

Collaborative Teacher Inquiry: Initial Comments¹Maryl Gearhart²

University of California, Berkeley

The STRIDE conference is framed around the following questions: *What is collaborative teacher inquiry? What do we know about collaborative teacher inquiry? In what ways does collaborative teacher inquiry impact teaching and learning? How do internal and external factors support or inhibit teacher collaborative inquiry?* Addressing these questions will require us to establish (or prioritize) working definitions of “collaborative,” “inquiry,” and perhaps even “teacher.” Collaboration, for example, is generally viewed as the practice of people coming together for joint work on common goals; participants may have similar expertise and roles outside the group (e.g., all teachers), or diverse expertise and roles (e.g., teachers, facilitator, specialists), but what’s key is work toward shared objectives. Yet many teachers participate in collectives of professionals engaged in independent inquiry, and they meet not to collaborate but for support and feedback. Will we extend the notion of collaboration to collectives?

We’ll also face dilemmas as we consider the conjunctions of terms. Will we use ‘teacher collaboration’ to refer to a working group whose participants are entirely, or primarily, teachers working toward a shared objective? or might we include projects such as “work circles” that engage teachers in curriculum or assessment development in collaboration with other experts (bearcenter.berkeley.edu/projects/WorkCircle_page.php; Reiser et al, 2000; Shrader, Williams, Lachance-Whitcomb, Finn & Gomez, 2001)? and collectives such as Critical Friends Groups that include participants other than teachers (administrators, non-certificated staff, parents, students, curriculum specialists, assessment specialists, content specialists)? Additional issues arise regarding ‘teacher inquiry.’ Are we interested just in inquiry initiated by teachers, or will we include teachers’ investigations of ideas and resources developed by outsiders? In my remarks, I’ve sketched some possible contributions to the conference based on my studies of teachers’ professional practices, with awareness that we may decide that some of the practices I’ve investigated are outside the purview of our agenda.

¹ Draft prepared for the Research on Collaborative Teacher Inquiry conference, Washington State University, Vancouver, WA, May 26-28, 2009.

² Author contact: gearhart@berkeley.edu

Background and context for my remarks

As a developmental psychologist, I have a particular interest in classroom practices that build on student understanding, and I've worked with colleagues to design and investigate a variety of strategies to support teachers' efforts to strengthen their practices. While features of teacher inquiry were present in each of these programs, teacher inquiry was not necessarily a targeted project objective and practice, and the same can be said for related objectives such as the establishment of sustained professional learning communities. In my efforts to sort out the relevance of these studies to the conference questions, I've outlined them in Tables 1-3.

Table 1 is a description of what I'll term (for want of a better term) "process-focused" professional development, in that the intervention was generic training in the use of protocols to structure professional conversations around student work (Curry, 2008; Gearhart, 2002; Gearhart & Little, 2007; Little & Curry, 2009; Little, Gearhart, Curry, & Kafka, 2003). In Critical Friends Groups (trained by the Coalition of Essential Schools) and in Evidence Groups (facilitated by staff from Harvard's Project Zero), teachers established individual inquiry questions focused on instructional improvement, sometimes within a common group focus such as writing across the curriculum. At each meeting, presenters brought evidence of student learning related to their inquiry, and groups reflected on the student work in discussions guided by a facilitator with expertise in protocol use. These groups were facilitated collectives.

Table 2 is a description of two programs grounded in specific content. In Integrating Mathematics Assessment, the focus was fractions, measurement, and scale (Gearhart & Saxe, 2004; Gearhart et al, 1999; Saxe, Gearhart & Seltzer, 1999; Saxe, Gearhart & Nasir, 2001), and, in Writing What You Read, narrative writing (Gearhart & Wolf, 1994; Wolf & Gearhart, 1994, 1997). These programs were designed to build teachers' content knowledge and key aspects of pedagogical content knowledge, including knowledge of cognitive and literacy development, methods of assessing student understanding and work, and methods of teaching for understanding. Teachers were engaged in guided inquiry through their investigations of the utility of particular assessment methods. Participants worked with outsiders as a facilitated collective, and meetings provided opportunities for the group to debrief and evaluate the methods.

