher leadership” in their school.

Because the primary focus of the Institute sessions is on deepening and using new content and pedagogical knowledge, it would seem that the TLI is based on a theory of action that deeper content and pedagogical knowledge will contribute to participants’ development as teacher leaders. However, this connection was not made explicit during the Institute, leaving participants with the sense that they were not engaged in activities that supported their leadership development.

Questions for Reflection

- Given the TLI goal of “enhancing [participants] effectiveness as teacher leaders,” should an explicit leadership component be included? If so, should it be differentiated according to participants’ roles?
- Given all participants’ interest in and expectation that teacher leadership be addressed more directly during the Institute, should this be a separate component of the Institute? A more explicit theme running throughout?
- Should leadership expectations for participants be more clearly defined by TLI instructors? Or should this be a topic for discussion within the TLI sessions?

Theme 4. Developing a Professional Community

During targeted and in-depth interviews, participants were asked whether the TLI functioned as, or supported the development of a professional community. In most cases, participants responded to questions about “professional community” by describing personal or professional networking. Specifically, participants said they were given the opportunity to share information and form networks through the cooperative learning structure of the sessions, and reiterated the importance of feedback and support. Both classroom teachers and specialists said they would have benefited from explicit community-building learning activities during the Institute sessions.

Participants described several benefits of working together. In terms of *instruction*, participants said they discussed “what works and doesn’t work in the classroom”; learning different ways to approach classroom situations; and gaining new ideas and new insights about lessons and assessment. Participants also described *sharing information*, such as how to locate resources and apply for grants, how to lead school activities, such as Math Night or Parents’ Night, or ways to prepare both teachers and students for the ISAT. Finally, some participants expressed appreciation for the *networking* opportunities provided through the TLI: the experience of meeting other math and science teachers, teacher leaders, OMS staff, and university faculty.

The two factors that participants identified as hampering the development of a professional community included inconsistent attendance and a lack of opportunity to work together outside the sessions. “We’ve gotten things from talking with each other we can use in our classrooms,” one classroom teacher said in a focus group, while a math and science specialist noted that the way they were learning from each other set the tone for what to do with students. However, in interviews, most participants indicated that they maintained communication outside of sessions with only one or two other participants, usually via phone or email. A few said they communicated through the program’s Yahoo list. There was no indication of larger groups or the entire cohort functioning as a community. “It only happens when we meet,” one math specialist indicated. “We’re all at different schools, and it just doesn’t happen.” One specialist suggested community might be facilitated by building in opportunities for participants to meet in groups to discuss topics or projects outside sessions.

Analysis: Findings suggest that the factors limiting development of professional community were primarily structural (e.g., the challenges of scheduling that led to uneven and inconsistent attendance, and the fact that participants only interacted during TLI sessions), and were not related to how the sessions were run. For instance, participants commented that they had a lot of time to network *during* the sessions. However, outside of the sessions maintaining contact was up to individuals. While many participants expressed an interest in gaining more knowledge about how to build or sustain professional learning communities, it is not clear whether this topic is within the purview of the Initiative.

A comparison to last year's Initiative is instructive in this regard, as both participants' roles and schedules were important to the creation of learning communities. Last year we found that Citywide Specialists considered themselves to be a learning community, and the TLI supported that process. Moreover, they were already at Medill, and had Fridays free so they could attend regularly. By contrast, the Magnet Cluster Lead Teachers participating the previous year had many of the same challenges as teacher and school-based specialists had this year, and were similarly hampered in developing as a learning community. In addition, the different roles participants played were difficult to overcome in creating an institute-wide learning community. This also seems to have been a challenge this year, as participants were inclined to engage professionally around their roles and content areas of expertise.

Question for Reflection

- How do TLI planners define professional learning community, and how do they expect participation in the Institute to foster such community, during and beyond the Institute?

Theme 5. Uses and Value of the Action Research Projects

The express goal of the Action Research Project component of the TLI was to contribute to participants' (a) deepening of expertise, (b) sharing of new knowledge and (c) reflection on practice as teachers and teacher leaders. Separate evaluations of participants' research projects and experiences designing and conducting the research have been prepared by the internal evaluators and the Loyola University instructor, respectively. In this evaluation we draw on participants' feedback to identify ways in which the Action Research Project component has or has not contributed to those Institute goals.

