



# Instructional Coaching in Mathematics: Researchers and Practitioners Learning from Each Other

A Teacher Professional Continuum Conference

Boston, Massachusetts  
April 22-24, 2007

## Conference Report

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**Instructional Coaching in Mathematics:  
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Loretta Heuer, PI**

*Instructional Coaching in Mathematics: Researchers and Practitioners Learning from Each Other* was a three-day conference held in Boston in April 2007. Funded by the National Science Foundation and sponsored by Education Development Center's Division of Mathematics Learning and Teaching, the conference was designed to bring together three audiences with an interest in instructional coaching in mathematics: researchers, coaches, and staff developers of coaches.

**One Conference, Three Audiences**

One major goal of the conference was to make participants aware of the wide variety of coaching models and strategies being used in K-12 classrooms nationwide. To do this, we needed as presenters a slate of researchers that represented this variety and range. A second major goal was to tap into the experience that attendees brought to the conference so that their voices would be part of the conversation. We did this through issue-focused panels where participants shared their experience and expertise. Third and finally, we recognized that there are issues of scale with regard to districts that employ instructional coaches. We wanted as attendees not only coaches from larger districts with well-developed training programs (and professional development budgets that could fund several of their coaches' attendance), but also coaches from small and rural districts, districts that may have only one mathematics coach who, because of funding issues and geographic location, has had limited opportunities for training in the skills needed by an instructional coach. To this end we set aside seats for, and actively sought out, coaches from small, economically struggling, and/or rural districts for grant-sponsored attendance at the conference.

Happily, we were successful in achieving all three of our participant goals.

**Our Presenters: Drawing on Research**

Nowadays it is common to talk about "research-to-practice," but that is precisely what our presenters brought to this conference. Each presenter not only had a background in research, but also a grounding in the realities of what coaching entails. Not only were they able to speak from a research perspective, but they did so with clear images of what they had seen happening in coaching situations in the field.

While we wanted our all our presenters to emphasize their research-to-practice perspective in their sessions, we also wanted variety within their experience. For the past five years, at annual meetings of the National Council of Teachers of Mathematic (NCTM), the National Council of Supervisors of Mathematics (NCSM) and the National

Staff Development Council (NSDC) the presenters for most sessions on instructional coaching have been from large urban areas with well-developed, well-funded coaching programs. We knew, however, that instructional coaching in mathematics extended beyond these large urban areas. Thus, we sought—and found—presenters who brought a rich diversity to our conference sessions.

In order to create an agenda that would reflect the current state of instructional coaching in mathematics, we sought as presenters researchers who could address:

- Districtwide coaching initiatives
- Statewide coaching initiatives
- Foundation-sponsored coaching initiatives
- Using coaching artifacts
- Online coaching support
- Coaching teams of teachers
- Coaching teachers of English Language Learners
- Coaching within a school's network
- Coaches writing case studies about their coaching experience
- Using video to analyze facilitation skills for staff developers of coaches
- Coaches' conferencing with teachers

Here is the slate of researchers who presented at our conference, along with their affiliations and a few words about the area in which they had instructional coaching expertise. Their biographical sketches may be found at:

<http://www2.edc.org/MLT/conference07/speakers.asp>

- Harold Asturias (Center for Mathematics Excellence and Equity, Lawrence Hall of Science, University of California, Berkeley): coaching teachers of English Language Learners
- Cathy Carroll (WestEd): the use of video to analyze staff developers' facilitation skills
- Ellen Davidson (Simmons College): effective conferencing with teachers
- Mark Driscoll (Center for Leadership and Learning Communities at Education Development Center): using coaching artifacts with coaches of English Language Learners
- Stephanie Feger (Brown University) and Kristine Woleck (New Canaan, CT, Public Schools): coaching in an online environment
- David Foster (Noyce Foundation's Silicon Valley Math Initiative) and Euthecia Hancewicz (former Noyce Foundation coach): a foundation-sponsored coaching program
- Marcia Foster (PBS TeacherLine) and Fran Hurley (Hezel Associates): web-based resources for math coaches
- Jane Gorman (Division of Mathematics Learning and Teaching, Education Development Center): group coaching of Japanese Lesson Study teams
- Loretta Heuer (Center for the Development of Teaching, Education Development Center): differentiated coaching to meet teacher needs, coaches' networking

- John Holton (South Carolina Mathematics and Science Coaching Initiative): a statewide coaching initiative
- Jim Knight (University of Kansas Center for Research on Learning): a districtwide middle grades and secondary coaching initiative in Topeka, KS
- Amy Morse (Center for the Development of Teaching, Education Development Center and the Boston Public Schools) and Polly Wagner (Shutesbury, MA, Public Schools): developing case studies based on the many layers of the coaches' experiences
- Jonathan Supovitz (Graduate School of Education at the University of Pennsylvania; Consortium for Policy Research in Education): co-author of *The Heart of the Matter: The Coaching Model in America's Choice Schools*
- Susan Villani (WestEd's Learning Innovations): a collaborative coaching model

### **Our Panelists: Drawing on Practitioner Expertise**

In addition to putting together a varied and nationally renowned group of presenters for the conference's keynote address and sessions, we wanted to tap into experience and expertise of participants, providing both a venue and a mechanism for sharing their stories and local models with researchers and coaching colleagues. We believed that there were things happening in the field that, going back to our goal of *Researchers and Practitioners Learning from Each Other*, would be of interest to researchers as they were developing questions and lines of inquiry for future studies. Equally important, however, was our belief that what was happening locally could broaden the perspective of coaches who knew how coaching was "done" in their own district but would benefit from a heightened awareness of what was being done elsewhere. We felt that hearing from conference colleagues about other districts' models of coaching, their success stories, and their challenges would leave coaches asking how instructional coaching could be configured or enhanced in their own district.