The Assessment Leadership Academy in Table 3 had features of both content- and process-focused programs. Science teachers from grades 1-9 across several districts worked in grade

level teams to develop assessment systems for their curriculum units. With the support of the generic step-by-step Academy assessment portfolio (DiRanna, Osmundson et al, 2008) and a facilitator with general expertise in science education, teams established curriculum unit learning goals and designed assessments, and then teachers implemented the units and assessments independently in their classrooms (Gearhart & Osmundson, 2009; Gearhart et al, 2006). The work of each team was organized as a guided collaboration during the assessment development phase, and independent inquiry in the classroom (but guided by the portfolio). Science content differed across grade levels and as teams shifted to new curriculum units.

What is collaborative teacher inquiry, and what do we know about it?

As I've noted, some of the practices I described may not be candidates for the conference focus on collaborative teacher inquiry. Therefore I've postponed my reflections on these questions, and I look forward to the discussion.

In what ways does collaborative teacher inquiry impact teaching and learning? How do internal and external factors support or inhibit teacher collaborative inquiry?

In this section, I highlight findings that may be relevant to the second set of conference questions. In doing so, I'm setting aside issues about the fit of projects in Tables 1-3 to collaborative teacher inquiry.

Teacher factors in the impact of inquiry: Teachers' knowledge and beliefs. There is, of course, an extensive body of research on the role of teachers' knowledge and beliefs in teacher learning. I'll mention two relevant studies represented in the tables.

Writing What You Read (WWYR) research documented the role of teachers' prior beliefs and knowledge in their engagement in inquiry and learning. Most teachers in the project grew in their understandings of narrative and narrative development, and progressed in the quality of their uses of WWYR resources in language arts instruction. However, a few teachers' prior commitments to either a skills view or a creative writing view of writing development contributed to their resistance to WWYR ideas. When the project concluded, Shelby Wolf and I acknowledged a tension between our content objectives and the value of a professional community in which participants voice and negotiate tensions among discrepant goals and frameworks.

Case studies from the Assessment Leadership Academy (ALA) provide insight into the complexity of professional learning as teachers pursued the detailed work of designing, implementing and evaluating new assessments (Gearhart et al, 2006). Teachers began the ALA project with different arenas of expertise, and each teacher took initiative in selecting the assessment methods he or she wanted to design and investigate. As a result, the trajectories of teacher learning over time were remarkably different.

The role of resources in the quality and impact of inquiry. Tables 1, 2 and 3 represent differences in the projects' theories of action and the resources provided to support teacher learning. The organizations facilitating 'looking at student work' in Table 1 provided resources for the conduct of inquiry and professional conversation. Meeting facilitators used organization-designed protocols to support the ways that teachers established their individual inquiry questions, selected evidence, and participated in discussions; no content resources were provided. Table 2 projects provided content-specific resources on student learning and practices that build on student understanding. University faculty, video materials, and print materials guided teachers in the construction of specific knowledge; there was no explicit support for ways that teachers can generate inquiry questions about their practice and work together to build relevant knowledge. Table 3 is a project that provided a generic model of assessment and a step-by-step process for designing and implementing assessments. While all of the participants were science educators, specific content resources for the design of unit assessments were rarely available either in print or among the participants; teacher inquiry was both supported and constrained by the assessment portfolio prompts.

No professional development strategy can provide comprehensive support for the complexity of professional learning and the complexity of classroom practice. That said, I have often been struck by the absence or misalignment of resources for the purpose at hand. For example, in the Looking at Student Work project, we found that, whether groups were collectives working on related inquiry projects (e.g., writing across the curriculum) or individual projects, the content-specific resources to support teacher learning and instructional improvement were often limited, and yet instructional improvement was the stated objective. Teachers in the LSW groups often read books, took courses, or attended workshops outside their groups, but the relevance of those sources would rarely be pursued in meetings, because group members varied in expertise in relation to a presenting teacher's inquiry, and because protocols

rarely afforded pursuit of resources other than the student work. The project goal of encouraging professional participation was often at odds with a teacher's need for targeted resources and input.

