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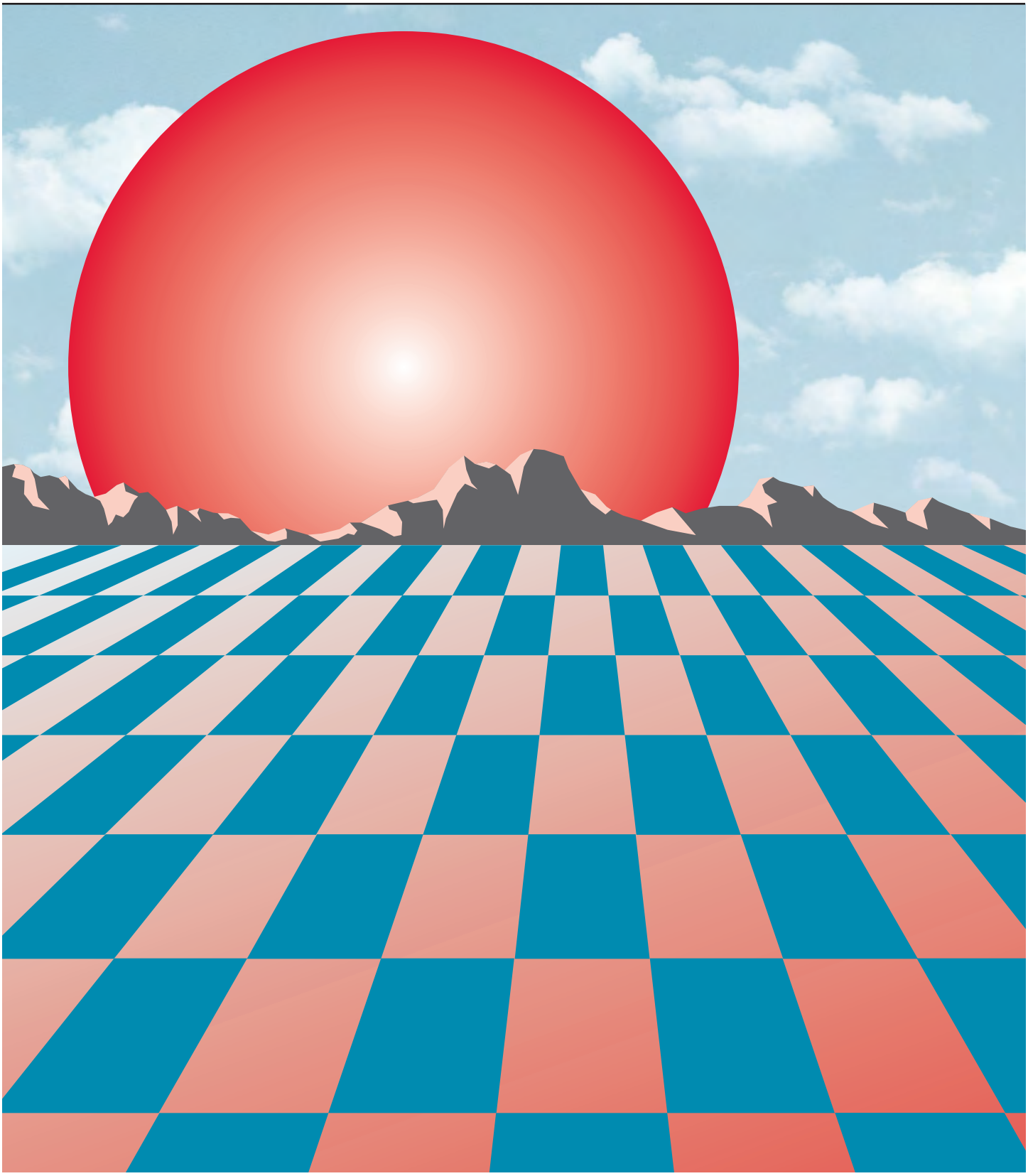

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Building Coaching Capacity Through Lesson Study

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It seems that policy-makers and administrators are convinced that professional development is the key to student achievement and that content coaching is an effective method of professional development. In their haste to get coaching into schools, districts often do not build the necessary foundation that will insure coaches' success — criteria for which also remains undefined. There is no consensus about the role and responsibilities of coaches or how best to utilize them. (We are using the term coach broadly to mean any job title that includes assisting teachers with improving math instruction as part of their responsibilities. Though principals may do some coaching, we are not thinking of principals as coaches for this article.) For example, New York City, San Diego, Los Angeles, Baltimore, and other large urban districts hired large numbers of instructional coaches at some point in time over the past few years in an effort to upgrade instruction and improve student achievement. The resulting dilemma in these cities was that a host of people with varying points of view about math education, little or no coaching experience, varying degrees of familiarity with local curriculum materials, were disseminated among schools with little direction or clarity. They were assigned to schools with very different contexts and cultures and in which there was little precedent for effectively employing instructional coaches.