In order to showcase this diverse nature and range of coaching models we looked at how participants answered a certain question on their registration form: "What do you hope to share with conference participants?" Registrants who indicated that they had something to share were contacted and asked to be on one of the following six panels. Here is a sample letter of invitation:

*As we were putting together our thoughts for the conference and reviewing the participant list we thought of you. Read on... We hope you find the following idea intriguing and will want to participate!*

*The primary goal of the upcoming coaching conference comes at the end of its title, "...Learning from Each Other."*

*When we asked on the registration form what you might like to share, so many of you said the interesting things you're doing, your success stories, your local challenges, and the next steps you're considering.*

*So how do we tap into that rich experience? How can we get those ideas—your ideas—out in the open, so that participants are not only listening to the featured presenters, but to each other?*

*One way—and this comes by way of a request—is to put together informal panels as vehicles for this type of sharing. No slides, no PowerPoints...just conversation.*

*Just three or four participants with a similar focus or scale to their work (large cities, small cities, rural areas, statewide/MSP's) who would talk informally in front of their colleagues.*

*Some things you might want to talk about:*

- *Tell us a little about the districts you serve.*
- *What motivated your districts to initiate math coaching programs?*
- *How do your districts define coaching?*
- *How long have their coaching programs been in effect?*
- *How did those programs get off the ground?*
- *What did you do, in your role, at the beginning?*
- *How has that changed over time? Why did it change?*
- *What do you feel has been successful? How do you define success?*
- *What challenges are you facing?*
- *What are your next steps?*
- *What does your coaches' professional development look like?*
- *What are your hiring and supervisory criteria?*
- *Do you have any materials related to your program that you'd like to share?*

*Surely, you can fill 10 minutes! And then entertain some questions from the audience.*

*Please get back to me—hopefully with an enthusiastic "Yes!"—so that we can put you on the docket.*

It was rewarding that *all* who were invited as panelists responded in the affirmative. How eager they all were to have an opportunity to talk about their work! These panels, which were well attended and highly interactive once the questions started, were truly one of the most exciting parts of the conference. (See the section below on panel sessions for information on the presenters.)

### **Our Participants: A Diverse Palette of Coaching Environments**

For our April conference we sent out registration information on January 30<sup>th</sup> to about 2000 persons on our mailing list, giving them a fairly tight registration period of only two weeks. Because we theorized that instructional coaching in mathematics had reached a critical mass that demanded its own conference, we were not at all surprised that we were oversubscribed well before the registration deadline.

Luckily, we had set aside twenty seats for coaches from small, rural, or economically struggling districts fearing that they could easily be shut out by larger districts that had the resources to support attendance by several coaches. The twenty coaches from districts that were small, geographically isolated, and/or in financial straits were also sponsored within the grant, so we were able to offer them not only a seat, but also both lodging for the two nights of the conference as well as a registration fee waiver. These sponsored guests came from Arkansas, Missouri, Montana, Vermont, and West Virginia.

Not only did these participants have access to a world-class professional development opportunity, but they also had a venue where their voices could be heard. They may have thought of their sponsored attendance as a gift, but their attendance was really a gift to the rest of us who needed to hear about their concerns and consider how small scale solutions to local problems might inform coaching programs in larger districts.

In addition to sponsored guests and other attendees from the above five states, we had participants from 13 other states and one Canadian province:

Arizona, Connecticut, Illinois, Massachusetts, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, Texas, Virginia, Wisconsin, and Saskatchewan

In addition to their geographic diversity, our participants worked in a variety of roles related to instructional coaching. We had hoped that there would be 15:50:35 percent distribution of researchers, coaches and staff developers among those three target audiences. Although we did not put quotas on the number of registrants from each of our three target audiences, for our 116 participants (excluding presenters and staff), the distribution was remarkably close what we had originally considered an ideal mix: 13:49:34 percent with teachers making up the remainder.

The job descriptions of our 116 participants (again, not including presenters and staff) were as follows:

- Researchers and University Faculty: 15
- Coaches: 57
- Persons responsible for Staff Development or Program Oversight: 40
  - Staff Developers: 19
  - Math Facilitator, Coordinator, Specialist, Department Head, Curriculum or Program Director: 10
  - Director of Instructional Technology: 1
  - Senior Administrator or Assistant Superintendent: 2
  - Elementary Principal: 1
  - State Department of Education Personnel: 5
  - Mathematics Director for a Foundation: 2
- Teachers or Public School Teaching Fellow: 4

## **Conference Activities**

The conference included five types of activities:

- A Keynote Address
- 17 Concurrent Sessions
- 6 Interactive Panel Discussions
- 5 Special Interest Groups
- Informal Networking

## **Sunday Evening: Conference Opening and Keynote Address**

- Coaching with Equity and English Learners in Mind—Harold Asturias

*The interplay between language and mathematics learning is complex. English Language Learners (ELLs) draw on their own socio-cultural and linguistic experiences to connect their natural language with the mathematical language required to develop facility with procedures, understand concepts, and solve problems. Yet many teachers lack the instructional support (e.g. instructional materials, professional development, coaching) that they need to teach mathematics to ELLs effectively. Coaches can help teachers gain an insight into the interplay among language development, culture, and mathematics. We will examine some of the equity issues in general, and those related to ELLs in particular, that we must consider when preparing to coach teachers on how to foster ALL students' proficiency in rigorous and coherent mathematics.*

## **Monday and Tuesday: Concurrent Sessions**

As mentioned above, our goal for the concurrent sessions was to showcase the variety of work being done nationwide by researchers and staff developers. However, equally important to us was that each of the presenters should be able to display not only expertise, but also approachability. When introducing presenters, we asked the session presiders to make explicit this issue of accessibility, noting during their introduction that the presenter was not only available during the conference for conversation at breaks and meals, but that he or she was willing to be a resource *after* the conference as well, as someone to contact with questions, for critique and constructive feedback about local programmatic issues, even for support when writing grant proposals about coaching. We believe we chose presenter that could display this generosity, and we hope that attendees will not be shy about contacting presenters for support.

