

External Evaluation of the OMS Professional Development Leaders Program, 2007-08

Final Report

PRAIRIE Group

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Authors produced this report collaboratively and share responsibility for its contents. 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. For further information, please contact Janise Hurtig at 312-413-3367 or jhurtig@uic.edu.

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Executive Summary

I. Overview of the Program and Report: The key goals of the OMS Professional Development Leaders (PDL) program for the 2007-08 program year were to: (1) develop a pool of qualified teacher leaders who can provide leadership in the Chicago Public Schools in mathematics and science and provide professional development for the designated instructional materials; and (2) coordinate and standardize the recruitment, training, certification, role expectations, and ongoing supports for Math and Science PDLs. This report provides feedback on the development and enactment of the PDL program. Findings and analysis focus on programmatic issues of the program's coherence, consistency, sustainability, and role definition. The goal of coordinating and standardizing the PDL program across Math and Science is addressed in relation to each issue.

II. Methods and Analysis: Data sources included program documents, meetings and interviews with program planners, observation of portions of the PDL Academies, and observations with debriefs of six PDL-provided professional development sessions. Data were analyzed in light of the programmatic issues, with attention paid to coherence and consistency across program activities, as well as similarities and differences between the Math and Science sides.

III. Findings and Analysis:

1. Building Coherence and Sustainability into the PDL Program Model: Math and Science sides of the PDL program have similar expectations for the PDL role, both in terms of the aptitudes associated with the role and in terms of the scope of PD leadership, i.e., the provision of high-quality, district-level PD. While PDLs are not expected to provide PD at the area or school level, doing so is encouraged in the PDL Blueprints. Math and Science sides have similar expectations of and provide similar supports to new PDLs, but differ in how they incorporate and support experienced PDLs. Math and Science PDL Blueprints, the document describing the path toward PDL certification, have been revised such that they have a common framework. The PDL program planners have made significant progress in increasing the coherence and usefulness of the Blueprints and consistency between the Math and Science Blueprints. As a result, the Blueprints are increasingly effective program maps. Differences in Goals as well as minimum time requirements and sample activities still exist. Some differences between Math and Science may be appropriate. A key component missing from the Blueprint template are indicators or measures of what constitutes accomplishment of each goal.

2. Clarity and Coherence in the Training of PDLs: The Spring Math and Science PDL Academies initiate training to become a certified PDL. Math and Science Academies began by providing an overview of program purposes, outlining what being a PDL entailed, and conveying similar programmatic goals around supporting teachers' learning and teaching of the CMSI-supported math and science curricula. The Math Academy kept its introduction to the broad goals and focused on the teaching of mathematics. The Science Academy devoted a day of workshops to issues of adult learning. In both the Math and Science Academy workshops facilitators drew analogies between how teachers worked with students and how PDLs worked with teachers. PDL trainees had opportunities to lead mini-lessons in which PDL trainees used the concepts and curricular activities provided to them to practice leading PD. OMS facilitators and/or experienced PDLs provided feedback to trainees. All of the workshops provided participants with learning experiences appropriate to PDL Blueprint goals associated with participation at the Academy.

3. Quality and Coherence in the Professional Development Provided by PDLs. PDLs leading professional development we observed had considerable knowledge of the CMSI curriculum they focused on, and its accompanying pedagogy. They were able to address any questions posed to them by teachers, and offered encouraging ideas of how to employ the curriculum in individual teachers' classrooms. PDLs appeared to believe strongly in the CMSI curriculum; they understood and communicated its philosophy and its overall approach. If the sessions we observed were representative of PDL-led professional development, it would seem that both Math and Science are having success in creating a pool of teachers who can provide high-quality professional development. This determination is based on criteria for effective PD delivery delineated by the CMSI Professional Development Observation Guide.

4. Role Definition of PDLs, Trainers, and Program Planners. Based on observations and debriefs with PDLs, it appears they share program planners' understanding of the scope of the PDL role. PDLs also concurred with program expectations that PD should support teachers to change the way they work. PDLs identified limits to their effectiveness as "change agents," given the range of expectations teachers bring to PD, and the fact that teachers' attendance at professional development is mandated by the District.

The OMS facilitators' role as PDL "trainer" is key to the PDL program. However, there do not seem to be explicit criteria or supports for the PDL trainer role within the program model. Differences in how the role of PDL "trainer" is enacted on the Math and Science sides may be related to differences between Math and Science in terms of program scale and available human resources. The role of PDL program planner is also key to program effectiveness. While apparently lacking in formal definition or institutional supports, program planners seem to work as a learning community.

I. OVERVIEW OF PROGRAM AND REPORT

An external evaluation of the CPS Office of Math and Science (OMS) Professional Development Leaders (PDL) program during 2007-08 was undertaken by a team of evaluators from the PRAIRIE Group, University of Illinois at Chicago. This evaluation of the PDL program represents one part of a series of external evaluation studies conducted over the 2007-08 school year by the PRAIRIE group in order to examine the systemic educational reform underway as part of the Chicago Math and Science Initiative (CMSI) supported by the CPS Office of Math and Science (OMS). The aim of these studies is to provide OMS and other key stakeholders with a deep, nuanced understanding of the processes and outcomes of the CMSI. As with past evaluations, the 2007-08 evaluation studies are based on rigorous data collection and analysis that are conducted in such a way as to provide timely and useful feedback to the audiences including the leadership team of the Office of Math and Science (OMS), the Chief Educational Officer of CPS, and the CPS Department of Program Evaluation, as decisions are made about the allocation of resources in the effort to continually improve math and science teaching and learning.

According to OMS lead staff and PDL program planners, as well as documents describing the PDL program, the key goals for this program year were to:

- develop a pool of qualified teacher leaders who can provide leadership in the Chicago Public Schools in mathematics and science and provide professional development for the designated instructional materials (from the OMS “Professional Development Leaders Draft and Overview,” March 2007);
- coordinate and standardize the recruitment, training, certification, role expectations, and ongoing supports for Math and Science PDLs.

Because the PDL program is in a formative phase, there is considerable emphasis on creating coherence around the program’s goals, expectations for PDLs, and training and support of PDLs – as well as efforts at standardization across the Math and Science sides of the program. Thus, this year’s evaluation has focused both on formative feedback regarding program development and on program implementation. In a February 2008 “Program Brief,” the evaluators provided feedback to OMS program planners regarding OMS’s vision of and expectations for the PDL program, program activities and plans for 2008, and ongoing internal monitoring and assessment. That program brief emphasized coherence and consistency across these three facets of program development, by looking at program goals, activities, and assessment practices for each facet.

The purpose of this end-of-year report is to provide feedback on program processes and activities that took place over the 2007-2008 school year to develop and refine the goals and enactment of the PDL program. The report’s findings and analysis are organized around the following four programmatic issues:

1. coherence and feasibility of the PDL program model
2. clarity and coherence in the training and support of PDLs
3. quality and coherence in the professional development provided by PDLs
4. role definition of PDLs, PDL trainers, and program planners

Discussion of each of these issues is followed by questions for reflection. We note that the goal of standardization across Math and Science is not addressed as a separate facet. Instead, we address that goal in the process of reporting on each of these four programmatic issues, and through the reflection questions.

II. METHODOLOGY AND ANALYSIS

Data collection methods: Data collected for this report came from several sources:

Document review: Draft and final versions of documents created by the PDL planning team were collected over the course of the program year (October 2007 – July 2008). Documents included initial and revised versions of Math and Science “blueprints” – laying out the goals, activities, time requirements, and documentation required to become a certified PDL; PDL Academy agenda drafts; letters of invitation for PDLs; PDL Academy

applications; PDL presentation assessment tools (rubrics); and participant written reflection and evaluation forms.

Meetings and interviews with planners: Extended individual interviews with the OMS Director and Math Manager, conducted in the fall of 2007, provided important background data on the history of and OMS vision for the program. A focus group interview with the PDL planning team was also conducted in the fall of 2007. The evaluators then attended four PDL planning meetings over the course of the year, gathering additional documents and engaging with PDL planners in extensive discussion around the development of this year's PDL "blueprints," Academies, and internal assessment tools.

Observations and debriefs: Evaluators observed portions of both the Math and Science PDL Training Academies.¹ We also observed portions of six sessions of professional development (three math and three science) in which PDLs co-presented. Debriefs were conducted with lead PDLs following four of the professional development sessions. A debrief interview was also conducted with one of the Science facilitators following professional development. (See Appendix A for observation and debrief instruments.)

Survey: Following the completion of the PDL Academies, the evaluators, in collaboration with the PDL planners, developed an on-line survey instrument to collect data on the experiences, beliefs and demographics of current and past PDLs (see Appendix B). The survey will be uploaded in October 2008, and findings from the survey will be reported in a future data brief.

Data analysis: PDL documents served as a primary source of evidence for the development of the program model. Content analysis of the documents generated findings about the internal coherence and consistency of the program. A comparison of early and later versions of the documents generated findings about progress the program planners have made toward increasing the program's coherence and feasibility. Content of the interviews and observational notes were coded and analyzed with respect to the above four programmatic issues, with attention also paid to similarities and differences across Math and Science. Data from observations, interviews, and meetings were compared with the formal documents to ascertain to what degree data from PDL participants corresponded with the official plans and intentions. Finally, a comparison of Math and Science documents generated findings regarding the extent of standardization of the program across these two sides of the OMS.