Many of the studies in Tables 1-3 provide evidence that teachers need content-specific resources if their objective is to deepen their knowledge and strengthen their instructional practices. The Integrating Mathematics Assessment (IMA) quasi-experimental study provides the most systematic evidence. In this study, three groups of teachers and their students participated: teachers in the IMA program, "Support" teachers implementing the same curriculum who met regularly to work on challenges they were experiencing, and Traditional teachers who used textbooks. All of the participants expressed commitment to reform or to traditional mathematics pedagogy; all of the IMA and Support teachers had previously implemented the replacement units that were the focus of our study. The opportunity to work with Support colleagues on implementation challenges had limited impact on the quality of classroom practice and student learning. Comparisons of classroom practices and student outcomes demonstrated that students in the Support classrooms gained the least in conceptual and procedural understanding of fractions; analyses of relationships between classroom practices and student outcomes identified greater opportunity to learn in the IMA classrooms. If instructional improvement is one core objective of teacher inquiry, findings from the IMA study indicate a need for resources targeted to the content of the curriculum and pedagogical practices.

Other projects in the tables provide similar but less systematic evidence for this argument. Teachers in the ALA project, for example, grew in their understandings of big ideas in assessment development, but they made less progress with content-specific assessment and the more technical aspects of assessment development. Teachers were highly motivated to strengthen methods of assessment for their curriculum units, and yet the work was challenging. For example, the portfolio step of describing 'expected student responses' when designing an assessment task was difficult for teachers in the absence of resources on conceptual development in specific science domains. The portfolio step of selecting key 'junctions' in the unit as sites for formative assessment was difficult in the absence of resources on trajectories of learning.

The critical need for formative evaluation. Discrepancies between goals and practices can emerge in any setting, and yet, in the context of professional development, teachers' roles in formative evaluation and project revision are often limited to completion of brief surveys now

and then. In the Looking at Student Work project, there was some irony in the absence of ongoing formative evaluation in the inquiry groups we were following. Groups were rarely observed inquiring, ‘what are our goals as a group, and in what ways are our methods supporting or hindering our progress?’ Questions like these were just as relevant to review of one piece of student work, when the protocol was impeding rather than supporting close analysis, or when the student work was insufficient evidence for the question at hand. Teachers often placed authority in the organization’s protocol rather than their own evaluations of purpose and practice. In any project, there is often a problematic relationship between objectives and resources, and the misalignment shifts as a project evolves. Formative evaluation is a key component of inquiry in any form.

Final remark

When we meet, we’ll decide whether to consider a diversity of practices that engage teachers as professionals in examination and improvement of their practices. I hope we do, because professional development paradigms are often isolated from one another in conceptualization and research, and the isolation is unproductive for our generative understanding of the practices and contexts that support teacher learning and development. For example, I could argue that formative assessment is a critical form of teacher inquiry in the classroom; a teacher’s goals for student learning can be reframed as an implicit inquiry question (e.g., ‘what are my learning objectives, and what progress are my students making? and what improvements do I need to make to provide my students more effective opportunities to make progress? ’). Yet research and practice in “formative assessment” and “classroom assessment” are rarely associated with “teacher inquiry,” a term associated with a commitment to the professionalization of teaching. Jargon can also obscure relationships among traditions and practices. Harvard’s Project Zero engaged teachers in the use of the “Modified Collaborative Assessment Conference” protocol to support teacher inquiry, yet PZ’s foundation lies *not* in assessment but in child study and phenomenological response to children’s work (Pat Carini). This conference is a wonderful opportunity to bridge perspectives.