The synopses of concurrent sessions, which are noted below, also can be found on the *Sessions* page of the project website:

<http://www2.edc.org/MLT/conference07/sessions.asp>

1. Coaching: Just What Does it Mean to “Coach” and How Do We Learn to Do it Well?—Amy Morse and Polly Wagner:

*This session will move from a particular case of coaching to broader questions about coaching practice and professional development. We will use a case, from a series of coach-written cases designed for professional development for coaching, to ground our investigation. Through the use of focus questions, participants will work to carefully examine this artifact of coaching for what it can teach us. Through a set of questions and discussions, we will then focus on our own developing understanding of both coaching and the professional development that supports effective coaching.*

- *What ideas about learning do coaches draw from? How are those ideas developed?*
- *What core ideas about mathematics teaching and learning do coaches draw from in their work? How do coaches examine and refine these ideas?*

- *On what does a coach draw the authority to be a teacher in the context of coaching?*
- *What kinds of supports do coaches need in order to do their work effectively?*

*With these questions and ideas in mind, participants will have an opportunity to consider what it takes to examine deeply—and to refine—a coaching practice.*

2. Coaching as Influence: The Case of English Learners Learning Mathematics—Mark Driscoll:

*Effective coaches influence teachers' attitudes, beliefs, and practice. Artifacts like lesson plans, student work, and classroom transcripts can serve coaches in this regard. Drawing from the work of such researchers as Chval and Khisty, this session will explore one important area where coaches can influence teachers, namely, efforts to help English Language Learners (ELLs) improve their learning of mathematics by:*

- *Integrating content and academic language development in classroom instruction.*
- *Attending to cognitive demand in the mathematical work done by all students, but especially by ELLs.*
- *Creating learning environments that use multimodal mathematical communication—speaking, writing, diagramming, etc.—to reinforce the learning of mathematical language.*

*With this framework, this session will use several artifacts of student mathematical thinking, drawn from a context rich in opportunities for learning academic language, to explore how coaches might employ such artifacts to influence teachers of ELLs.*

3. Supporting Instructional Coaching in Mathematics: Investigations Online Seminars—Stephanie Feger and Kristine Woleck:

*Online communities are a promising approach for supporting professional learning in mathematics, especially in schools that are underserved, have limited resources, or are geographically remote. In order to make effective use of online approaches, professional developers need to understand how to design and facilitate social interaction that supports knowledge building. This session will share with participants an overview of and 'lessons learned' from a series of online professional development seminars, 'Investigations Online', designed specifically to support elementary mathematics coaches and teachers. The presenters will provide an overview of two types of seminars that were offered; one focused on coaching teachers and the other on a strategy often used by coaches in working with teachers, looking at student work. We will discuss the design of the seminars and the research studies conducted to investigate how online environments can be used to support professional learning. Participants will engage with artifacts of learning from the seminars, consider the implications of an online environment in the building of a learning community, examine the role and moves of an online facilitator, and discuss options for scaling up or scaling down this online seminar structure for use in one's own district or situation.*

4. The South Carolina Mathematics and Science Coaching Initiative—John Holton

*The South Carolina Mathematics and Science Coaching Initiative (MSCI) began in the 2003-04 school year with 33 mathematics (17) and science (16) coaches. Training and supporting a new cohort of coaches each year since 2003, the MSCI has trained 164*

*coaches, who have worked with 3,700 teachers who teach approximately 95,120 students in grades K-5. Beginning with the 2006-07 school year, the first cohort of coaches (called iCoaches) who work with teachers in grades 6-8, began working in 15 low-performing schools. The presentation will focus on the how and the what of a statewide coaching initiative. In particular, the training and ongoing professional development of the coaches, sustaining the partnership with schools and districts, and how coaches work with the teachers in their schools.*

5. Managing and Addressing Errors in the Classroom—David Foster

*Research has shown that mathematical errors occur in typical classrooms on a regular basis. Math coaches face a dilemma when these situations arise. They have to maintain a trust and respect relationship with the teacher and they have a moral and professional obligation to the students. How does a coach negotiate these situations? What can be done to reduce the possibilities of teacher errors occurring? How is content knowledge addressed in coaching relationships? How is trust developed and maintained over the trials of coaching? Written and video cases will be explored in this session to address the dilemma.*

6. Supporting Teachers' Mathematical Reasoning in Elementary Mathematics Professional Development—Cathy Carroll

*This interactive session will employ video as a tool to analyze and discuss how leaders/coaches develop mathematically rich professional development cultures that foster the development of mathematical reasoning with groups of elementary teachers. Participants will engage in a case experience based on a video taken from an authentic mathematics professional development session. After working on and discussing the mathematics task, participants will view and discuss the video clips with an eye to examining the issues and ideas that emerge. Building from the video discussion, participants will have opportunities to consider implications for their own work in leading professional development. Specifically, they will consider issues related to supporting elementary teachers' mathematical reasoning.*

7. Leadership and Instructional Influence—Jonathan Supovitz

*Formal leadership and influence are not the same thing. Instructional influence does not necessarily come from principals or other formal leaders in schools. In this session we will examine the range and sources of instructional influence in schools – who holds it and why. Using data from a national study of 15 high schools, Dr. Supovitz will examine who teachers report seeking assistance from for different types of instructional support and why teachers report going to those individuals. The research shows that influence is distributed across both informal and formal leaders in schools. In small group discussions, we will explore the implications of this more expansive view of leadership for coaches and formal school leaders.*

8. Developing, Supporting, and Evaluating MSCI: Does Coaching Change Teachers and Improve Student Performance? —John Holton

*The MSCI was developed to address a central issue of standards-based reform: how to support teachers who are required to teach for understanding (Windschitl, 2002). The*

*traditional approaches to teacher learning (e.g., afterschool workshops, teacher professional development days) have largely proved inadequate to the task. A full-time, trained coach has become a catalyst for teacher growth and learning. This presentation will highlight the theory of action on which the initiative has been built, the specific tools developed to support the initiative, the research background and specific findings that address the question of teacher change and student performance, the practical learnings, and how the initiative will evolve.*