III. FINDINGS, ANALYSIS, AND QUESTIONS FOR REFLECTION

This section includes findings and analysis for each of the issues listed in Section I, followed by questions for reflection that may serve to frame further discussions of the findings. In doing so, we have tried to use consistent nomenclature for the various program facets and roles, some of which are referred to in different ways in documents or discussion. For instance, we refer to teachers who are in their first year of the PDL training process as "PDL trainees." We refer to teachers who have gone through the Academy and are in their first year of co-presenting professional development (PD) as "new PDLs." We refer to PDLs who have already provided PD for at least one year as "experienced PDLs."² Also, we refer to the Math and Science documents outlining the plan for to become certified PDLs as "Blueprints." Finally, we use the terms "Math side" and "Science side" to refer to those two components of the OMS.

It is possible that this report provides a more complete account of developments on the Science side compared to the Math side. We attribute this to two factors. First, planning meetings the evaluators attended included more Science than Math facilitators. Second, on several occasions the evaluators were included in e-mail discussions about document revisions with Science program planners. The evaluators consider these factors to be fortuitous and in no way indicative of differences in program developments on each "side." Wherever possible we report equally on the two sides, and seek to identify similarities and differences in their program models.

¹ In the interests of breadth of understanding, PRAIRIE researchers circulated across a number of workshops during the Math and Science Academies -- in addition to observing the opening presentations.

² We recognize that experienced PDLs are most likely "certified" PDLs, but we are not sure this is always the case.

Issue 1: Building Coherence and Sustainability into the PDL Program Model

In this section we report on three facets of the PDL program that the planning team addressed during the 2007-08 program year in its efforts to increase the program's coherence and sustainability: defining the PDL role; revising the PDL math and science "Blueprints"; and identifying and incorporating ongoing supports for PDLs on the path to and beyond certification.

Defining the PDL Role

A central issue included on planning team meeting agendas and discussed at each of the planning meetings the evaluators attended was that of defining the PDL role. This role definition included two facets: (1) aptitudes: the knowledge, skills, and dispositions PDLs are expected to bring to the position and/or acquire during the course of their training; and (2) scope: the extent and location within the district structure of the PDL's leadership activities. We report each below.

PDL aptitudes: Various program documents – recruitment forms and program plans in particular, lay out two sets of aptitudes that a PDL should possess. One set are those aptitudes PDLs need in order to be participate in the PDL training process. According to a recruitment letter prepared by the Everyday Math facilitators, these include:

- I. experience teaching or supporting CMSI mathematics curricular materials and enacting them in a standards-based classroom;
- II. the ability to develop strong peer relationships and support high quality teaching and learning;
- III. leadership, communication, planning, and organizational skills;
- IV. willingness to deepen their math and science pedagogical content knowledge and to be observed teaching the instructional materials;
- V. prior leadership roles

The second set of aptitudes are those PDLs need to acquire in order to qualify for certification as a PDL. These aptitudes – which we summarize from the "goals" listed in revised, 2008-09 PDL Blueprints, include:

- standards-based teaching practices;
- mastery of mathematics or science content and pedagogy – also stated as a "deepened pedagogical content knowledge";
- deep understanding of grade levels or units within a particular instructional material;
- leadership capacity in mathematics or science education;
- understanding of adult learning

Analysis: As these two lists make apparent, aptitudes address areas of subject matter content, pedagogy, adult learning and leadership. There is a strong continuity between the aptitudes expected of recruits and those expected of certified PDLs. Assuming the PDL training program (Academy and follow-up supports) is based on this model of role expectations, effective screening and recruitment of PDL trainees is a crucial factor for a successful program.

Scope of the PDL role: In focus groups and planning team meetings, program planners were clear that the primary expectation of PDLs was that they provide district-wide PD. This expectation is consistent with PDL program description and recruitment documents. For instance, the Science program's recruitment letter sent to principals describes the responsibilities of the Professional Development leader as "to design and facilitate professional development for the CMSI science materials." The letter further notes that PDLs will "provide new teachers with teaching strategies that will support the successful implementation of these materials," it is understood that this support is a facet of what PDLs provide during district-wide PD sessions, and not to new teachers at their schools. While it was hoped that PDLs would informally be curricular leaders in their schools, there was no formal expectation that they lead PD sessions in their schools. Moreover, the planners concurred that while the PDLs' training prepared them to provide PD at the Area level, they were only expected to provide district-level PD.

This understanding of the scope or parameters of the PDL role within the district was shared by Math and Science planners. However, the both Math and Science PDL Blueprints list “facilitation of area professional development” as one activity through which they can satisfy a Blueprint goal. The Science PDL Blueprint also includes leading “grade level discussion” as a means of fulfilling another PDL certification goal. In other words, there appears to remain some inconsistency or ambiguity in the presumed scope of PDLs’ leadership activities, as presented in program documents.

Distinct role expectations for “new” and “experienced” PDLs: The goal of the PDL program is not simply to prepare teachers to provide professional development; it is also to retain certified, or “experienced” PDLs. Both the Math and Science sides have incorporated experienced PDLs into the PDL program in ways that extend their roles beyond the provision of PD, but they have done so in different ways. On the Math side, experienced PDLs were recruited to facilitate workshops during the Math Academy. (A 2007 letter of invitation suggests that the criteria for this role are similar to the criteria for being a certified PDL.) Indeed, the Connected Math program facilitator on the planning team indicated that, because their program is relatively small, the experienced PDLs run all their workshops; whereas for larger programs like Everyday Math, facilitators as well as experienced PDLs run the workshops.

By contrast, the spring 2008 Science Academy workshops were led primarily (or exclusively) by representatives/vendors from the curricula. As far as the evaluators are aware, experienced PDLs did not have a formal role associated with the Academy workshops comparable to experienced Math PDLs. (However, as discussed later in this report, a small group of experienced PDLs participated in a panel discussion during the Academy orientation.)

The role expected of new and experienced PDLs during the provision of professional development seems comparable for Math and Science sides; specifically, experienced PDLs are meant to “lead” the professional development session, while new PDLs are meant to “co-present.” Meanwhile, PDL trainees are assigned the role of observing and taking notes on the quality of PD delivery. All three are meant to debrief at the end of the PD session. That said, at one planning meeting it was noted that the definition of “co-presenting” could vary. Planners suggested that this facet of the role should be defined and made consistent – within and across Math and Science sides.

Revising the PDL Math and Science PDL Blueprints

A key document for the PDL program is the Professional Development Blueprint. This document provides a specific template for PDL trainees as they work toward certification, identifying the goals they need to accomplish, the minimum time required to meet each goal (in hours), sample activities through which they can meet each goal, and evidence of accomplishment that the trainee should submit for each goal. Over the course of the 2007-08 program year, Math and Science PDL program planners generated several revisions to their Blueprints, which they shared with each other and with the evaluators. (Recent versions of the Math and Science Blueprints are attached to this report as Appendix C.) Revisions that were made to the Math and Science Blueprints in order to increase their internal clarity and coherence, and consistency across the two sides, included the following:

1. The Science side adopted the term “Goal” used in the Math Blueprint to replace their term “Outcomes.”
2. Math and Science revised their “Goals” so as to be comparable (although some differences remain, as discussed below).
3. Math and Science changed the “Time Requirement” (Math) and “Recommended Time” (Science) to “Minimum Time Requirement” associated with each goal. The Science side removed a column that suggested a timeline for completion, recognizing that trainees would develop their own completion plans.
4. Math and Science adopted the term “Sample Activities” rather than “Activities/Tasks” (Math) or “Actions” (Science) to describe activities a PDL trainee might engage in to meet a particular goal and minimum time requirement for that goal.
5. Math followed Science in labeling the final Blueprint column “Sources of Evidence” (rather than Resources), as this column identifies documents the trainee is meant to include in their binder/portfolio to demonstrate completion of a Goal.

Over the year, Math and Science program planners increased the similarity between their Blueprints. However, there remain certain differences. These include differences in the actual Goals, the minimum time requirements associated with the goals, and the sample activities and sources of evidence associated with each goal. A systematic comparison of the two Blueprints does not seem productive at this moment, given that these documents continue to be “under construction.” Below we note a few salient differences:

1. Goals: Math and Science Goals are similar in that they include some “process goals” and some “outcome” goals. The Math Blueprint includes six Goals, while the Science Blueprint includes seven. Five of the Goals are either identical or comparable. Science distinguishes the Goals of “mastery of content” and “mastery of pedagogy,” whereas Math includes those in a single Goal. Also, the Science Blueprint includes participation at the PDL Academy as a Goal in itself, unlike the Math Blueprint. The Math Blueprint contains a Goal that PDLs “demonstrate leadership capacity,” which is not an explicit Goal of the Science Blueprint. However, the Science Goals to “participate in extended learning opportunities” and “provide PD during the year” are comparable to that Math Goal.
2. Time Requirements: There are considerable discrepancies between Math and Science in the minimum time requirements associated with most of the Goals. It is not possible to determine whether the total minimum time requirements are the same, as some Goals are satisfied by similar activities, and not all activities have set minimum time requirements.
3. Sample Activities and Sources of Evidence: The Math and Science Blueprints vary considerably in terms of what activities meet which Goals, and what sources of evidence will be used to assess accomplishment of the Goal. It is difficult to identify trends within or across the Blueprints. Moving forward, it will be important to ensure that the activities do in fact lead to the Goals, and that the sources of evidence can generate information to document completion of the activities and assess accomplishment of the Goal.