STRIDE/Gearhart 7

Table 1. Process-focused professional development projects

Program goals and design					Implementation				Research & Development			
Program	Content focus	Built capacity with:	Program design	Teacher inquiry and professional community	Participants	Meetings	Expertise	Resources	Development	Research design	Measures and analysis	Ken Findings
Looking at Student Work for Instructional Improvement and School Reform (LSW)	Content varied	<p><i>Coalition of Essential Schools Critical Friends Groups</i></p> <ul style="list-style-type: none"> -inquiry on instructional improvement -analyzing evidence of student learning (modified Tuning Protocol) -sustaining these practices* 	<p>Teachers pursued individual inquiry questions. In meetings, facilitators (a member with CFG training) guided use of protocols to structure professional conversations relevant to each teacher's inquiry. CES encouraged teachers to examine evidence of student learning using a modified Tuning Protocol originally designed for collaborative 'tuning' of instructional materials.</p>	<p>In Critical Friends Groups (CFGs), teachers pursued individual inquiry questions of importance to their classroom practice. In some groups, individual questions were linked to group or schoolwide goals for instructional improvement.</p> <p>CFGs often included participants other than teachers: principal, noncertificated staff, etc.</p>	<p>CFGs varied in membership – some teachers only, others also staff and administrators.</p> <p>Coalition staff visited infrequently due to CFG norm of privacy.</p>	<p>Monthly, often in a teacher's home</p>	<p>Teacher facilitator with protocol expertise</p> <p>CFG members whose expertise varied in relation to a teacher's inquiry</p>	<p>Copies of protocols</p> <p>Student work selected by presenting teacher</p> <p>Additional (optional) artifacts -- curriculum, school mission statements etc.</p>	Protocols for structured conversation	<p>Longitudinal qualitative study of protocols as resources for teachers' collaborative work on instructional improvement and school reform</p> <p><i>The Wallace Foundation</i></p>	<p>Qualitative analysis of video recordings of teachers' meetings, teacher and administrator interviews, and classroom observations</p> <p>Focus on relationships among a teacher's inquiry focus, the available resources (participants, protocols, artifacts), and the emergent discussion</p>	<p>Expertise relevant to a teacher's inquiry was often limited.</p> <p>Protocols were often a problematic fit to a teacher's needs for targeted input.</p>
		<p><i>Harvard Project Zero Evidence Groups</i></p> <ul style="list-style-type: none"> -inquiry on instructional improvement -examining evidence of student learning (Modified Collaborative Assessment Conference) -sustaining these practices 	<p>Teachers pursued individual inquiry questions and gathered evidence of student learning. In meetings, facilitators (usually HPZ staff) guided use of protocols to structure professional conversations relevant to each teacher's inquiry. HPZ encouraged teachers to examine evidence of student learning using a modified version of the Collaborative Assessment Conference protocol originally designed for phenomenological study of children's work.</p>	<p>In Evidence Groups, teachers pursued individual inquiry questions of importance to their classroom practice. In some groups, individual questions were linked to group or schoolwide goals for instructional improvement.</p> <p>Evidence Groups were initiated by HPZ with hope that the practice would be sustained by teachers.</p>	<p>Evidence Groups varied in membership – entire school faculty and administrators; teacher volunteers; etc.</p> <p>HPZ staff facilitated most meetings.</p>	<p>Monthly at school</p>	<p>Outside facilitator with protocol expertise</p> <p>Evidence Group members whose expertise varied in relation to a teacher's inquiry</p>	<p>Copies of protocols</p> <p>Student work selected by presenting teacher</p> <p>Notes from prior meetings</p>				

*Most CFG groups were well established at the outset of the study.