9. Preparing Math Coaches through a Collaborative Coaching Model—Susan Villani and Kathy Dunne

*During this interactive session, participants will learn about a content-based collaborative coaching model that is designed to promote teachers' reflection through the use of open-ended questions and data that the person being coached requested be collected. This collaborative model is non-evaluative, non-judgmental, and totally confidential. Participants will have opportunities to learn about the key components of collaborative coaching through observing a coaching conversation, hearing people reflect on the process, and trying some of the skills presented. Elements necessary to effectively prepare math coaches in a collaborative coaching model will be discussed. Tools will be shared to support math coaches in assessing their effectiveness as coaches.*

10. Supporting Teachers' Mathematical Reasoning in Secondary Level Mathematics Professional Development—Cathy Carroll:

*This interactive session will employ video as a tool to analyze and discuss how leaders/coaches develop mathematically rich professional development cultures that foster the development of mathematical reasoning with groups of secondary teachers. Participants will engage in a case experience based on a video taken from an authentic mathematics professional development session. After working on and discussing the mathematics task, participants will view and discuss the video clips with an eye to examining the issues and ideas that emerge. Building from the video discussion, participants will have opportunities to consider implications for their own work in leading professional development. Specifically, they will consider affordances and drawbacks of potential strategies for creating/supporting a mathematically rich environment in their own professional development contexts.*

11. Get Rid of the Tripod: Shifting our Focus to Children's Thinking and to Mathematical Content—Ellen Davidson:

*Imagine videotaping a lesson so that the teacher and coach can collaboratively debrief the lesson afterwards. Where do we focus the camera? What can we learn if it's on a tripod facing the front of the room? What can we learn if the camera follows the teacher as he circulates? What if the camera also visits groups of students working together? What footage will best support a careful examination of the lesson in order for the debrief conversation to delve into practice? In this session we will watch an excerpt of a fifth grade lesson on fractions and follow that with an excerpt from a debriefing conference between the teacher and the mathematics coach. Our focus will be on the interconnections among student thinking, teacher moves, and mathematical content. We will work on developing questions that can collaboratively probe students' thinking with a longer-term agenda of supporting the teacher's generative learning.*

## 12. Instructional Coaching: An Overview—Jim Knight

*For the past eight years, researchers and practitioners at the University of Kansas Center for Research on Learning have been developing and evaluating a model for providing onsite professional learning. The result of this study is the identification of several activities that instructional coaches employ to facilitate teachers' learning new teaching practices. This presentation will provide an overview of the components of coaching—(a) enroll, (b) identify, (c) model, (d) observe, (e) explore, (f) support, and (g) reflect—and introduce the partnership principles that represent the theoretical framework for this approach to coaching.*

## 13. A Case Study of Student-Focused Coaching in Mathematics—David Foster, Euthecia Hancewicz, and Loretta Heuer

*There are a wide variety of coaching models in education. One particular model that focuses on students' understanding and thinking in mathematics has been implemented successfully in both California and Massachusetts. The session will focus on the philosophy, attributes, and techniques of establishing the model, developing relationships, and supporting teachers. The power and legacy of math coaching networks will be discussed as an outgrowth of the model.*

## 14. Supporting Instructional Coaches—Marcia Foster and Fran Hurley

*Instructional coaches are key providers of onsite, job-embedded, continuous professional development for teachers. Although coaches play a vital role in teacher professional development, they don't always have the support and resources needed to be effective. For the past year, PBS TeacherLine and their evaluator, Hezel Associates, have talked to coaches across the country to learn more about their work, challenges, and needs. Attendees will hear key research findings, view the tool PBS TeacherLine is developing to support math and reading coaches, and share their coaching knowledge and experiences.*

## 15. Coaching the Lesson Study Team: New Paradigm or Familiar Coaching Territory? — Jane Gorman

*The worlds of lesson study and coaching are intertwined. They share many common goals, are built on similar visions of effective professional development, and utilize similar forms of dialogue and inquiry. In many districts, the school-based coaches are the first to try lesson study, and then may use it as one strategy to support teachers in improving instruction. Some lesson study teams have an outside "lesson-study coach", who helps the team develop understanding of lesson study, but also provides expertise in content and pedagogy.*

*In this session, we will look for the similarities and differences in the two worlds. We will share some of the EDC experience coaching lesson study teams, how our model for coaching has emerged over the past five years, what we see as some of the major challenges lesson study coaches face, and what the role of "knowledgeable other" is in lesson study. The session will provide participants with opportunities to discuss questions such as: Is lesson study "group-coaching" or a completely different paradigm? Is the coach a participant or leader in lesson study? What new knowledge, skills, or ways of*

*thinking might a coach need to work in a lesson study setting? How does lesson study act as professional development for the coach? Please come to the session ready to share your ideas, questions, and experience in the territory where lesson study and coaching meet.*

## 16. Instructional Coaching for Classroom Management—Jim Knight

*Instructional coaches have the opportunity to share a wide-variety of teaching practices with teachers. However, if they are unprepared to assist teachers with classroom management issues, they may hit a roadblock that is difficult to get beyond. To provide more support in this area, researchers at the University of Kansas Center for Research on Learning have partnered with Safe and Civil Schools to create tools that coaches can use to increase time on task, opportunities to respond, praise, and other teaching practices that have been shown to improve classroom climate. This presentation will provide an overview of these coaching classroom management tools, provide an opportunity for participants to practice using the tools while observing videos of teachers, and include an overview of the research we've conducted on coaches use of these tools.*

## 17. Differentiated Coaching—Loretta Heuer

*Just as teachers need to differentiate instruction to respond to the needs of their students, mathematics coaches need to identify and respond to the needs of the teachers with whom they work. Whether the goal is deepening teacher content knowledge or developing instructional practice, coaches need a toolkit of strategies with which to support teachers as individuals. This session will introduce a model for differentiating instructional coaching and then apply the model to coaching scenarios drawn from classroom visits.*