Analysis: The PDL program planners have made significant progress in increasing the coherence and usefulness of the Blueprints. As a result, the Blueprints are increasingly effective program maps. They have also increased the consistency between the Math and Science Blueprints. That said, given differences between Math and Science sides in scale, structure, and human resources, some differences in the Blueprints may be appropriate. A key component missing from the Blueprint template are indicators or measures of what constitutes accomplishment of each goal. As they two sides work separately and collaboratively to make further improvements in the Blueprints, it might be useful to consider the following criteria.

- Will completion of the proposed activities lead to the program goals?
- Are the expectations of PDL trainees consistently and clearly stated?
- Do measures or indicators of successful completion of goals [if added to Blueprints] address both the completion of activities (processes) and changes in knowledge or skills (outcomes)?
- Are the expectations realistic?
- Are there sufficient human resources and supports for PDL trainees to accomplish the stated goals?

Ongoing supports for PDLs

A key facet of the PDL program discussed by the planning team was that of the support provided to teachers who are part of the PDL program. The primary support built into the existing program model is that of the feedback that trainees receive from OMS staff at various points along their trajectory toward certification. This support – which is itself a facet of the training process – is first provided to small groups of PDLs at the PDL Academy after their practice PD sessions. Both the Math and Science sides include this support in their program design. While the observation and PDL self-reflection forms used by each side vary in their format, the overall content is similar, and consistent with the expectations of an effective PDL laid out in other program documents. Where the two sides currently differ is in who provides this initial support. On the Science side, an OMS science facilitator is meant to have that role. On the Math side, that role is frequently assigned to experienced PDLs. This difference is attributed to differences in the scale of the two sides relative to the human resources they have available. Moving forward, it will be important to determine whether this difference in support personnel matters in terms of the quality of support provided.

Another area of support addressed by program planners during planning meetings was that of the provision of ongoing supports for experienced PDLs. The planners recognized that providing ongoing support was directly related to the challenge of retaining experienced PDLs in the program. This in turn, they recognized, related to the sustainability of the program. The Science PDL planning team explored ways of providing supports to experienced PDLs during the Academy and beyond. As we describe under Issue 2 below, the one formal change implemented during the program year was the incorporation of experienced PDLs in the Academy as a panel of experts. It is worth considering whether the extensive inclusion of experienced PDLs by the Math side, while prompted in great part by demand, may serve the purpose of supporting those PDLs and validating their expertise.

A third area of concern around supports discussed by program planners was that of how to accommodate the different professional strengths and developmental needs of PDLs as they followed the path toward certification. This concern contributed to efforts on the Science side to modify the program model such that PDLs could individualize their certification trajectory depending on their strengths and challenges. Ostensibly this will lead to a differentiation of supports based on need, as well.

Questions for Reflection

1. Given the overall consistency between Math and Science PDL program models, which differences in program design, role definition and/or program implementation should be modified for greater consistency?
2. Given differences in the scale of the two sides' PDL programs and district-level demand for PD provision, are there distinctions between the Math and Science sides that might best remain distinct?
3. Given differences in scale, structure, and human resources of Math and Science sides, are some differences in the PDL Blueprints appropriate?

Issue 2: Clarity and Coherence in the Training of PDLs

The PDL program uses its spring PDL training Academies as an official launching of the training of a new cadre of PDLs. All teachers hoping to become certified PDLs (as well as new PDLs) are expected to attend.³ Both Math and Science sides have specific Blueprint goals linked to attendance at their Academies. (Math and Science Blueprints are attached to this report as Appendix C.) One of the activities associated with The Math PDL Blueprint's Goal # 6 – to “understand adult learning” – is attendance at the Academy. In the Science PDL Blueprint, participation in the PDL Academy is itself a goal (Goal #5).

In this section we report on how this year's PDL Academies oriented and prepared PDLs for the work of providing professional development. First we examine how each Academy used its initial orientation to communicate the broad goals of the PDL program. In some instances their orientations corresponded directly with the Blueprint goals and in others the goals were less specific and more implicit. We then discuss how the PDL workshops provided opportunities for PDLs to develop and refine certain skills associated with the Blueprint goals for math and science. Whenever appropriate, we have highlighted similarities and differences between these two primary facets of the Math and Science PDL Academies.

The Spring 2008 Math Academy took place at the Medill Professional Building over three days, while the Science Academy took place at the Shedd Aquarium (an OMS museum partner), also over three days. Each Academy made time at the beginning to provide PDLs with an overview of the program and to lay out the broad goals of what it meant to become a PDL. The Science Academy also spent time focusing on the philosophy and pedagogy behind both CMSI and adult learning strategies. Lastly, time in both Academies was allotted for participants to both observe and practice the use of the curricula in an adult learning and PD setting. Below we report on the ways in which the broad goals were communicated and consider how the overview contributed to a coherent and consistent message about the PDL program, within and across the Math and Science strands.

³ We observed new and experienced PDLs in attendance at both Academies but did not learn if their attendance was mandatory.

Introductory Sessions of Academies

Mathematics Academy: The introductory session of the Math Academy was held in a very large room with tables arranged for participants to sit in groups. Approximately 100 participants were at the opening session, which lasted roughly 40 minutes. On an overhead projected onto the front wall were three mathematical problems – one addition, one subtraction and one multiplication – with the instructions “do these in your head.” The OMS Elementary Math Manager told the assembled participants that a major goal of the program was “to think about math and to help teachers think about math,” and that this had been a recurrent goal of the “previous ten PDLAs.” She added that another goal was “to get people engaged and talking right away.” She next directed participants’ attention to the problems on the overhead and elicited first the answers and then several different examples of how people calculated in their heads. This initial experiential activity got participants immediately engaged and talking about math. The Math Academy orientation concluded with the Math Manager outlining three benefits to becoming a PDL. First, she said, the OMS gets more trained PDLs; second, the PDLs get to offer professional development to the district; and third, PDLs get certification for completing the training process.

Science Academy: The Science Academy planners allotted the entire first day of the Academy (approximately six hours) to identifying broad goals and objectives behind the PDL program. Roughly 80 participants attended the opening day session. They convened in one large classroom in the educational wing of the Shedd Aquarium and were seated at round tables. On each chair was a “goody bag” that contained books and other resources they would need. On the tables were large binders that contained PDL documents, forms, the Academy agenda, and selected readings.⁴ The OMS Elementary Science Manager told those in attendance that in their capacity as PDLs, “we are changing the way we work and the way our peers work.” Next, she introduced a keynote speaker, Dr. Arlene Hambrick, a professor at National-Louis University and an expert on professional development, to help frame their broad goals. The speaker laid out a conceptual framework for professional development that she said was built on three dimensions. It had to be intentional, ongoing, and systemic. According to the presenter, “intentional” meant that effective leadership “begins with clear purpose and goals and ensures that the goals are worthwhile and determines how they can be assessed.” “Ongoing” implied that these PDLs would need to keep abreast of current knowledge and changes in their fields. “Systemic” meant that “if we are to move forward with science education in this district, for kids, it has to start from the top and garner support.”

During the remainder of her presentation, the keynote speaker focused on the theme of change. She commented that, “Being a PDL means you will need to become good teachers of adults and so for some this will be a steep learning curve.” She then introduced an experiential activity that she described as being “all about change.” In it, back-to-back pairs of PDLs made five changes in their appearance and, then faced one another. The other had to identify what changes their partner made. During the activity, the speaker commented that as PDLs, each one will have to “know who you are at the deepest level” and be a “change agent.” (PDLs’ thoughts and concerns about their ability to function as change agents in the context of delivering district-wide PD is discussed in the section on professional development.) The remainder of the introductory portion of the Science Academy was spent with all the participants engaged in activities and reflection around the concept of “teamwork.”

The first day concluded with a panel discussion of experienced PDLs who talked about their experiences and fielded questions about becoming PDLs. One panelist said, “I was frustrated at first using the new curriculum and so I wanted to help others not to be.” They discussed some of the benefits of becoming a PDL. “It helped my school get the ball rolling with others and really paid off in increasing [our] kids’ capacity to do science.” Another PDL volunteered that it “helped me to be more reflective, more deliberate about what I do, more practical and more of a support system to the people I meet.” They also talked about ways being a PDL has changed how others see them (e.g. people come to them with questions now, they can recruit others to become PDLs), and offered advice for new PDLs and others on the fence about joining. Lastly, the panelists made a point of saying how important the support from their principals was to their success as PDLs. The evaluators remind the reader that this portion of the opening day was included by the Science Academy planners as one way to support and validate the role of experienced PDLs.