In general, both in New York City and across the country, coaches were teachers, teacher leaders, math coordinators or department chairs last year and "coaches" this year. In our experience, we have observed the following:

- The role and skill set of coaches is rarely defined in the early stages, and is different from coordinator, department chair or classroom teacher
- First year coaches often have difficulty making the transition from their old job description to their new amorphous role
- Unskilled coaches are often dropped into a culture that is nebulous about the purpose of coaches and what coaches are supposed to know and be able to do
- Coaches rarely receive ample training, support, or direction
- Coaches tend to be extremely isolated from one another thus coaching is even more idiosyncratic than teaching
- Coaches are rarely part of a team that has a clear mission, change theory and coherent strategy
- Coaches are rarely fully embraced members of the school communities to which they are assigned.

These are the circumstances we found ourselves facing in New York City's Region 9 in 2003. Our challenge was to build a competent coaching force with a coherent vision and skill set to improve mathematics instruction across 179 schools K-12 as quickly as possible. This article examines one possible and powerful vehicle that may address the issue of "on the job " coach development — lesson study. We posit that districts need to build into coaches' schedules the processes, models, and scaffolding needed for cultivating the capacities and expertise of coaches. Effective content coaching that results in improved instruction and learning involves, among other things, skillful lesson and unit planning among professionals focused on learning — theirs and their students. In other words, one of the main tasks of coaches is to assist teachers to deepen and refine their lesson designs and gather evidence of student understanding or lack thereof. Lesson Study is a model for thoughtful, collaborative lesson design and analysis. This work is at

the heart of content coaching. Our hypothesis is that by engaging coaches in the process of lesson study we can help them develop part of the skill set necessary for effective content coaching and build a coherent understanding of the kinds of instructional practices worth disseminating across a district.

What we have learned, in Region 9 and in work across the country, is that it is the role of the district to provide supportive structures and processes to allow coaches to develop the skill set necessary to be successful. Coaches are poised to become catalysts for building or upgrading the level of professional learning communities within and across schools. (West 2005) Our concern is that coaching, which holds enormous potential for the profession, will go the way of so many initiatives without more thoughtfully, strategically and systematically cultivated development.

What do we mean by lesson study?

The work described in this article is based on what the authors understand about Japanese lesson study and their experiments with Americanized versions of the process. We are not advocating a strict adherence to the formal Japanese model and have taken many liberties with it.

Lesson study in our view is a process that has the following characteristics:

- Involves a group of professionals collaboratively planning a lesson or series of lessons based on some common goals or questions or set of principles.
- Is inquiry based and focuses on student learning. A group of professionals study a common goal or question and assess how the goal progresses by clinically examining their own practice in light of evidence of students' learning.
- Utilizes curriculum materials that are available or adopted by the district. The curriculum materials are seen as tools and the lessons described in these materials are the starting point for building specific lesson plans appropriate for students.
- Includes the engagement of participants in actually "doing the math" contained within the lesson being planned.
- Provides the participants with common tools for planning the lesson. In our case, we used some version of The Guide to Core Issues in Lesson Design, (West and Staub, 2003). (see Figure 1)
- Involves the public teaching of the planned lesson by one of the participants. The planning team and other invited guests observe the lesson.
- Involves focused observation by planning team and guests based on an observation guide or an issue for which the planning team wishes to gather data or evidence.
- Includes a formal debriefing of the lesson using an agreed upon protocol with the assistance of a skilled facilitator.
- Is an iterative process in which the lesson is refined, retaught and debriefed a second time.
- Ideally, happens on a fairly regular basis over the course of a year or several years
- Requires that at least one person present deeply and flexibly understands the mathematics under discussion.