### **Monday and Tuesday: Interactive Panel Discussions**

1. Coaching in Large Urban Areas: NYC, Chicago, Dallas, Milwaukee
  - Kerry Cunningham and Suzanne Werner, Regional Instructional Specialists, Region 9, New York City (NY) Board of Education
  - Mary Jo Tavormina, Elementary Mathematics Manager, Chicago (IL) Public Schools
  - Wanda Cullins, Ercleo Resos Esquejo, Karen Hasty, Brenda Kirby, and Esther Sarver; Middle School Instructional Coaches, Dallas (TX) Independent School District
  - Sharonda Harris, Mathematics Teaching Specialist and Laura Maly, Mathematics Instructional Coach, Milwaukee (WI) Public Schools
2. Coaching in Smaller Urban Areas: Bridgeport, CT; Billings, MT; Fitchburg/Leominster, MA
  - Ricardo Rosa, Director of Mathematics, Bridgeport (CT) Public Schools
  - Gail Surwill, K-12 Director of Curriculum and Instruction, Billings (MT) Public Schools
  - Donna Sorilla, Math Support Specialist, Fitchburg/Leominster (MA) Public Schools
3. Coaching in Rural Areas: Montana, West Virginia, Vermont, Arkansas
  - Jean Howard, Executive Director, Montana Learning Center, Helena, MT
  - Faye Jackson, K-12 Mathematics Coach, Star City (AR) Public Schools
  - Jane Merendino, Mathematics Coach, Fairmont State (WV) University

4. State & MSP Coaching Initiatives: Massachusetts, Arkansas, Missouri
  - *Life LeGeros, Director of Targeted Assistance in Mathematics and David Parker, Mathematics Specialist, Massachusetts Department of Education*
  - *Bill Nielsen, PreK-12 Mathematics Program Support Manager and Instructional Specialist, Arkansas Department of Education*
  - *Karen Brannon, MSP Mathematics Program Coordinator, Washington University, St. Louis, MO*
5. Coaching & Teachers of English Language Learners: Lowell, MA; Navajo County, AZ; Cambridge, MA
  - *Claire Abrams, K-12 Mathematics Coordinator and Joyce Tapper-Benham, Professional Development Coordinator Lowell (MA) Public Schools*
  - *Nancy McLaughlin, K-12 Mathematics Curriculum Coordinator, Cambridge (MA) Public Schools*
  - *Pamela Van Arsdale, County Programs Director and Michele Lehr, High School Teacher and County Mathematics Coach, Navajo County, AZ*
6. Coaching Models: Math in the City, NY; Missouri Mathematics Academy; Phoenix, AZ; Virginia Staff Development Council, Richmond, VA
  - *Virginia Staff Development Council's Coaches Academy: Sherry Gardner, Mathematics Coach and Title I Mathematics Teacher, Richmond City (VA) Public Schools.*
  - *Math in the City: Antonia Cameron, Co-Director, Math in the City, City University of New York*
  - *Missouri Mathematics Academy: Ann McCoy, Mathematics Education Instructor, University of Central Missouri*
  - *Group Coaching: Team Planning and Lesson Study: Marge Scanlon, Mathematics Coach and Shakun Tulpule, Teacher, Phoenix (AZ) Elementary Schools*

As mentioned earlier, these were well attended and quite interactive once the question-and-answer period started. What was striking about the panels was panelists' frankness about the challenges they were facing. This was not a self-congratulatory experience, but one in which local success stories were balanced with the challenges with which the panelists' districts were struggling.

It was interesting to hear the informal conversations that occurred during and after these sessions. It was as if participants had arrived at the conference assuming that they were the only ones struggling, that everyone else "had it all together" and were experts who were working with coaching programs that were finished products. Instead, participants discovered that every district's coaching program is a work in progress, that no one possesses instructional coaching's "silver bullet." Participants expressed in those post-panel conversations that they no longer felt that they were alone in facing challenges, and that the panels helped refine their image of coaching as a work in progress as they discovered that, regardless of how long a district's coaching program had existed, its components were still being analyzed and fine-tuned.

### **Monday: Special Interest Groups**

Participants' roles were the focus of the Special Interest Groups (SIGs). Thinking that people with similar responsibilities would benefit from meeting and conversing with each other about common topics and concerns, we scheduled the following five DIGs based on the job descriptions attendees had noted on their registration form.

1. K-8 Coaches
2. 6-12 Coaches
3. Professional Development of Coaches
4. Central Office Staff and Oversight of Coaching Programs
5. Researchers

The goal of these Special Interest Groups was twofold. First, we wanted to give participants the opportunity to meet and network with others who shared their job responsibilities and common job related challenges. Second, on a broader scale, we wanted each SIG to chart its issues of concern in a format that could be used during the conference's closing session to share their job-related concerns with those working in other coaching-related roles. Each SIG had a facilitator who asked participants to introduce themselves, work as partners, and then share out to the larger group. The agenda was as follows:

- Share one issue, challenge, or concern with your partner
- Coach your partner regarding this issue, challenge, or concern
- As a whole group, note common threads and potential next steps
- Record these commonalities in a display that can be used at the closing session to share these issues with those in other coaching-related roles

The SIGs were scheduled as the last activity of the day on Monday afternoon. Hence, SIG attendance was lower than at the concurrent sessions and panels earlier in the day. Still, each of the five groups had enough participants to raise issues that could be charted and shared at the closing session.

### **Sunday, Monday, and Tuesday: Informal Networking**

Although featured speakers, concurrent sessions, panels, and facilitated groups are all ways to learn about a topic, we recognized the value of informal conversations begun during a session and then continued during break time. In order to honor the importance of these informal but potentially powerful and transformative conversations, we were determined to foster them by carving out the time they deserved. Here's how we described this in the Conference Overview found in the participants' binder:

We've decided to give you half-hour breaks each morning and afternoon. How many times have you decided not to go to the next session because you connected with someone during a session or at break time and wanted to continue a collegial conversation? We hope that these longer breaks allow you to chat *and* get to the next session!

The value of these half-hour breaks was noted numerous times on the conference evaluation sheets, as was a deceptively simple tool that we devised for participants: a notes sheet that we called a Conference Journal (see Appendix) that they could complete at the end of each conference activity. Here's how we described it in the Conference Overview:

We're also including in your binder a simple form that we're calling a Conference Journal. At the end of each session, take the luxury of five minutes to reflect on what you heard...and write down the names of those you've met at the session so you can broaden your network of colleagues.