⁴ To our knowledge, we did not observe mathematics distributing similar binders at its Academy.

Sessions Devoted to Adult Learning

We observed several sessions on the second day of the Science Academy that were devoted to the issue of preparing PDLs to lead professional development with adults. In two sessions, vendors-as-facilitators introduced participants to the Concerns-Based Adoption Model (CBAM) model, and explored how it could be useful in “facilitating the change process [and] connecting adult learning with PD.” In one of those sessions, the facilitator introduced a table entitled “Stages of Concern” and walked the participants through the types of concern along with the different stages of concern from Stage # 1-basic awareness (i.e. ‘I’m not concerned about my PD’) all the way to Stage # 8-refocusing (i.e. ‘I have ideas about something new that would work even better.’). The final three stages (#6-8) represented an overall level of impact from PD. The facilitator explained that, depending on teachers’ concerns, the PDLs could adjust their PD sessions according to the stage at which the teachers appeared to be operating. He noted that the District wants teachers operating at the impact level because that level reflected someone actually using the curriculum.

The Math Academy did not include workshop sessions that focused specifically on adult learning. However, each of the Math Academy sessions we observed included portions during which facilitators and/or participants addressed the topic of adult learning. For instance, during an Everyday Math workshop, PDL trainees working in groups were asked to address a series of questions after reviewing a particular lesson. One of the questions was “What do teachers need to know to teach this?” This question led each group to consider some facet of adult learning, specifically in relation to the math lesson. For instance, following a discussion about the value of hands-on ways of exploring (to understand place value before getting to partial products), the presenting groups answered the question “What do teachers’ need to know to teach this?” by stating that, “They need to know concepts, multiple approaches to problem-solving; they need to be open to multiple approaches.” The workshop facilitator commented that if teachers understand different methods, they will know what to use in different situations.

Summary and Analysis: Both Academies began by bringing participants together and providing an overview of the goals and purposes of the program. Both Academies also took time to discuss and outline what being a PDL entailed, and conveyed similar programmatic goals around supporting teachers’ learning and teaching of the CMSI-supported math and science curricula. Those were the principal similarities between the two OMS sides. A full day of the Science Academy was spent outlining some of the broad goals of the PDL program, including the qualities of leadership needed to become a successful PDL. By comparison, the Math side kept their introduction to the broad goals and focused on the teaching of mathematics. We did not observe specific attention to the qualities of leadership or to the nature of adult learning in the Math Academy’s orientation. The Science Academy devoted a second of its three days to issues of adult learning. Even though the Math Blueprint Goal #6 specifies that PDLs will “understand adult learning,” we did not observe a comparable approach to adult learning during the Math Academy. Instead, aspects of adult learning were incorporated into the activities and discussion of math content focused workshops.

Questions for Reflection

- Can the Math PDL Blueprint goal of “understanding adult learning” be satisfied simply through attendance at the Academy? If not, might the math PDL program planners want to consider including more explicit attention during their opening overview to the skills and practices of this goal?
- As the PDL program moves forward, is it useful for the planners to discuss the merits and utility of how they use the Academy training to orient PDLs to the overall program and its broad goals? Is this an area where greater coherence and consistency across Math and Science is desired, or are distinct Academy introductions appropriate given differences in the Math and Science PDL programs?

PDL Academy Workshops

In this section we discuss how the PDL workshops provided opportunities for PDLs to develop and refine certain skills associated with the “blueprint” goals for math and science. These opportunities included observing and following the lead of facilitators as they modeled how to use the curricula, leading mini-lessons themselves,

and being introduced to a framework for how to facilitate adult learning in the context of professional development.

The Math Academy: Following the initial introductory remarks, the remainder of the Math Academy was devoted to content-driven, curriculum-based workshops. Participants divided themselves into sub-groups by curriculum and, when appropriate, by grade level. Different rooms were staffed with facilitators and devoted to each of the four math curricula. Once the participants were split up into groups associated with the curriculum they were using, the Math Academy organized a series of experiential and activity-driven workshops. Below are summaries of several sessions we observed that illustrate how the Academy workshops provided participants with “mini” opportunities to develop and refine skills associated with the Mathematics Blueprint goals of demonstrating mastery of mathematical content and pedagogy (i.e. goals # 2, #3 and # 6). The activities also provided participants the opportunity to plan and facilitate high quality professional development -- albeit on a smaller scale than the professional development sessions they would eventually lead.

The PDLs in the Connected Math room were given an 11-page paper to read with the instruction to “look for the big ideas” in the paper. Additionally, the session was guided by what the facilitators termed “driving questions.” These driving questions were: “What implications do we need to consider in forming or planning our PD?” and “How does this impact our PD sessions?” The facilitators collected the “big ideas” people came up with and then paired new and pending PDLs to discuss the paper in light of these questions. What we observed were teachers largely talking about their own practices and experiences. We did not observe much attention given to the article and its big ideas.

In a room devoted to the Everyday Math (EM) curriculum, participants also read a research article and came up with a list of their “big ideas.” One group in this room was very focused on the article and on linking it to their classroom practices. After 20 minutes, the EM facilitators instructed the participants that, in their grade levels, they were to develop a five-minute lesson on how to teach place value. Each group had access to its curriculum and manipulatives. They would then send an “ambassador” to each of the other grade level tables to demonstrate their lesson.

In a Math Trailblazers (MTB) workshop, PDLs first watched and then critiqued a video of a classroom where students were learning how to plot graphs of time-by-yards and were in dialogue with their teacher and their peers about their strategies and their meanings. The video showed students talking with each other about whether their straight line should be made by connecting each point on the line. Their teacher instructed those who already knew the answer to help those who did not.

To summarize, these activities from the different math workshops engaged participants to think and talk about math with one another. Examples of pedagogy were examined in the research articles read and discussed as ‘big ideas.’ Participants got to practice some instruction in the EM workshop. Others in MTB had an opportunity to observe and critique the classroom instructional practices by the teacher in their video. In a second MTB workshop, pairs of new and/or PDL trainees came prepared to lead mini-lessons on different portions of the curriculum. Each mini-lesson included participants providing written critiques. Participants were asked to review and assess what mathematical ideas were explored, what pedagogical content knowledge was embedded in the lessons, and what characteristics of standards-based instruction did they observe. A rigorous debrief and dialogue was then led by the PDL workshop facilitators, in which they encouraged trainees to provide PD that supports teachers in thinking about the environment they provide for their students, “that it should be a problem-solving one and a foundation for open responses.”

The Science Academy: Following the initial introductory, whole-group session, the remainder of the Science Academy was organized primarily around workshops led by representatives from the curriculum publishers. These workshops consisted of smaller groups working with specific curricula at different grade levels: K-2, 3-5 and 6-8.

The first half of each curricular session focused on the outside presenter exploring some facet of the science curriculum with the group. In one small group SEPUP workshop, we observed that all the participants were well-acquainted with the curriculum. This group spent time discussing and sharing examples of how student journals could be used: as an assessment tool, to ensure students are doing the work, or to engage parents with

the curriculum via homework assignments that asked parents to contribute to students' journals. In another workshop, participants were introduced to FOSS kits and were observed sitting quietly and listening. The facilitator talked about using "At a Glance." She quickly referenced a number of other topics — rubrics, differentiated instruction, interdisciplinary instruction -- and directed participants to where these could be found in the FOSS binder. This particular workshop session was largely built around PD presenter talk (a characteristic of the previous year's workshops that Science Academy planners aimed to minimize). The workshop presenter confessed later that while she likes her workshops to be more interactive, this one was "very passive" and was mostly her walking participants through the binder because so few had any science background.

During the second half of the workshops, participants worked in pairs or small groups to develop "mini" PD sessions they then presented to the whole group. For instance, for the last part of the workshop on the 3rd – 5th grade FOSS curriculum, the workshop facilitator (a representative from the vendor), assigned pairs of participants to look over a lesson on electricity for 15 minutes, and prepare to talk to the group about four themes: (1) Identify the inquiry question in the lesson; (2) identify the lab prep; (3) talk about wrapping up the lesson; and (4) talk about the science story (if they have time). The remainder of the workshop was devoted to pairs of participants presenting their "mini" lesson, during which time other participants and the facilitator asked questions or offered feedback. For example, one apparently experienced PDL responded to a presentation by noting that in her district area they are really pushing work stations. The PDL offered a tip to the presenters about how to set up the experiment in that context. The workshop facilitator followed up by recognizing the value of the suggestion that relates the lesson to the actual classroom. The facilitator noted that PDLs should incorporate these kinds of suggestions into their PD.

Summary and Analysis: In both the Math and Science Academy workshops we observed that by and large the PDL trainees were involved and used the concepts and curricular activities provided to them by their facilitators. We also saw instances, in both Math and Science workshops, in which the facilitators drew analogies between how teachers worked with students and how PDLs worked with teachers. During both the Math and Science PDL workshops we saw trainees getting the opportunity to lead mini-lessons. In both Math and Science workshops, facilitators encouraged participants to draw on their own classroom experiences as they practiced presenting to other teachers. Although workshops varied within and across the Academies in terms of the ways workshop facilitators integrated curricular concepts with content knowledge and teaching techniques, all of the workshops we observed provided participants with learning experiences appropriate to the Blueprint goals associated with participation at the Academy.