Framing the Context

In the new structure implemented in New York City in July 2003, community school districts with diverse needs, resources and beliefs about teaching and learning were joined into regions. As part of the reorganization, the city created "coach" positions, with the intent that each of its 1200 plus schools would have both a math and literacy coach to support teachers in improving instruction. The new position was announced in late spring and the hiring was expected to commence over the summer and coaches assigned to schools by September. The role was being invented as the hiring was taking place. Region 9 hired 70 math coaches, less than half the number of coaches the city intended. Within the Region 9 group of coaches there was a wide range of skills and perspectives on teaching and learning. Many of the coaches hired were not familiar with the new curricula, nor were they familiar with lesson study and content-focused coaching (except for the few that were former teacher leaders and coaches in Community School District 2).

Region 9 has about 179 schools K-12 and includes much of Manhattan and part of the South Bronx. It contains the former Community School Districts (CSD) 1, 2, (a district known nationally for its innovative and effective professional development) 4 and 7. Of the four CSD within Region 9, District 2 was the only district to have a coaching model in place prior to reorganization. Content-focused coaching, a research based instructional coaching model, was developed by Lucy West and Fritz Staub in CSD 2,

FIGURE 1

Name of Study Lesson: **Grade Level:**

What is the math in this lesson?

- What is overall goal?
- What are specific concepts?
- Are there specific strategies to be developed?
- What skills are addressed?

Focus on Students:

- What relevant concepts have already been explored by the class?
- What strategies does this lesson build on?
- What familiar or relevant contexts could you draw on in relation to this concept?
- How does this lesson engage students in thinking and activities that move toward the goals stated?
- What misconceptions or difficulties do you predict children may have?
- What support or interventions can you provide?
- In what ways can you provide extensions or challenges?

Implementation of Lesson:

- How will you introduce or present the problem/lesson?
- How will students be grouped and why?
- How will you make materials available to students?
- What models or visuals can you use?
- In what ways will students make their thinking and learning public?
- How will you insure that students are talking and listening to each other about important mathematics?
- How will insure that students can clarify, highlight and grapple with one another's ideas?

Reflection/Evaluation:

- What will evidence of children's understanding look and sound like?

Based on Content Focused Coaching *by Lucy West and Fritz Staub*

with the support of a teacher enhancement NSF grant and in conjunction with the Institute for Learning, University of Pittsburgh.

Under the direction of Lucy West, District 2 also had more than four years of experience utilizing some version of lesson study with teacher leaders K-12. District 2 had experimented with Collaboration Sites (West and Curcio) in the elementary schools and with lesson study in the middle and high schools. Collaboration Sites involved bringing teams of teachers to a school in which a few teachers, teacher leaders and coaches would open their classes to their colleagues from across the district. These sessions involved sharing the lesson plans prior to observation; having an observation focus; debriefing the lesson and analyzing student work after the lesson. Collaboration Sites resemble the "open house" aspects of traditional Lesson Study. (Lewis)

In our middle and high schools we worked with Clea Fernandez and Makota Yasshido from Columbia University's Lesson Study project for two years and designed lesson study that more closely resembled traditional Japanese Lesson study with our secondary teacher leaders and coaches. The work involved finding a "common goal" and gathering evidence of where we were in relation to that goal; collaborative lesson planning using the Connected Mathematics Project and Mathematics: Modeling Our World curriculum materials and then open house lessons that were debriefed, refined and retaught. We did two cycles of lesson study a year for each group of involved teacher leaders and coaches.

Returning to the case of Region 9, initial visits to schools, early coach meetings, and research (Stigler and Hiebert, 2004; Ball and Bass, 2000, 2004; Hill, Rowan & Ball, 2005; Lewis, Perry and Hurd, 2004), revealed some very common issues across the region in terms of mathematics teaching and learning. Foremost, on the part of some coaches (and many teachers), was a striking lack of conceptual understanding of the mathematics they teach and a parallel lack of knowledge of children's development of mathematical ideas. For example, elementary level coaches spent several sessions examining the properties of whole number operation, trying to understand operations as more than procedures. Without these two elements, coaches are greatly hindered in their ability to support classroom teachers in improving instruction and learning. Quite a few coaches (and many teachers) were not even aware that it is possible to truly engage with ideas in a math class, never having had the opportunity to do so themselves. Another issue was the discrepancies seen in the depth of lesson and unit planning by both coaches and teachers.