We also asked each presenter or facilitator to reserve a few minutes at the end of their session to allow time for participants to fill out the following journal entry:

- Session or Activity
- Presenter
- Table Conversations with
- An idea from this session that I found interesting
- Where is my school or district with regard to this idea?
- What one step could I take to move my school or district in the direction of this idea?

We hope that participants will use these personal Conference Journal sheets, along with the list of conference attendees' contact information, when seeking coaching connections and resources once they are back in their districts.

## **Conference Findings**

The University of Massachusetts Donahue Institute, under the direction of Dr. Greta Shultz, developed the data collection instruments used at the end of Day 1 and 2 of the conference. (See Appendix for data collection instruments.)

The following themes and implications were extracted from participant feedback:

1. **Validation of Participant Experience.** Although this was a consistent theme during concurrent sessions and special interest groups, it emerged most strongly after the panel discussions, which were honest, frank, and candid about the struggles panelists faced. We discovered from participant feedback that many walked into the conference assuming that their problems were unique. But rather than hearing that everyone else "*had* it altogether," attendees discovered that "we're all *in this* together." Comments received included: "Our concerns are the same"; "There seem to be universal problems"; "I needed colleagues to speak with about my concerns"; "It was good to get feedback and suggestions."
2. **Tools and Strategies.** The sessions that focused on tools and strategies were especially well attended, validating our conjecture that instructional coaches are hungry for resources with which to do their work. Coaches commented on the

practical nature of these sessions, saying that they left with resources and strategies they could put to use immediately: observation protocols and templates, scripting and transcript analysis forms, pre-conferencing strategies to set a focus for observation, rubrics for moving teachers forward, and questioning strategies for the post-conference, e.g., “Ask...don’t tell! It creates a dependent relationship,” and “Move post-observation questions from general (‘How did it go?’) to more specific.” Coaches also were attuned to the individuality of their teachers and were looking for ways to differentiate their coaching by finding entry points through diagnostic conversations in order to determine “where teachers are and where you could begin coaching them.” Tools and techniques designed to assess teachers’ needs while remaining non-evaluative were noted by participants as being particularly valuable.

3. **Relational Aspects of Coaching.** Presenters addressed both the primary relationship between teacher and coach, as well as the wider network to which coaches belong. Participants mentioned learning about strategies that would help them navigate difficult coaching interactions, such as dealing with teacher errors or pressing for accountable change. All teacher-coach relationships mentioned were not negative. One participant wrote about learning how to “help a couple of strong teachers ‘unpack’ what they do that works.” With regard to the larger sphere of relationships that affect their work, participants frequently used the word *collaborate*: with their colleagues to learn from others’ experience, with administrators who can provide building-based support, and in developing professional learning communities of coaches within geographical regions (and wondered how their state might support this). Participants also highlighted two relational concepts they found intriguing: social networks and the role of influence in coaching. Several mentioned the idea that influence and leadership, which are crucial to the change process, are often “hidden” in the culture of the school, and that they would attempt to discover and tap into these persons of influence when back in their district.
4. **Scope, Definition, and Complexity of the Coach’s Job.** As participants listened to each other, especially during the panels and special interest groups, they discovered differences in how coaches were organized and how coaching responsibilities differed. “Clarification,” “expectations,” and “definition” were words frequently used when participants wrote about this issue. For example, when thinking of how they might deal with this back in their districts, sample responses included, “Work on a clear document that lays out expectations,” “Clarifying coaches’ roles; clarification of coaching processes,” “A more defined role of coaching is needed in my district,” and “Clearly identify roles *early*.” Others noted the complexity of coaching, the intersection of content, pedagogy, observing, conferencing, and attending to teachers’ individual differences—while acting as a change agent who is somewhat of an “outsider.”
5. **Models and Structures for Coaching.** Most coaches and district staff developers had experience with only one model of coaching: the one operating in their district. Thus, it was illuminating for them to hear about how coaching plays out elsewhere. “I appreciated the exposure to approaches used in differing contexts,” “The models are all very different!” and “It was important for me to see models and visions.” Many participants emphasized the practical value of the conferences sessions (see # 2 above). Several, however, highlighted their need to see a bigger picture: “It was good

to talk about larger organizational issues around coaching vs. the practical ‘use it tomorrow’ opportunities,” and “We have many models going on in our county. I think we could do a better job of discussing the models/frameworks. We spend more time talking about the practice of coaching.” Participants were also interested in hearing about systemic statewide coaching models and initiatives, both in panels and in concurrent sessions.

6. **Professional Development of Coaches.** Coaching, while itself a form of professional development, needs its own professional development plan to address the complexity of the job (see # 4 above). One participant termed this complexity “the many layers of coaching.” Participants were enthused about analyzing coaching artifacts and coaching cases (both written and video) as a form of professional development for themselves. Three other types of professional development were mentioned as something to investigate back in the district: communicating and networking with other coaches and staff developers (described by one participant as “essential to my own PD,”), online professional development for coaches, and a “coaches’ coach” to “help me discover my theory of practice.”
7. **Mathematics Content.** Unlike many other instructional coaching conferences, this one kept the focus on the math. Specifically, participants highlighted proof and the precision of mathematical language as two focus areas when working with teachers. More generally, however, was a commitment to developing teachers’ content knowledge, which was evidenced by comments such as, “Make sure content is a focus as I work with teachers,” “Make content knowledge a central part of the coaching conversation,” “I want teachers to really think about each unit before teaching it,” and, most succinctly, “Prioritize the math!”
8. **Systemic Issues and Sustainability.** Although this was not mentioned by a large percentage of participants, it was a concern of those who attended the sessions and panels on statewide initiatives and the special interest group for those with oversight of coaching programs. These comments were often phrased as questions: “How can I structure an initiative at the state level?” “How can our region improve coach performance?” and “What plan do we have for ramping up to the next step?”
9. **A Need for Standards, Assessment, and Research.** Related to the issue of coaching’s lack of definition (see # 4 above), coaches asked questions such as “How am I to be evaluated?” and “How do I know I am doing my job and meeting expectations?” Several participants mentioned the need for evaluation tools suited to the job responsibilities of a coach, rather than the tools currently used, which were created for the job of classroom teacher. But before a coach’s performance can be evaluated, he or she need to be hired, and one participant, sounding frustrated, asked, “How crazy it is to hire coaches without a definition of a coach?” In addition to evaluating individual coaches, there were frequent comments on the need to evaluate coaching *programs* to measure their impact, noting that there was a paucity of research in this area as to which coaching models are most promising and effective in changing teacher behavior and increasing student achievement.
10. **Coaches as Reflective Practitioners.** One goal of coaching is to have teachers become more reflective about their practice. Whether participants were coaches,