Question for Reflection

- Currently, the Academy workshops engage with all participants at a common level of expertise. If PDLs who attend the Academies represent the full spectrum from trainee to highly experienced, how might the Academy training be differentiated to address the needs of more experienced PDLs? Additionally, how might their experience be utilized to assist during the Academy?

Issue 3: Quality and Coherence in the PD Delivery by PDLs

In this section we report on the quality and coherence of the PD delivered by PDLs. In order to assess whether and how PDLs were contributing to program expectations, we consider the PDL-led professional development sessions we observed in light of criteria for high-quality professional development as described in the CMSI PDL Observation form.⁵ We have drawn on this form because the criteria it lists seem to accurately represent expectations for high-quality professional development contained in numerous PDL program documents from both Math and Science sides.

A key premise of the PDL program's is the notion that experienced teachers (as opposed to curriculum vendors, for instance) can be particularly effective professional development leaders because their "local" expertise can

⁵This form was included in the Science Academy binder.

be a tool to help build greater teacher buy-in to the value of professional development. As one of the PDL program planners put it, “We know that our teachers accept hearing things from their peers rather than outsiders. So we found that growing our own would be the best way [to build capacity].” In the second part of this section we examine the PDL as a “local expert,” and report on ways in which their intimate knowledge of the curriculum and of the school district contributed to their ability to provide high quality professional development.

It should be noted that because we attended only portions of what were 2 ½ day sessions, we are limited in the degree to which we can fully assess the quality of any of the PDL-led professional development sessions.

Quality of PDL-led Professional Development

Upon completion of the PDL Academy, PDL trainees follow an escalating series of steps whereby they first observe PDL-led professional development, then plan, facilitate, and reflect upon their own delivery of professional development. The professional development summer sessions for each curriculum and grade level lasted between one and 2 1/2 days. Each session we observed was led by a team composed of one experienced and one new PDL, and observed by one or more PDL “trainees.” After each session, we debriefed with the PD leaders.

Similar to what we observed during the Academies, in all of the PD sessions we observed examples of PDLs working to provide teachers opportunities for engagement with the curriculum and efforts to model the tenets of the CMSI pedagogy through a more dialogic, interactive and participatory classroom structure. The CMSI PDL Observation form asks observers to record examples of both “participant learning” and “PDL moves.” Participant learning focuses on: (1) participants’ understanding of key ideas; (2) use of tools to develop understanding; (3) participant reflection on their learning; (4) a mood that supports learning; (5) communication and explanation of ideas among participants and PDL; and (6) collaborative and respectful relationships. The form also prompts for six “PDL “moves””: (1) understanding of unit knowledge; (2) use of questions and strategies to further participant understanding; (3) how PDLs use ongoing assessment to modify the workshop based on emerging needs; (4) how they facilitate reflection; (5) how they encourage communication and move discussion forward, and (6) how they encourage a climate of respect for the ideas of all participants and promote intellectual risk taking.

Because this evaluation did not include the assessment of PD participants’ learning, we cannot determine the extent to which participants actually understood key ideas presented. However, in each PD session we observed, the PDLs appeared to satisfy the other five criteria for supporting participant learning. In all cases PDLs incorporated tools from the curricula aimed at enhancing understanding of key concepts. Each workshop also included time for participant reflection in small or large groups. There were regular periods of communication and explanation. While most whole-group explanation came from the PDLs, in small group work teachers had a chance to explain aspects of the lesson to each other. PDLs consistently aimed to encourage and model collaborative, respectful relationships among participants, and to establish a positive and enthusiastic “mood” – even in [one case] in which some teachers appeared mildly resistant.

Observing PDL “Moves”

We also observed instances of PDLs engaging in each of the six “moves” in all of the workshops we attended. For instance, in one 4th grade math workshop, the PDLs’ goal was to help teachers get some in-depth experience with what problem-solving was and what students needed to become good problem solvers. The PDLs approached this by facilitating a series of activities that allowed participants to build their own qualities of a good problem-solving classroom and then plug those qualities into little number games played in pairs. They provided case studies of other teachers to be critiqued individually and then as small and whole groups, as well as specific geometry problems associated with the Everyday Math fourth grade curriculum. At each stage, the PDLs posed questions asked teachers to consider how it might apply to their own classroom and used their concerns (e.g. ELLs, frustrated kids) as opportunities to reflect on how a problem solving classroom might respond and address their concerns. At times their questions were more rhetorical and meant to promote deeper reflection. For example, in comparing the ability to do number to word problems, one PDL asked the teachers whether they would hold the same thoughts and beliefs about problem solvers if there was not a State test. In this particular workshop, one intent was to create a classroom model where students would feel safe to take risks

in their thinking in order to grow as problem solvers, and while the participants did not always take advantage of the environment to take some risks themselves, in the questions that they posed and the dialogue they facilitated these PDLs tried to make it possible.

In an eighth grade science workshop, the PDLs introduced the use of journals and gave participants hands-on practice with using them. Participants were asked to switch back and forth from responding as a student and as a teacher to aspects of the assignment. The assignment was to identify the most expensive of 3 types of water (distilled, bottled and tap). This involved setting up their journal to record the different relevant components of the activity; taking measurements, recording data, creating a glossary. Each small group had to develop a consensus of its view. Their views were recorded on an overhead that would produce the range of views in the class. Participants were asked to write a reflection from the perspective of a teacher. The PDLs moved about the room modeling talking with each table as a means of preparing students to talk in front of the whole class. In this workshop, the PDLs modeled their familiarity with the unit, guided participant understanding, encouraged communication, and also tried to model how to set up a climate of respect and risk-taking (e.g. talking in public).

A question we frequently heard during these workshops from PDLs was, “How would this work in your classroom?” One example of this occurred while teachers were preparing to work with manipulatives during one math PD and were fooling around with them in advance of getting directions of the assignment. The PDL suggested that, for manipulatives that were new to students, teachers should let them simply play with them (for as little as five minutes), similar to how she had just let the teachers get acquainted with using them. As the workshop moved on to polygons, the PDLs asked the participants to consider how this would look in their classrooms and how they would use it? One teacher volunteered that students could be sent on a treasure hunt to locate all the polygons in their classroom. Another teacher offered that she gave students the task of spelling their names in polygons as homework.

PDLs as Local Experts

As we noted above, one rationale for the CMSI shift from PD instruction provided by external vendors to PD provided by PDLs had to do with the localized knowledge and resulting credibility that practicing CPS teachers and instructional leaders bring to the PD sessions. Three of the PDLs we debriefed with following PD sessions identified their primary role as a classroom teacher as key to their ability to be effective PD leaders. One science lead PDL noted that her main role is still as a classroom teacher, and she likes it that way. For her, this meant she could relate to the teachers she worked. She added that having the opportunity to lead PD for other teachers also made her a better teacher.

We also observed several examples of this in PD sessions. For instance, one PDL explained to a group of fourth grade math teachers that because it was difficult to fully open flat the teacher manual on a copy machine, she took her manual to a local Kinko’s and had them slice open the binding and three-hole punch it for greater access and ease with making photocopies of different pages, assignments and resources. A second example occurred during a science PD, in which the PDL framed the reality of CPS for science instruction. The PDL commented that, “You might get 30 good minutes of science two times a week, even though CMSI recommends 150 minutes per week for K-5 and 250 for 6-8.” At the same time, she encouraged teachers to work with the kits and consider how they could do the exercises under less-than-optimal conditions (e.g. no classroom sink). A third example came from the same science PD session. After the teachers had completed an activity in which they built replicas of a human knee with tubes, paperclips and rubber bands, the PDL asked the group, “How well would this activity work in Centers? Not so good.” She went on to suggest that the teachers might use parent volunteers or “if you have a colleague who owes you a favor,” to help for 5-10 minutes to get the activity rolling.

Summary and Analysis: Both the Math and Science PDL-led professional development sessions exhibited most of the “participant learning” qualities and many of the “PDL moves” that the CMSI observation form prompted PDL trainees to look for and assess. In this sense, these PDLs seemed to be both effective professional developers and good roles models for the PDL trainees. The PDL sessions were probably good examples of what PDL trainees who were in the room observing could aim for once their time came to co-lead PD sessions.

All PDLs we observed, in addition to knowing the content of the curricula, were well-versed in the pedagogy of the CMSI curricula. Throughout the PD sessions we observed, PDLs welcomed questions and issues from teachers about their specific classrooms and modified their sessions to include those concerns and questions as a means to further explore the curriculum and possible strategies and approaches to meeting the needs of their classrooms. These kinds of connections would be more difficult for outside vendors to make, whose experience with the CPS district is limited to their PD sessions. They also illustrate how PDLs incorporate their own identity as CPS classroom teachers, past and current, and help to underscore the value of the PDL as a local expert. We cannot assess whether the consistently high quality of the PDLs we observed was a function of recruiting, training or a combination of both. What we did observe was that these PDLs appeared to believe strongly in the CMSI curriculum; they understood and communicated its philosophy and its overall approach of shifting from a teacher-centered to a student-centered classroom that is dialogic, participatory and problem-solving. If the PD sessions we observed were representative of PDL-led professional development, it would seem that both Math and Science are having success in creating a pool of teachers who can provide high-quality professional development.