The authors discovered that lesson study could be a more appropriate professional learning vehicle initially for coaches and teacher leaders than for teachers at large. This finding is in line with Jim Stiegler's remarks at NCSM in 2005 in which he shared his experience that even when given substantial chunks of time to plan lessons in detail, American teachers often complete their planning process in about half an hour. They report that they do not know what else to consider in their designs. Without outside expertise, they do not know how to deepen and extend their thinking. This finding is in line with Elmore's conclusion that at different stages in a school improvement process it is necessary to infuse new information into the community. (Elmore) In many settings, educators have not had the professional learning opportunities that would develop the skill set needed to successfully engage in a fruitful lesson study and often work in contexts in which collaboration is not yet part of the culture. Lesson study has proven to be a useful process when there is enough skill and expertise in the circle of professionals engaging in the process. It is less successful when participants are unskilled in planning, have fragile knowledge of the content, are not prone to "kidwatching," have limited pedagogical repertoires and are not used to engaging in professional dialogue. Thus, if a cadre of coaches could be cultivated in any given district who develop the expertise to engage in productive lesson study, they, in turn, could begin to engage the teachers with whom they work in modified, site-based versions of lesson study, combined with coaching. This is one way to build professional learning communities focused on the instructional core processes of teaching and learning and sustain capacity over the long haul.

Professional Development Plan

Returning to our experience in Region 9, the professional development plan was designed to address the observed lack of a common basis for approaching the study of teaching and learning and issues of content and pedagogical knowledge. This plan was, in turn, informed by our experience in CSD 2 in which we had cultivated a cadre of sixteen skilled coaches and 75 teacher leaders over a period of five years.

One crucial element of the Region 9 plan was lesson study. The regional instructional team in math met with coaches twice a month for a half a day at the beginning of the year. Given the scope and scale of the work to be done, in December, the meetings became full day. At those meetings, much groundwork was laid for participation in lesson study. For example, coaches (and teachers) needed help in learning how to observe lessons. By incorporating coursework such as Developing Mathematical Ideas (EDC) and Fostering Algebraic Thinking (EDC) into the meetings, the regional team was able to engage the coaches in conversations around content, pedagogy and children's thinking and to hone observation skills. Coach meetings also provided opportunities for coaches to examine and analyze the curricula used in Region 9 schools and to learn about the format and goals of lesson study.

After the first round of lesson study in both elementary and secondary schools had taken place in Region 9, the regional instructional team saw the need for a conversation with all coaches, focused on the question: "What are the elements of a good lesson?" One of the difficulties in the first round was that in the planning and debriefing not enough attention was paid to the specific mathematical content in the lesson. We wanted to make explicit the connection of the processes of lesson study to their work as coaches. We wondered, "How can coaches take their experience in lesson study and use it in their work as coaches?" Focusing conversations on the specific mathematical content in the planning of lessons in schools is the job of the coach. That conversation was critical to develop a shared understanding of what we mean by "good" teaching and planning. In addition, the conversation was grounded by

the use of a common planning tool (see insert) which encourages more specificity and depth in defining mathematics content in terms of concepts, strategies and skills, than appears to be the habit of many of the coaches and teachers we've encountered. The planning tool is an adaptation of the work of Staub and West, A Guide to Core Issues in Lesson Design.

In Region 9, two cycles of lesson study at each level — elementary and secondary — were conducted as part of the professional development plan in year one. In the first cycle of lesson study, small groups of coaches, working with a lead coach experienced in lesson study, planned a study lesson. A key element of the planning, not generally practiced in Japanese lesson study, was that the coaches actually did the activity and analyzed the specific mathematics to be taught. This engagement in the mathematics led to discussions about key mathematical concepts and the web of ideas connected to the concept to be taught. These rich sessions allowed coaches to gain a broader knowledge of both the content and possible pedagogical strategies to help students learn that content.

The lead coaches then taught the lessons in classrooms in which they worked with teachers. The classroom teachers, along with other elementary and secondary coaches, were observers and participants in the debriefing and adjustment of the lesson. This gentle introduction convinced several newer coaches to take a lead role in lesson study in the second cycle. Observation provided coaches with opportunities to not only examine teaching but also student learning and engagement with mathematics at different grade levels. For example, one secondary coach, with some surprise, was particularly intrigued by the elementary lesson study he observed which focused on algebraic thinking using a "function machine." This experience demystified his preconceived notions about what mathematics is taught in elementary school.