STRIDE/Gearhart 8

Table 2. Content-focused professional development projects

Program goals and design					Implementation				Research & Development			
Program	Content focus	Built capacity with:	Design	Teacher inquiry and professional community	Participants	Meetings	Expertise	Resources	Development	Research design	Measures and analysis	Key Findings
<p>Writing What You Read (WWYR)</p> <p>Shelby Wolf Maryl Gearhart</p>	<p>Language arts: Narrative writing</p> <p>Grades K-6</p>	<p>Literature-based narrative instruction and formative assessment of narrative writing</p>	<p>Facilitated in-service program designed to build teachers' knowledge of narrative and narrative development, and teachers' capacities to design literature-based narrative units and assess students' writing progress.</p>	<p>Teachers adapted WWYR materials and strategies to fit their instructional purposes. Assessments of students' writing progress provided teachers evidence to gauge student progress and refine instruction. The entire faculty participated.</p>	<p>K-6 faculty from one school Shelby Wolf, facilitator</p>	<p>Every 3-4 weeks at school over several months</p>	<p>WWYR designer and facilitator</p>	<p>WWYR framework, lesson planning guide, rubric, feedback form Readings on narrative and narrative development Children's literature</p>	<p>WWYR framework and materials</p>	<p>Qualitative study of the role of teachers' prior beliefs and knowledge in their implementation of WWYR resources Apple Computer, Inc. National Center for Research on Evaluation, Standards, and Student Testing</p>	<p>Qualitative analysis of interviews, observations, and artifacts</p>	<p>Teachers' prior beliefs and knowledge supported or constrained teachers' understandings and uses of WWYR.</p>
<p>Integrating Mathematics Assessment (IMA)</p> <p>Maryl Gearhart Geoffrey Saxe Deborah Stipek and others</p>	<p>Mathematics: fractions, measurement, and scale (Seeing Fractions, and My Travels with Gulliver)</p> <p>Grade 4</p>	<p>Integrating formative assessment when implementing reform curriculum in fractions, measurement, and scale</p> <p>Strengthening implementation of reform curriculum in fractions, measurement, and scale</p>	<p>University-based cross-district program designed to build teachers' knowledge of mathematics and children's mathematical development, and teachers' capacities to design and implement formative assessments for reform mathematics units</p> <p>University-based cross-district program designed to provide teachers with a forum for sharing and discussion of strategies for implementing reform curriculum.</p>	<p>Teachers adapted IMA strategies to fit their instructional purposes. Assessment of students' mathematical thinking provided teachers evidence to gauge student progress and refine instruction. Teachers represented different schools.</p> <p>Teachers contributed to meeting agendas. Issues were pursued per teacher initiative. Teachers represented different schools.</p>	<p>9 4th grade teachers from various urban schools Maryl Gearhart, Geoff Saxe, and graduate students, facilitators</p> <p>9 4th grade teachers from various urban schools Susie Hakansson, facilitator</p>	<p>1 week summer institute at university Biweekly during year</p> <p>2 day summer institute at university Monthly during year</p>	<p>IMA designers and facilitators</p> <p>Teacher participants Discussion moderator</p>	<p>Curriculum materials IMA mathematics tasks for teachers IMA developmental framework with samples of student work and video of children's reasoning IMA-suggested assessments</p> <p>Curriculum materials California Framework NCTM Curriculum Standards</p>	<p>IMA framework and materials</p>	<p>Quasi-experimental mixed-methods study of IMA impact on classroom practice and student learning (20 classrooms) National Science Foundation</p>	<p>Pre-post student learning Ratings of students' opportunities to learn in lessons (from video and fieldnote records)</p>	<p>IMA had positive impact on classroom practice and student learning (two comparison groups)</p>

STRIDE/Gearhart 9

Table 3. Mixed model

Program goals and design					Implementation				Research & Development			
Name	Content focus	Built capacity with:	Design	Teacher inquiry and professional community	Participants	Meetings	Expertise	Resources	Develop-ment	Research design	Measures and analysis	Key Findings
<p><i>Assessment Leadership Academy (ALA)</i> Kathy DiRanna Ellen Osmundson and many others</p>	<p>Science content varied by grade level and over time (teams worked with 3 units over 18 months)</p>	<p>Understanding and implementing a general framework for curriculum-embedded formative assessment</p>	<p>Facilitated grade-level teams met to design assessment plans for a common curriculum unit, and then again after unit implementation to debrief and revise the assessments. The cycle was repeated with two additional curriculum units over 18 months.</p>	<p>Inquiry: Teachers refined curriculum unit learning goals, and then designed, implemented, and evaluated curriculum-embedded assessment systems to track student progress. Community: Cross-district grade level teams met 3 times a year for 2-5 days; district K-12 teams met several times a year</p>	<p>23 K-9 science teachers from 5 districts in California Kathy DiRanna and WestEd colleagues as facilitators Ellen Osmundson, assessment specialist</p>	<p>3 times a year at rotating sites in California</p>	<p>Facilitators with science education expertise (but not necessarily with a grade level teams' unit) and knowledge of the steps of the ALA assessment development process Grade level colleagues Assessment specialists</p>	<p>Instructional materials and guides ALA assessment framework ALA assessment portfolio (resources, prompts) Readings</p>	<p>Development of ALA framework and materials</p>	<p>Longitudinal qualitative study of teacher learning Center for the Assessment and Evaluation of Student Learning (CAESL), National Science Foundation</p>	<p>Periodic teacher surveys Qualitative analysis of teachers' assessment portfolios Interviews with and classroom observations of case teachers</p>	<p>ALA had positive impact on teachers' understandings of the big ideas of embedded assessment, and less impact on their understandings of curriculum-specific assessment design and use.</p>