Questions for Reflection

- Based on the evaluators' observations of a small sample of PD-led professional development, the PDL program seems to be attaining a considerable degree of success in training PDLs to provide high quality PD. How can the PDL program planners draw on the PDL program's successes in the training of PDLs to further improve the less developed areas of recruitment and retention of PDLs?
- Given the diversity of teachers who attend professional development, and resulting limitations of district-level PD sessions, and given the skills, disposition, and investment of effective PDLs in the CMSI, is their primary role as district-level professional development leaders the best use of their time and energy? For instance, are there ways in which their leadership roles can be cultivated and supported within their schools? Within the area?

Issue 4: Role Definition of PDLs, Trainers, and Program Planners

In previous sections of this report, we noted that the primary role of the PDL from the perspective of program planners and the OMS, is to lead "high quality" professional development in a particular curriculum. We also identified a series of "aptitudes" PDLs are expected to have, and reported on the extent to which the PDLs we observed demonstrated these aptitudes – which was considerable. Because the debriefs conducted with PDLs for this evaluation focused on how PDLs felt about the PD they had provided, and how their performance related to the program and the supports it provided, we have no direct instances of PDLs describing their roles using terms comparable to the aptitudes described under "Issue 1" of this report. Nor were PDLs asked explicitly about what they understood to be the "scope" of their leadership role. That said, none of the PDLs we spoke with referred to providing PD at the area of school level. A few did emphasize the fact that their primary role was as a classroom teacher, and they related their ability to be effective PDLs to that position. In this section we focus in more detail on how PDLs understand their leadership role.

However, the PDL is not the only role that is relevant to the PDL program; there are two other key leadership roles that the PDL program has generated. One is the additional role that Math and Science facilitators take on as "trainers" or "supports"⁶ for PDLs-in-training. The second is the role of those Math and Science facilitators who are members of the PDL program planning committee or team. Each of these roles requires skills and knowledge that do not necessarily result directly from the facilitator role. In this section we report on how PDL trainers and PDL planners define their roles, and what kinds of support they receive or would like to receive as they develop in those roles. It bears noting that some OMS facilitators have taken on both roles. For instance,

⁶ We include these titles in quotations because we are not aware of a formal title associated with the facilitators' role of observing and providing feedback to PDL trainees. The position has also been referred to as PDL "supervisor."

most if not all members of the PDL program planning team also act as trainers for PDL trainees. However, in this section we distinguish between the roles of PDL trainers and PDL program planners.

PDLs as Change Agents: The Potential for Leadership within the PDL Role

As we noted in the discussion of the PDL Academies, the speaker at the Science Academy concluded her prepared talk by telling the assembled PDLs, that each one will have to “know who you are at the deepest level” and be a “change agent.” We also heard the Elementary Math and Science managers say to the assembled Academy participants that the role of PDLs was also “to help teachers change how they thought about math” (and science) and “how they worked and worked with their peers.” While PDLs are expected to “lead” professional development, it is not clear how the expectations for their role support their leadership as “change agents.”

Several of the new and experienced PDLs we debriefed with recognized this role expectation. They expressed a desire do well and wanted to affect the teachers who attended their sessions. But they wrestled with the extent of their ability in a given PD session to change how teachers thought and/or worked. For instance, one PDL told us that she thought there was a relationship between the quality of a PD session and the types of agendas that teachers bring with them. She explained that “What teachers walk away with can be determined in large part by the questions they came in here with. ‘What’s in it for me?’ If I am coming just for the hours and for the CPUs or for the extra income because this is in the summer, it is going to be very different from the one who says, ‘we don’t have science in our building. Our scores are consistently low, but I feel our kids have the potential and are deserving of a new and different learning experience.’”

Two other PDLs recognized that in any PD session there was always going to be a wide range of teacher agendas. For them, the “trick was to find some meeting in the middle.” They expected that some veteran teachers attending had done the lessons before and might not be seeing something new in their PD session. Others might be there in attendance but feel little or no obligation to participate. In their PD sessions there might be other teachers who are still struggling to make sense of the curriculum, and others who are only too willing to throw themselves into all the activities and conversations. This plurality of teachers’ needs, issues, and dispositions presented a challenge in terms of how these PDLs structured and adjusted a PD session.

These types of concerns related back to stated goals at both Academies—“how to think about math [and science]” and how as PDLs they were “changing the way we work and the way our peers work.” One of the new PDLs we interviewed told us that “We’re kind of advocates for Everyday Math,” but she went on to say that “teaching will never change until we’ve reflected on our own teaching practices and this is very difficult to do in an environment like this.” By this she was referring to an environment in which teachers may be compelled to attend PD but they don’t have to be engaged or participate or take risks. Another math PDL concurred by saying that facilitating PD is more than understanding how a particular curriculum works and even its philosophy. “It’s a deepening of your understanding of mathematics. It is being able to make a connection between what you expect kids to know and how you’re doing as an effective leader.”

Summary and Analysis: The PDLs we interviewed shared the expectations for PDLs outlined in the PDL program documents. They also concurred with the expectations of the program associated with helping teachers attending PD to “change the way we work” They also recognized that there were limits to their effectiveness that were bundled up with the tension between a new philosophy of teaching and learning as advanced by the CMSI curricula and a district policy of professional development that compelled teachers to attend but not to learn, take risks, or change if they chose not to. Such conditions, while accepted as the way is it, nonetheless challenged the degree to which their leadership could be effective.

The Role of Facilitators as PDL “Trainers”

Another leadership role that is intrinsic to the PDL program as it is currently structured and enacted is that of the OMS facilitator who “trains” the PDLs when they are providing professional development. This role does not seem to be formally identified as a discrete role in PDL program documents, or by PDL program planners in their discussions of the program design and delivery. However, the practice of observing and providing feedback to new and experienced PDLs is central to the program’s “theory of action” about how to develop

highly qualified PDLs. Thus it is also worth considering whether there should be supports in place for facilitators who take on this “trainer of PDLs” role.

One of the science facilitators commented during a debrief following a PD session he was observing, that he would like to receive training or support in his role as a PD trainer, noting that there was support for teachers to use the curricula, and for PDLs to provide PD, but somehow not for facilitators in their role as PDL mentors or supports. The importance of support for the PDL “trainers” was brought up by the OMS director in a fall interview. She identified that absence of training or support to date for facilitators who supervise PDLs, and speculated that “this [lack of training] may relate to why some PDLs are leaving that role.”

To the evaluators’ knowledge, there are no formally agreed upon criteria for the PDL “trainer” role. Nor was assessment of this role part of the 2007-08 evaluation workscope. Thus, we address the role in this report in a minimal fashion with the understanding that as the PDL program moves forward planners may begin to define and support that role more explicitly. In the evaluators’ fall focus group with members of the PDL program planning team, the Math and Science facilitators described the role of the facilitators involved in the PDL program in different ways. Because the role of the PDL trainers varies across the Math and Science sides, we report on the role for each side.

Science facilitators as PDL trainers: The Science facilitators indicated that they recruited PDL trainees, observed the PDL trainees conduct mock professional development presentations during the Academy, and provided feedback to them at that point. The facilitators also were charged with observing PDLs deliver professional development and reflecting with them on the quality of the professional development they provided. These role expectations were consistent across the Science program. Based on our observations of the Science Academy and summer professional development sessions, and conversations with Science PDL program planners, it appears that science facilitators were able to observe most of the Academy PD presentations and debrief with all of the PDL trainees on their presentations. The evaluators observed Science facilitators participating as observers of PDL presentations through the Academy. The facilitators periodically participated in the group discussion, pointing out facets of the science lesson or the PDL’s delivery they considered important. For instance, during paired presentations on an electricity unit in which the presenters were unsuccessful in completing a circuit, the Science facilitator commented reassuringly that “this happens to us all. You set up the experiment, it doesn’t work. That’s ok. You just work through it.” This comment leads to group discussion about the importance of having students do multiple trials, and about how things may come up during a lab that “even the teacher may not know.”

According to the Science PDL program planners, this summer there was a Science facilitator in attendance at all of the PDL-led professional development sessions. However, the nature and extent of attendance varied. In two cases a science facilitator attended the entire PD session, observing PDLs co-presenting and debriefing with the PDLs after the session was over. In those cases the facilitator also actively supported the PDLs by interjecting comments that one facilitator described as aimed at “moving the teachers along.” In another case the facilitator attended and observed the PDL-led session intermittently, as she was also observing PD sessions in adjacent rooms.

Based on conversation with PDL program planners during the focus group and subsequent meetings, it appears that at the current time the Science facilitators are able to perform the role of “trainer” for most or all PDLs. This capacity is attributed to the smaller scale of the Science side and smaller demand for professional development within the District, compared to the Math side. There is a concern on the part of the Science leadership, however, as to whether the existing staff will be able to continue to perform this role as the demand for professional development in the CMSI science curricula increases with the growing use of the curricula within the District.