In this first cycle of lesson study, both lessons took place in the same day, one in the morning and one in the afternoon, with an extended "working lunch" for debriefing and adjustment of the lesson. This design has both benefits and drawbacks. One benefit, which is extremely important in parts of the region where substitute teachers are hard to find, is that it is possible to reschedule the day to require little extra coverage. Having to do so for only one day instead of the customary two days minimizes the disruption to schedules of both participating teachers and their colleagues at other grade levels. It also minimizes the impact on other schools since observers are out for just one day. A drawback is that the time constraint allows only small changes to the lesson. The interesting thing is that teachers saw how even a small, thoughtful adjustment — in pacing, visuals, questioning or focus — could have a major influence on the effectiveness of the lesson.

We found it best to work with the adopted curricula materials as the foundation for study lessons rather than to write completely new lessons. By using published curriculum materials teachers and coaches recognize the relevance to what they do every day and it allows for a slightly more expeditious planning cycle. If teachers use the curriculum materials they generally work with as their starting place and work to refine and enhance the lessons based on what they know about the students in their class and the collective wisdom of the teaching community, the lessons are richer and more targeted (see planning guide). This is generally a new way of thinking and engaging with curriculum materials for the many teachers who see curriculum materials as a script to be followed. In fact, West and Staub take the position Content-Focused Coaching represents a profound change — from teaching as *mechanically implementing curriculum* to teaching as *mindfully making use of curriculum.* (p. 5)

How does lesson study help coaches become skillful agents of change?

Lesson study was a powerful experience for the coaches. Through their experience with lesson study, Region 9 coaches developed a deeper understanding of what is required to plan and teach a successful lesson. The success of the lesson was now determined by evidence of student outcomes and understanding, not by pacing, use of particular materials, use of technology or styles of teaching such as cooperative learning or other elements of a lesson. Lesson study practice among coaches (quotes are from reflections on lesson study by participants):

- **developed stronger planning habits,**

"Maybe the most important idea is the collaborative planning. It gives me a deeper sense of math which I can carry to the students."

"I've noticed that lesson study invites teachers to think deeply and intentionally about their choices."

• **deepened content and pedagogical knowledge**

"I made a big shift from teacher-centered teaching to learning how to question students so they come up with the ideas."

"I am relearning the math. The more we work with it and talk about it the more I discover what I don't know."

"My personal growth is so important. Now my sixth grade class can work in groups, have discussions and work together The shift from apathy to 'I'm interested in this' is wonderful to see."

• **enhanced coaching sessions with teachers.**

"Now I analyze the teachers I work with form a different view. When I give suggestions, teachers try them. They are now stepping back and allowing kids to work. Everything I do here I use in schools and the teachers love it."

• **helped coaches and teachers to develop a shared belief on what good math instruction should be**

"By having others present to view the lesson (not the teacher) we gain insight about choices we make pedagogically. It's a privilege to get feedback in this way, where it's not about judgment."

"My students have started to develop a habit of thinking beyond procedure and have more of those 'why is that so' questions for me. It is amazing how they are taking it in and understanding. "

• **created a sense of community among a wide range of participants.**

""I learned that working on a lesson as a group is a lot more valuable and insightful than working alone."

"I have always enjoyed working with people. I love when we come back and reflect on our lesson and refine it, and re-do."

"Conversations build relationships and relationships can yield change."

Coaches need a robust and flexible understanding of the mathematics to be taught and a large repertoire of pedagogical content knowledge to make the mathematics accessible to students and engaging to colleagues. Lesson study directly addresses these two components of what coaches need to know and be able to do.

One profound impact of participation in lesson study was, as one coach put it, that in working with teachers, both coaches and teachers were "thinking more comprehensively about the choices they make that best support student learning." Attention is paid to each specific component of a lesson (introduction; context of the task; visuals, handouts; support for particular students; anticipated student responses and misconceptions; questioning; grouping; the share; pacing) during the process and some aspect resonates with each participant/observer.

"It brings to light questions we need to ask ourselves every day — why am I choosing these materials? Why did I pair the students? What do I expect the students to do or say?"

In Region 9, the level of insight and the aspects to which participants could and did attend seemed to correlate to the level of experience in both professional development opportunities and the degree to which they reflected on their practice. For coaches and teachers brand new to the idea of studying teaching, lesson study offered very concrete and relevant insights, ones which can have an immediate and profound impact on classrooms of planning group members and observers. For example, for teachers in one school it was a concern that high expectations had been set by the lesson study group and a revelation that the students were capable of meeting those expectations. For others the seemingly basic tenet that lessons can be easily differentiated to allow entry for all students was an exciting discovery and one they were eager to attempt in their own classrooms.

"It taught me to be more mindful of the different levels of learners in my class."