References (grouped by project or topic)

- Assessment Leadership Academy* (Center for Assessment and Evaluation of Student Learning (CAESL), National Science Foundation)
- DiRanna, K., Osmundson, E., Topps, J., Barakos, L., Gearhart, M., Cerwin, K., Carnahan, D., & Strang, C. (2008). *Assessment-centered teaching: A reflective practice*. Thousand Oaks, CA: Corwin Press.
- Gearhart, M., & Osmundson, E. (In press). Assessment portfolios as opportunities for teacher learning. *Educational Assessment*.
- Gearhart, M., Pfothenhauer, J., Nagashima, S., Clark, S., Schwab, C., Vendlinski, T., Osmundson, E., & Herman, J. (2006) Developing expertise with classroom assessment in K-12 science: Learning to interpret student work. *Educational Assessment, 11*, 237-263.
- Integrating Mathematics Assessment* (National Science Foundation)
- Gearhart, M., & Saxe, G. B. (2004). When teachers know what students know: Integrating assessment in elementary mathematics. *Theory Into Practice, 43*, 322-324
- Gearhart, M., Saxe, G. B., Fall, R., Schlackman, J., Nasir, N., Ching, C. C., Bennett, T. R., Rhine, S., & Sloan, T. (1999). Opportunities to learn fractions in elementary mathematics classrooms. *Journal for Research in Mathematics Education, 30*, 286-315.
- Saxe, G. B., & Gearhart, M., & Seltzer, M. (1999). Relations between classroom practices and student learning in the domain of fractions. *Cognition and Instruction, 17(1)*, 1-24.
- Saxe, G. B., Gearhart, M., & Nasir, N. (2001). Enhancing students' understanding of mathematics: A study of three contrasting approaches to professional support. *Journal for Research in Teacher Education, 4*, 55-79.
- Looking at Student Work* (Wallace Foundation)
- Curry, M. (2008). Critical Friends Groups: The possibilities and limitations embedded in teacher professional communities aimed at instructional improvement and school reform. *Teachers College Record, 10*, 733-774.
- Gearhart, M. (2002, April). Teacher learning from 'looking at student work.' Presentation at the 2002 Annual Meeting of the American Educational Research Association, New Orleans.
- Gearhart, M., & Little, J. W. (2008, April). Looking at student work: Opportunities afforded for teacher learning. Presentation at the Annual Meeting of the American Educational Research Association, New York.
- Little, J., & Curry, M. (2008). In L. Earl & H. Timperley (Eds.) Professional learning conversations: Challenges in using evidence for improvement (pp. 29-42). New York: Springer.
- Little, J. W., Gearhart, M., Curry, M., & Kafka, J. (2004). 'Looking at student work' for teacher learning, teacher community, and school reform. *Phi Delta Kappan*.
- Work Circles*
- Reiser, B.J., Spillane, J.P., & Steinmuller, F., Sorsa, D., Carney, K., & Kyza, E. (2000). Investigating the mutual adaptation process in teachers' design of technology-Infused Curricula. In B. Fishman & S. O'Connor-Divelbiss (Eds.), Fourth International Conference of the Learning Sciences (pp. 342-349). Mahwah, NJ: Erlbaum.
- Shrader, G., Williams, K., Lachance-Whitcomb, J., Finn, L.-E., & Gomez, L. (2001). Participatory design of science curricula: The case for research for practice. Paper presented at the Annual Meeting of the American Educational Research Association, Seattle, WA.
- Writing What You Read* (Apple Computer Inc.; Center for Research on Evaluation, Standards, and Student Testing (CRESST))
- Gearhart, M., & Wolf, S. A. (1994). Engaging teachers in assessment of their students' writing: The role of subject matter knowledge. *Assessing Writing, 1*, 67-90.
- Wolf, S. A., & Gearhart, M. (1994). *Writing What You Read: A framework for narrative assessment. Language Arts, 71*, 425-445.
- Wolf, S. A., & Gearhart, M. (1997). New writing assessments: The challenge of changing teachers' beliefs about their students as writers. *Theory into Practice, 36*, 220-230.