Math facilitators as PDL trainers: According to PDL program planners representing the Math side of OMS, Math facilitators play a role during the PDL Academy as well as when PDLs provide professional development. However, the role of the facilitators seems to vary depending on the curriculum they are assigned to. For instance, the facilitator for Everyday Math reported observing PDLs and providing professional development for the EM curriculum. By comparison, a Connected Math Program facilitator commented that she and the other CMP facilitator primarily observe the PDLs providing professional development, and do not themselves lead

professional development sessions. She also noted that they draw on their cadre of experienced PDLs to observe professional development sessions. The CMP facilitator suggested that the difference between her role and that of the EM facilitator was due to the difference in scale, there being greater demand within the District for EM professional development sessions than for the CMP curriculum.

Based on conversation with PDL program planners during the fall 2007 focus group and subsequent meetings, it appears that at the current time the capacity does not exist on the Math side for facilitators to perform a “trainer” role for most or all PDLs during the Academy or subsequent PD sessions. As a result, at the 2008 Math Academy, this role was taken on by individuals with different positions within OMS and the District. For instance, we observed combinations of Math facilitators, citywide specialists, and experienced PDLs observing and providing feedback to PDLs presenting mini lessons. Similarly, math facilitators were not able to attend all the PDL-led professional development sessions. The math PDLs we debriefed with expressed the desire for more feedback from their “trainer” facilitators. Based on discussions with program planners, the Math facilitators are aware of this challenge.

Summary and Analysis: Based on model and enactment of the PDL program, it is evident that the role of PDL “trainer” is key to the program’s success. However, there do not seem to be explicit criteria or expectations for the PDL trainer role within the program model. Finally, there are differences how the role of PDL “trainer” is enacted on the Math and Science sides, and by whom, apparently as a result of differences in program scale and available human resources.

Questions for Reflection

- Given the centrality of the PDL “trainer” role to the program, should role expectations be formalized? What would those expectations be?
- How can facilitators and others who take on this “trainer” role be supported?
- Given differences in the scale of the Math and Science PDL programs, does it make sense to standardize this PDL “trainer” role across the two sides?

The Role of the PDL Program Planner

Role Definition: In the fall of 2007, the evaluators discussed the vision, organization, and goals of the PDL program with the OMS director. She characterized the role of the PDL program planners as entailing a move from being a facilitator to a “program developer,” and saw this as a key part of building her staff’s capacity. Based on the evaluators’ meetings with and work supporting the PDL planning team, as well as our observations of the planners’ roles during the Academies and professional development sessions, it is apparent that the PDL program planners engage simultaneously in multiple roles of curriculum facilitator, PDL trainer, and program developer. In other words, the PDL planner roles requires staff to develop the PDL program, in addition to their already existing responsibilities of leading and/or coordinating professional development in a particular curriculum, recruiting training and supporting PDLs to lead PD sessions.

Role Supports: The evaluators are not aware of formal supports the PDL program planners receive from the OMS or District. Based on informal comments from planners during meetings or Academy and PD session debriefs, it appears that their supervisors in the Office of Math and Science provide informal support, input and advice. The PRAIRIE evaluators played a support role as part of their formative evaluation work. From November 2007 through July 2008 the PRAIRIE evaluators offered technical assistance in the form of feedback on drafts of the PDL blueprints, the Science Program’s logic model, and the two sides’ evaluation and self-assessment forms.

Perhaps the most important form of support the PDL program planners received was from each other. Through meeting discussions and e-mail exchanges around the preparation of program and Academy materials, it was apparent to the evaluators that the planners conferred regularly with each other. This seemed to occur primarily within the Math and Science sides, although the lead planners from each side also appeared to confer periodically. It appeared that the planners integrated group discussion and PRAIRIE evaluators’ feedback from

the various meetings as they worked to produced new, more coherent, and clearer iterations of their program documents, PDL Blueprints, Academy agendas, and assessment forms. In this sense the PDL program planning team seems to function as an informal “learning community.”

Questions for Reflection

- Given the distinct skills and knowledge required for the role of program planner, what kinds of training and support might the OMS and/or the District provide to the Math and Science facilitators who take on this role?
- How might the OMS and/or the District further support the PDL program planners’ ability to function as both an effective program development team and as a “learning community”?

PDL PROGRAM Final Report -- APPENDIX A

**PRAIRIE Evaluation Team
CMSI PDL Leadership Academy or PD Session Observation/Debrief Template 2007-2008**

PART 1 -- OBSERVATION

Evaluation project: CMSI PDL strand

Program/Activity: PDL Academy or Professional Development Session

Location of visit:

Date/time/duration of visit:

Observer recording notes:

Date notes written:

Individuals present:

Description of site:

List of materials collected:

Description of activities with time intervals:

(This section should include detailed description of interactions and dialogue during observation, with time indicated at key activity intervals (for instance, as move to next point on agenda). Keep in mind you are looking for details of professional learning in an Academy structure, a deepening of content and/or pedagogical knowledge ,and experiences that promote leadership development.

Analytic themes:

(This section should include evidence about activities, interactions, comments and dialogue that will contribute to evaluating the program. The following prompts will help you relate your observations back program goals and evaluative questions.)

1. Evidence of the professional development or Academy workshop as a professional learning environment for math/science teachers:

- New skills and concepts are effectively modeled
- Participants practice applying new skills and concepts during the professional development or Academy workshop
- Active participation occurs through questioning, discussion, writing
- Participants use time to reflect on their practice --alone and together; written and verbal
- Participants see the material presented as relevant to their actual work
- Participants are engaged as sources of knowledge and experience
- Participants communicate their understanding and engagement (to each other)
- Participants receive constructive feedback on their work (from facilitators and/or PDLs and from peers)

2. Evidence of deepening of content and/or pedagogical knowledge related to the particular instructional curriculum:

- Participants engage with facilitator/PDL around aspects of CMSI instruction in mathematics and science
- Participants engage with facilitator/PDL in processes by which CMSI instruction in math/science can be promoted in Chicago Public Schools
- Participants engage with facilitator/PDL in discussion of the philosophy and structure of the instructional program

3. Evidence of learning experiences that promote effective instruction using CMSI-supported curricula

- PDL/facilitator models best practices within the session by facilitating the professional development through investigation and use of tools and manipulatives
- Participants have opportunity to explore a range of instructional decisions

Other analytic comments:

(i.e. additional thoughts in which you relate your observations to the immediate scope of the program objectives or evaluation questions)

Interpretive comments:

(i.e. additional thoughts in which you relate your observations to broader issues and contexts beyond the immediate scope of the program objectives)

Self-reflective observations:

(i.e. ways in which the event or activity observed affected you, how you responded to aspects of the activity that might influence your observations, etc.)

Follow-up needed:

(In this section identify any additional information that needs to be gathered, gaps filled, etc.)

PART 2 (for Academy observation) – DEBRIEF WITH INSTRUCTOR/FACILITATOR

Program/Activity: PDL Leadership Academy

Location of debrief:

Date/time/duration of debrief:

Interviewer recording notes:

Date notes written:

Note to interviewer: This brief protocol is intended to be used with one or more facilitator/instructor, immediately after the observed Academy session is completed. The intention of this instrument is to collect data on the individual facilitator's perception of the PDL Academy as a learning environment that: *a) develops instructional competencies, b) deepens content knowledge, c) helps to build and refine leadership skills.* The interviewer should listen for examples of these 3 categories in the substance of these questions.

- 1) **How do you think the training went?**
- 2) **Did you accomplish what you planned?**
- 3) **Which activities worked well and why?**
- 4) **Which ones fell short? Why was that?**
- 5) **How do you think you balanced the time for active participation with time for reflection?**

- 6) How did you accommodate multiple learning styles and your own knowledge of participants' backgrounds and skill levels?
- 7) Which aspects of the training seemed most specifically in sync with participants' own work? Which ones did you think came across as more generic or abstract? How come?
- 8) Which new skills and concepts did the participants seem to pick up on easily? Which ones did they seem to struggle with? Were there any that went over their heads? How so?
- 9) What were the signs or evidence that participants were understanding things deeper and more fully?
- 10) What did you learn about in the process of doing this facilitation? (e.g. the program, the participants, your colleagues, yourself, the art of facilitation)

PART 2 (post-PD session) – DEBRIEF WITH PDL

Program/Activity: PDL Professional Development

Location of debrief:

Date/time/duration of debrief:

Interviewer recording notes:

Date notes written:

Note to interviewer: This brief protocol is intended to be used with a PDL immediately after they have led a Professional Development workshop. We are interested in learning about their perspective on the workshop they led, and then to explore their experience of the PDL role more generally.

- 1) How do you think the PD workshop went? Did it meet your expectations? How so/why not?
- 2) How well prepared do you feel you are in your role as a PDL? (Prompt around preparation in the curriculum and preparation as a leader and facilitator)
- 3) Are there aspects of this role in which you feel you could use additional support?
- 4) What has been your experience of the PDL role thus far? What are your responsibilities with OMS? With your school? Area?

5) Do you have an opportunity to engage with other PDLs? If so, what is the nature of that engagement? If not, would that be something that would be of value to you?