And, not surprisingly, teachers (including secondary teachers) remarked on learning new mathematics or making connections and gaining insights into math relationships during the process of lesson study.

"What I've realized is that while we [secondary math coaches/teachers] have math content, we are learning different ways to teach math. We are starting to teach investigations. We are experiencing a process."

Coaches particularly found the debriefing protocol helped sharpen their own facilitation and communication skills — make it or break it skills — when working with teachers. One coach who facilitated an elementary school lesson study team shared that it wasn't easy to get teachers with different philosophies to agree on an overarching goal. This process involved demystifying assumptions, the willingness to negotiate and compromise and to examine one's own belief and practice collegially. She indicated that the process had helped her to think about what it would take to build a professional learning community in her school.

A change for the second cycle of lesson study in Region 9 at each level was further involvement of the classroom teachers. Rather than have the coaches meet at a regional site to plan, the groups spread out to the sites at which lesson study would take place. Thus coaches planned not only with the teachers in whose classrooms the lessons would be taught, but also with colleagues at the grade level and any instructional support staff who worked in those classrooms. The impact of this change was far-reaching. Because of the involvement of a core group at the school, coaches saw small cultural changes. Teachers were more willing and eager to plan collaboratively. It was after this second cycle that a few of the schools conducted their own in-house study lesson. The structure of the lesson study process had helped to shape a more collaborative atmosphere in these schools.

Coaches play a key role in creating an environment for risk taking and professional rigor to thrive. And lesson study, with its stress on professional community, paired with content coaching focused on developing mathematical knowledge, a large repertoire of pedagogical content knowledge, and evidence based lesson design, is an excellent vehicle to empower both coaches and teachers, and to develop shared beliefs about teaching and learning.

What foundation is needed for coaches to successfully, systemically improve teaching and learning in schools?

Assuming that our analysis of the present general picture of coaching is fairly accurate, namely, unskilled, inexperienced, coaches (who may be masterful teachers) are being hired by districts in which there is little clarity regarding the role and skill set of the coach, we propose that lesson study for and by coaches is one of a number of long and short term strategies which could be employed to ensure sustainable success. Lesson study encourages the formation of a professional learning community of coaches. This community of coaches is necessary as coaching is even more isolating and idiosyncratic than teaching.

Coaching flourishes in a community in which practitioners are enthusiastically studying the craft of teaching and using evidence of student learning as the main criterion for success. Therefore, when coaches do meet, they need to focus on the work of planning, teaching and assessing (or reflecting), which are the core activities of lesson study. When there is a shared belief that teaching is complex yet learnable and that there is a knowledge base about teaching that might inform the work, coaches become instrumental in propagating research based instructional practices, such as lesson study, and focused, facilitated classroom discourse across a school or district.

We found that lesson study formats *combined* with coaching experiences produced more rigorous lessons and greater professional growth since the growth gained during the study lesson, by *both* teachers and coaches, is sustained and deepened through ongoing coaching. Lesson study, combined with instructional coaching, is a way to organically de-privatize teaching and create a professional community that monitors itself as it upgrades the practice of teaching. Moving from the privatization of teaching to making teaching a public practice is one of the major strategies used to develop professional learning communities within and across schools, which in turn is what coaches need to be cultivating — professional learning communities focused on the core instructional practices of planning, enacting and assessing lessons. Teachers and coaches report over and over again that collaborative planning coupled with watching others teach and then reflecting on the lesson is by far the most helpful professional learning experience for them. Lesson study, with its protocols and emphasis on collaborative lesson design and evidence-based learning, offers a relatively safe and structured way

in which to move toward public teaching. Lesson study, combined with coaching, thus provides a means for building instructional and curricular coherence, often lacking, across a school or district.

Coaching has the potential to upgrade the teaching profession in unprecedented ways because it is a model of professional learning that is centered around the core of instructional practice, site based, ongoing, and by its very nature builds professional learning communities. Coaching is in its infancy and it is proliferating rapidly. We have a wonderful opportunity to shape the role of the coach into one that profoundly impacts the nature of the teaching profession, as we presently know it. Coaches can be catalysts for teaching to take its place among the most honored professions as a result of an upgrade in the professional behaviors and skill level of its practitioners. When done well, instructional coaching not only leaves no child behind, it empowers adults and students alike to reach new heights. It is crucial that the support we hope to give to students and teachers through coaching is also provided to the coaches. Lesson study conducted by a community of coaches is one way to provide support.

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