(a) Deepening of expertise: In interviews and focus groups, participants described ways their Action Research project deepened their expertise. Both classroom teachers and specialists pointed to what they themselves had learned, and how that was being applied in their schools. Below are a series of examples of such applications:

- An in-school specialist said that in doing research on benchmark assessments, she learned the importance of collaboration in professional development, and is now structuring sessions with teachers as dialogues.
- A classroom teacher with mentoring responsibilities said her research on the effectiveness of hands-on mentoring led her to plan on making changes next year, focusing her work on having a calendar ready to meet what teachers say they need, then implementing monthly sessions with them.
- A classroom teacher who compared students' problem-solving abilities using an inquiry approach vs. a traditional textbook approach found that students were more favorable to the inquiry approach and to working in groups, and she is modifying her instruction next year along these lines.

- A math specialist did his project on introducing elementary children to algebra at an earlier age. He deepened his understanding of algebra curriculum, and ways of giving younger students a purpose for studying it.
- A classroom teacher who studied gender grouping in the middle grades, and found that while discipline problems declined, math test scores did not increase, and consequently an experiment in gender grouping at her school is being discontinued. She, however, is interested in continuing her research on the topic.

(b) Sharing of new knowledge: One of the ways in which the action research generated a sharing of new knowledge was through the research process itself. Participants described sharing during some of the Institute sessions with other participants, as well as at their schools. In written reflections, 9 of the 13 respondents described this sharing as effective; two described project sharing as somewhat effective, and one rated it as extremely effective. In interviews, participants emphasized the fact of sharing or collaboration as something new and valuable.

In terms of the sharing of new knowledge at their schools, most participants interviewed indicated that their project's surveys and interviews contributed to more communication and in some cases more collaboration in their schools. Participants described four ways in which the sharing of new knowledge produced by or through the action research projects has had impact:

- Changes to instruction. For instance, one teacher said that manipulatives are now used more in the school's math classes.
- Increased communication, as in the case of one specialist who noted that planning dialog is now taking place with the math coordinator and area coach at his/her school.
- Use of data gathered through the action research process. One example is the use of data in the process of designing 8th-grade algebra instruction reported by a specialist.
- Generating resources, as in the case of one participant who has submitted an application for a grant to continue research in the school.

(c) Reflection on practice as teachers and teacher leaders: Several Institute participants commented on the usefulness of the action research project as a tool for reflecting on their practice as teachers. For instance, one classroom teacher said, "It's important to learn about different ways to look at a particular item to get a true image of what's going on." An in-school specialist commented that her research had made her aware of a gap between the cooperative learning goals of CMSI and the need for independent problem-solving abilities for the ISAT.

While participants did not tend to explore the value of the action research project as a tool for reflecting on their practice as teacher leaders, numerous classroom teachers and in-school specialists gave examples of how the research project contributed to their leadership roles. These included:

- Extending the use of data in school-wide decision-making in areas such as curriculum choices and structure of middle grades
- Helping teachers learn to use data to make instructional and assessment choices for their classrooms
- Learning new approaches to mentoring new teachers in a school with high teacher turnover and a high percentage of alternatively certified teachers

Analysis: A comparison of evaluation findings from this year's Institute and last year suggest that the Action Research component, was more effectively implemented this year compared to last, such that more participants were able to complete or come close to completing their projects. Comparisons of observations and participant feedback from each year offer strong indications that this year's delivery was organized more effectively and in a more timely and manageable manner than last year. (Nonetheless, the

obstacle to project completion most often cited by participants, was time.) Another factor may have been that it was easier for teachers and school-based specialists to collect data in their schools, whereas Citywide Specialists faced the challenge of limited access to a particular school. In other words, in the case of this TLI component, participants' location in and knowledge of a single school appeared to have been an advantage.

As the findings suggest, the action research process and results generated meaningful new knowledge, the sharing of new knowledge, and even some meaningful changes in classrooms and schools. Nonetheless, many participants, in focus groups and interviews, expressed uncertainties or doubts about the purpose or value of the action research component in relation to their understanding of the goals of the TLI. This may be indicative of a lack of clear integration of the action research component with the other components.

Feedback on written reflection forms suggest that participants had a clear sense of how engagement in the action research projects supported, or might support the development of a learning community during the Institute. What was less clear to participants – though perhaps evident to Institute planners – is how the research project contributed to their development as teacher leaders. This lack of connection may be another instance of the broader challenge of developing shared understandings of what constitutes “teacher leadership.”

Questions for Reflection

- Given that in both program years, some participants were unable to complete their projects, could modifications be made to the action research schedule to facilitate completion?
- Would it enhance the value and usefulness of the Action Research Project if it were more effectively integrated with the other components of the TLI?