administrators, staff developers, or researchers, the tone of their responses showed evidence of a reflective nature. Comments often included phrases such as:

- “Really had me thinking about ....”
- “I was aware that ....”
- “It made me reflect ....”
- “Caused me to think more deeply about ....”
- “Made me realize ....”
- “The importance of knowing ....”
- And the collegial: “Enjoyed table discussions. Great thinkers at my table!”

Dr. Shultz, in the *Conclusions* section of her conference evaluation, notes:

“Participants were energized by the opportunities that the conference afforded to:

- Exchange knowledge and experiences with talented, insightful colleagues
- Explore the commonalities and differences that characterize coaching contexts across the nation, and the implications of such
- Reflect on their own practice, challenging assumptions and formulating new questions

Participants appreciated the conference structure, especially the longer breaks between sessions that fostered collegial conversations. Feedback on individual sessions was largely positive, with participants expressing appreciation for the knowledge they gained from one another as much as from presenters.

Not surprisingly, thoughts on how the conference will likely affect future practice varied according to participants’ particular situations, but commonalities included plans to engage in dialogue with administrative and teaching colleagues back home, as well as the intent to continue studying and embracing questions about coaching design, implementation, and effectiveness.”

## **Conference Products**

During the conference we distributed hard copies of the participant list and encouraged participants, as described above, to use their Conference Journal to record the personal connections that they made during conference activities.

To complement and extend the face-to-face conference experience the conference website serves as a repository for papers written for the conference, materials from presenters' sessions, the conference report and executive summary, and links to a coaches’ email list and a message board. In addition, we have sent out periodic e-newsletters to our 1800 person mailing list of anyone who received notice of the conference

Immediately after the conference we put up on our website the papers that presenters had written for the conference as well as the materials from their sessions, including

downloadable PowerPoint slides and handouts. Some presenters did not give us their papers or materials to upload to the project website, but made their products available by providing their email address and requesting that visitors to the website contact them directly for materials. These materials and presenter contact information may be found on the *Resources* page of the project website:

<https://secure.edc.org/mlt/conference07/resources.asp>

Other electronic resources include:

- An email group (EDC's version of a Listserv):  
<http://mailman.edc.org/mailman/listinfo/mathcoach>
- A WebBoard (message board with chat feature):  
<http://boards1.edc.org/~MathCoaching>

Dr. Shultz and her colleagues are developing an instrument to assess the sustainability of the conference experience through the use of these technological resources.

## **Contributions to the Field**

This coaching conference increased awareness and understanding about the various models of instructional coaching in mathematics, the challenges that coaches face, the success of various coaching initiatives, and the research base related to instructional coaching in mathematics. This was done by:

- Articulating the growing body of knowledge, wisdom of practice, and research related to coaching and making this accessible to others
- Connecting researchers, coaches, and coaches' staff developers both to each other and to coaching resources that exist in each of these three areas of practice
- Providing materials, resources, and support so that state and district coaching initiatives can build and enhance their own capacity
- Providing support to staff developers who themselves need professional development as trainers of coaches
- Raising issues and concerns of those in the field that may serve as areas for new research on coaching

The conference also provided an opportunity for states and larger districts to share materials and get feedback from participants. For example, representatives from the Massachusetts Department of Education put forth a draft of a document entitled, "Characteristics of High Quality Coaching" and sought input from conference attendees. Two months later, the revised document had incorporated feedback that the DOE had received during the conference from attendees across the nation. It was rewarding to see how policy could be influenced by those with field expertise, and that the Massachusetts DOE was committed to creating policy "with," not just policy "for" instructional coaches in mathematics. Truly another instance of the conference goal, "...*Learning from Each Other.*"

## **Appendix**

Artifact 1: Feedback and Reflection Sheet, Monday April 23 ( 2 pages)

Artifact 2: Feedback and Reflection Sheet, Tuesday April 24 ( 2 pages)

Artifact 3: Conference Journal (3 pages)

Artifact #1

**Instructional Coaching in Mathematics:  
Researchers and Practitioners Learning from Each Other**  
Feedback and Reflection Sheet: Monday, April 23

Name:  
Position:  
District and State:

1. When I registered to attend the conference, I hoped that it would be useful to me in terms of....

2. After the conference Opening Session (Sunday night), my expectations about how I would grow from attending the conference were:

3. Thoughts on Concurrent Session # 1, Monday morning:

Which Concurrent Session did you attend? [Please circle.]

- **Coaching: Just What Does it Mean to “Coach”?:** Amy Morse and Polly Wagner
- **Coaching as Influence: The Case of English Learners Learning Mathematics:** Mark Driscoll
- **Investigations Online Seminars:** Stephanie Feger and Kristine Woleck
- **The South Carolina Mathematics and Science Coaching Initiative:** John Holton

To what extent did this session meet your expectations?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

Comments about how this session affected my thinking:

Implications for the future (e.g., my work, my professional growth, other):

4. Thoughts on Concurrent Session # 2, Monday morning:

Which Concurrent Session did you attend? [Please circle.]