PDL PROGRAM Final Report -- APPENDIX B

PDL SURVEY

July 29, 2008

Broad Themes

- * Quality of training and preparation for leading PD and supporting use of CMSI materials
- * Deepening understanding of mathematics or science content and pedagogy
- * Effectiveness of the PDL program as a professional development approach to support the use of CMSI curricula across the school district
- * The intrinsic/extrinsic value of obtaining PDL certification
- * Sustainability of the PDL program

First we want to ask you questions about the quality of professional development and preparation for leading and using CMSI materials.

- 1) My training as a PDL has improved my own use of the CMSI curriculum.
 - a) Strongly Agree
 - b) Agree
 - c) Neutral
 - d) Disagree
 - e) Strongly Disagree

- 2) The PDL professional development has deepened my understanding of mathematics/science content and pedagogy.
 - a) Strongly Agree
 - b) Agree
 - c) Neutral

- d) Disagree
 - e) Strongly Disagree
- 3) As a result of the PDL's professional development I feel prepared to facilitate adult learning opportunities.
- a) Highly prepared
 - b) Prepared
 - c) Slightly prepared
 - d) Not prepared
 - e) No opinion
- 4) While becoming a PDL I have deepened my knowledge of the CMSI curricula.
- a) To a Great Extent
 - b) To some extent
 - c) Neutral
 - d) Very Little
 - e) Not at All
- 5) Because of my PDL experience I feel confident in my ability to lead others in the use of CMSI curriculum.
- a) Strongly Agree
 - b) Agree
 - c) Neutral
 - d) Disagree
 - e) Strongly Disagree

Next, we want to ask some questions about your school-based experiences of being a PDL

- 6) My experience as a PDL has supported my development as a mathematics/science leader in my school.
- a) Strongly Agree

- b) Agree
- c) Neutral
- d) Disagree
- e) Strongly Disagree

7) My principal values my being a PDL

- a) Strongly Agree
- b) Agree
- c) Neutral
- d) Disagree
- e) Strongly Disagree

8) My principal demonstrates his/her valuing my being a PDL by [*rank order from 1 most important to 7 least important. Ignore those that do not apply*]:

- Asking me to lead PD in my school
- Puts me in positions of leadership within my school
- Giving me public recognition
- Recommends me elsewhere to lead PD
- Encourages other teachers to seek me out
- Asks directly for my help in CMSI matters
- Other (please describe)

Finally, we want to ask you some questions about what the PDL program means to you both personally and professionally.

9) Participating in becoming a PDL has contributed to my professional growth.

- a) Strongly Agree
- b) Agree
- c) Neutral

- d) Disagree
- e) Strongly Disagree

10) What appealed to me about becoming a PDL were opportunities to [*rank order from 1 most important to 6 least important. Ignore those that do not apply*]:

- Collaborate with like-minded colleagues
- Facilitate professional development for other teachers who are using the CMSI curriculum
- Make additional money
- Deepen my mathematics or science content and/or pedagogical content knowledge
- Take a step in advancing my own career
- Expand my opportunities to engage in curriculum work in mathematics and science with OMS
- Develop leadership capabilities outside of my school
- Other (please explain)

11) The best aspect about being a PDL is the opportunity to [*rank order from 1 most important to 6 least important*]:

- Collaborate with like-minded colleagues
- Facilitate professional development for other teachers in CMSI curriculum
- Make additional money
- Deepen my math and/or science content and/or pedagogical knowledge
- Take a step in advancing my own career
- Expand my opportunities to engage in curriculum work in mathematics and science with OMS
- Develop leadership capabilities outside my school
- Other (please explain)

12) The requirements for becoming a PDL are reasonable and appropriate to the work of a PDL

- a) Strongly Agree

- b) Agree
- c) Neutral
- d) Disagree
- e) Strongly Disagree

13) How satisfied are you with the level of support for being a PDL that OMS provides

- a) Very satisfied
- b) Satisfied
- c) Neutral
- d) Dissatisfied
- e) Very Dissatisfied

14) Please tell us why you plan on continuing or why you don't plan on continuing to be a PDL.

15) Please tell us in your opinion what major change OMS should make in the PDL program

16) In your own words, please tell us what else you think is important that we reflect upon as we continue to build and refine the Professional Development Leaders Program

Demographic Data?

Number of years teaching _____

Number of years teaching in CPS _____
Types of Certifications/Endorsements _____
Grade Level Teaching _____
Current curriculum used _____
Number of years as a PDL _____
Number of PD sessions led as a PDL _____
Other formal leadership positions held _____

PDL Final Report – APPENDIX C

Chicago Math & Science Initiative Professional Development Leadership Plan
2008-2009
Science Side

Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
Professional development leader demonstrates standards based teaching practices.	6 hours	Classroom observation Grade level discussions Area collaboration	Student work and reflection about science lessons Observation with use of the Classroom Observation Guide Agendas from grade level discussions around specific science lesson, student learning and teaching strategies
Professional development leader demonstrates mastery of science content.	12 hours	Facilitates professional development session Participates in Teacher Leadership Institute Endorsement in science National Board Certification	Attendance verification Science endorsement University coursework National Board Certification

Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
Professional development leader demonstrates mastery of pedagogy.	12 hours	Facilitates professional development session Participates in Teacher Leadership Institute Endorsement in science National Board Certification	Attendance verification Science endorsement University coursework National Board Certification

Professional development leader participates in extended learning opportunities.	24 hours	Enrollment in university coursework Present at a state or national convention Facilitate area professional development Participate in national board certification process	Attendance verification Science endorsement University coursework National Board Certification
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Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
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<p>Professional development leader participates in the CMSI Leadership Academy.</p>	<p>12 hours</p>	<p>Present sample lesson</p> <p>Participates in curriculum focused discussions</p> <p>Identify current research on best practices in science</p>	<p>Attendance verification</p> <p>Evaluation forms</p>
<p>Professional development leader supports/provides professional development during the 2008 -2009 school year.</p>	<p>36 hours *K-5</p> <p>51 hours *6-8</p> <p>*Note: Hours vary depending upon grade level</p>	<p>Co plans and plans professional development sessions</p> <p>Co presents professional development sessions</p> <p>Observation of professional development sessions</p>	<p>Professional development planning matrix</p> <p>Self reflection form</p> <p>Professional development summary</p> <p>Evaluation forms</p>

Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
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Professional development leader understands adult learning.	6 hours	Leads grade level discussion around specific science lesson, student learning and teaching strategies Leads CMSI professional development session	Professional development summary Evaluation forms Self reflection form
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Chicago Math & Science Initiative Professional Development Plan
 2008-2009
 Math Side

Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
Professional development leader demonstrates standards based teaching practices.	6 hours	Be observed teaching specific lesson by an OMS facilitator <ul style="list-style-type: none"> • Engage in pre and post conference with PDL coach of facilitator • Reflect on the lesson • Engage in analysis of student work • Agree to videotaping of lesson (Optional) 	Observation tool

Professional development leader demonstrates mastery of mathematics content and pedagogy.	54 hours	Attend and participate in grade level professional development related to specific instructional materials Complete a reflection for each module/unit	PD attendance data
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Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
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<p>Demonstrates a deep understanding of grade level/s or units within specific instructional materials</p>	<p>54 hours</p>	<p>Attend and participate in grade level professional development related to specific instructional materials</p> <p>Completes reflection for each module/unit</p>	<p>PD attendance data</p>
<p>Professional development leader demonstrates leadership capacity in mathematics education.</p>	<p>Time varies</p>	<p>Professional development leader participates in extended learning opportunities</p> <p>Algebra qualified</p> <p>National Board Certification in math</p> <p>Degree in mathematics education</p> <p>Analysis of student work in PDL academy</p> <p>Middle school math endorsement</p> <p>Facilitates professional development at area level</p> <p>Mentors pre-service teachers</p> <p>Presents at state or national conferences</p>	<p>Agenda</p> <p>Letter</p> <p>Artifact of presentation</p>

Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
Professional development leader will plan and facilitate high-quality professional development	12 hours 12 hours planning 12 hours facilitating	Observe PD session with particular attention to the moves of the facilitator and the outline Co-plan PD with experienced leader Reflect on summer PD with mentor Participate in debriefing of PD session Professional development leader supports/provides professional development during the 2008-2009 school year	Reflective observation tool Planning hours Evaluation forms Reflective tools

Professional development leader understands adult learning.	12 hours	Attend leadership academy Engage in discussion and analysis of proficient teaching of mathematics Plan and implement PD workshop mini-session	PDL Academy attendance data
	6 hours	Analyze student work and provide feedback to students with GPSA Analyze assessment sources within the instructional materials and connections to standardized assessments	PDL Academy reflections
	12 hours planning 12 hours facilitating	Observe PD session with particular attention to the moves of the facilitator and the outline	Reflective observation tool
		Co-plan professional development with experienced leader	Artifact from presentation
	Time varies	Co-facilitate a professional development session for new users with an experienced leader	

Goal	Minimum Time Requirement	Sample Activities	Sources of Evidence
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Professional development leader understands adult learning.	6 hours	Leads grade level discussion around specific science lesson, student learning and teaching strategies Leads CMSI professional development session	Professional development summary Evaluation forms Self reflection form
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