- **Managing and Addressing Errors in the Classroom:** David Foster
- **Supporting Teachers’ Mathematical Reasoning (Elementary):** Cathy Carroll
- **Leadership and Instructional Influence:** Jonathan Supovitz
- **Does Coaching Change Teachers and Improve Student Performance?:** John Holton

To what extent did this session meet your expectations?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

Comments about how this session affected my thinking:

Implications for the future (e.g., my work, my professional growth, other):

5. Thoughts on the Panel Discussion

Which Panel Discussion did you attend? [Please circle.]

- **Coaching in Large Urban Areas:** NYC, Chicago, Dallas, Milwaukee
- **State & MSP Coaching Initiatives:** Massachusetts, Arkansas, Missouri
- **Coaching & Teachers of English Language Learners:** Lowell, MA; Cambridge, MA; Navajo County, AZ

To what extent did this session meet your expectations?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

Comments about how this session affected my thinking:

Implications for the future (e.g., my work, my professional growth, other):

6. Thoughts on the Special Interest Group

Which Special Interest Group did you attend? \_\_\_\_\_

To what extent did this session meet your expectations?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

Comments about how this session affected my thinking:

Implications for the future (e.g., my work, my professional growth, other):

7. Looking back over my experience with the conference so far, I have been most struck by....

8. The organizers will review these sheets tonight. If you would like to communicate any information to them, please use this space:

9. The evaluation team will contact some conference attendees in the Fall to explore the ways in which the conference has influenced reflection or practice in the longer term. Please record below any thoughts on how your knowledge, beliefs, perceptions or curiosity have been affected so far:

Artifact #1

**Instructional Coaching in Mathematics:  
Researchers and Practitioners Learning from Each Other**  
Feedback and Reflection Sheet: Tuesday, April 24

Name:  
Position:  
District and State:

1. Thoughts on Concurrent Session # 3, Tuesday morning:

Which Concurrent Session did you attend? [Please circle.]

- **Preparing Math Coaches: a Collaborative Coaching Model:** Susan Villani and Kathy Dunne
- **Supporting Teachers' Mathematical Reasoning (Secondary):** Cathy Carroll
- **A Case Study of Student-Focused Coaching in Mathematics:** David Foster
- **Shifting our Focus to Children's Thinking and Mathematical Content:** Ellen Davidson
- **Instructional Coaching: An Overview:** Jim Knight

To what extent did this session meet your expectations?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

Comments about how this session affected my thinking:

Implications for the future (e.g., my work, my professional growth, other):

2. Thoughts on the Panel Discussion

Which Panel Discussion did you attend? [Please circle.]

- **Coaching Models:** Math in the City, NY; Missouri Mathematics Academy; Phoenix, AZ; Virginia Staff Development Council
- **Coaching in Smaller Urban Areas:** Bridgeport, CT; Billings, MT; Fitchburg/Leominster, MA
- **Coaching in Rural Areas:** Montana, West Virginia, Vermont, Arkansas

To what extent did this session meet your expectations?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

Comments about how this session affected my thinking:

Implications for the future (e.g., my work, my professional growth, other):

3. Thoughts on Concurrent Session # 4, Tuesday afternoon:

Which Concurrent Session did you attend? [Please circle.]

- **Supporting Instructional Coaches:** Marcia Foster and Fran Hurley
- **Coaching the Lesson Study Team:** Jane Gorman
- **Instructional Coaching for Classroom Management:** Jim Knight
- **Differentiated Coaching:** Loretta Heuer

To what extent did this session meet your expectations?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

Comments about how this session affected my thinking:

Implications for the future (e.g., my work, my professional growth, other):

4. Informal networking: One of the aspirations of the conference organizers was that participants would enrich one another through the building of relationships and sharing of experiences.

a. For you, to what extent has this aspiration been realized?

1-not at all      2-somewhat      3-mostly      4-to a very great extent

b. What factors have helped or hindered cross-fertilization of ideas among attendees?

5. Looking back over my experience with the conference, I have been most struck by....

6. Reflecting on my relevant professional experiences in the past, the conference has...

... reinforced some beliefs I have long held, including:

... pushed me to re-think some of my assumptions, including:

... enhanced my knowledge about:

... sparked my curiosity about:

7. Please share a few thoughts about how your practice will be affected by the experiences you had at the conference. In what ways will your approach to the field be the same or different? How so? Why?

**CONFERENCE JOURNAL**

**Monday, Concurrent Session # 1**

Presenter: \_\_\_\_\_

Session Name: \_\_\_\_\_

Table Conversations with:

An idea from this session that I found interesting:

Where is my school or district with regard to this idea?

What one step could I take to move my school or district in the direction of this idea?

**Monday, Concurrent Session # 2**

Presenter: \_\_\_\_\_

Session Name: \_\_\_\_\_

Table Conversations with:

An idea from this session that I found interesting:

Where is my school or district with regard to this idea?

What one step could I take to move my school or district in the direction of this idea?

**Monday, Panel # 1**

Districts Presenting: \_\_\_\_\_

Session Name: \_\_\_\_\_

Table Conversations with:

An idea from this session that I found interesting:

Where is my school or district with regard to this idea?

What one step could I take to move my school or district in the direction of this idea?

**Monday, Special Interest Group**

Topic: \_\_\_\_\_

Table Conversations with:

An idea from this session that I found interesting:

Where is my school or district with regard to this idea?

What one step could I take to move my school or district in the direction of this idea?

**Tuesday, Concurrent Session # 3**

Presenter: \_\_\_\_\_

Session Name: \_\_\_\_\_

Table Conversations with:

An idea from this session that I found interesting:

Where is my school or district with regard to this idea?

What one step could I take to move my school or district in the direction of this idea?

**Tuesday, Panel # 2**

Districts Presenting: \_\_\_\_\_

Session Name: \_\_\_\_\_

Table Conversations with:

An idea from this session that I found interesting:

Where is my school or district with regard to this idea?

What one step could I take to move my school or district in the direction of this idea?

**Tuesday, Concurrent Session # 4**

Presenter: \_\_\_\_\_

Session Name: \_\_\_\_\_

Table Conversations with:

An idea from this session that I found interesting:

Where is my school or district with regard to this idea?

What one step could I take to move my school or district in the direction of this idea?