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Teaching and Teaming More Responsively: Case Studies in Professional Growth at the Middle Level

David Strahan

Western Carolina University
Cullowhee, NC

Melissa Hedt

Asheville Middle School
Asheville, NC

Abstract

This case study examined the experiences of two middle level teachers as they worked with a literacy coach and university partners in an instructional improvement initiative. Robert and Janice worked together as a two-teacher team. Across the three years of the study, they collaborated with Melissa, the literacy coach, to integrate reading and writing across the curriculum and to create connections with reluctant students. Analysis of observations, interviews, and archival documents showed that professional growth accelerated with discussions of instructional practices and student performance, guided by informal assessments of student achievement. Patterns of professional growth and student accomplishment document the power of collaboration and suggest possibilities for supporting professional development more productively through interdisciplinary teamwork.

Introduction

> I am really proud of myself this year. I stayed out of trouble and my teachers were great. They're nice and they'll go out of their way to do anything for you—to help you—it all worked out for me. (Andre, Interview, May 2007)

Providing support for students like Andre has long been the focus of efforts to promote interdisciplinary teaming in the middle grades. Early advocates proposed that a team of teachers working together with the same students could create a safe and caring school environment, one in which students and teachers could collaborate (George & Alexander, 1993). Over the years, a growing body of research demonstrated that interdisciplinary team organization benefits young adolescents (Felner et al., 1997; Jackson & Davis, 2000; Kuntz, 2005; Mertens & Flowers, 2004). Additional studies documented ways

that interdisciplinary team organization benefits teachers as well (Arhar, 1997; Erb, 2001; Kain, 2001). This study examined the processes of teacher learning with beginning teachers in a team setting. Researchers worked with Robert and Janice, a two-teacher team with seventh grade students, as they participated in a partnership project across a three-year period.

This initiative, entitled "Connected Coaching," addressed the needs for teacher leadership, student engagement, and professional development in improving instruction in a middle school in a small city school district. Funded with a grant, the literacy coach provided job-embedded professional development across the content areas. A university partnership enabled content area experts to consult with coaches and teachers to assist with the development of teaching resources. Summer literacy institutes provided opportunities to share ideas and integrate insights from research. In this context, one of the university professors (Dave) and the literacy coach (Melissa) conducted case studies in teacher development. As project director, Dave met with Melissa and project participants at least twice a month. Additionally, he conducted observations in classrooms, interviewed participants, and met with small groups of students. As literacy coach, Melissa worked with teachers as a "guide on the side" to support literacy instruction. Collaborative activities included assessing students' needs, co-teaching strategy lessons, unit planning, and identification of resources.

Conceptual Framework

To explore ways that participants responded to the Connected Coaching initiative, researchers worked from a conceptual framework that described how teachers make changes in their classroom practices based on mental representations of good teaching. This conceptual framework integrated two strands of research: studies related to the nature of professional growth on teams and investigations of ways that teachers collaborated to improve their practice. When woven together, these two strands of research illuminate many of the dynamics of professional growth.

Professional Growth through Interdisciplinary Teaming

Middle level advocates have emphasized the value of interdisciplinary team organization for students and teachers for some time (George & Alexander, 1993; Jackson & Davis, 2000). In studies documenting the positive impact of middle level practices, teaming has been central (Felner et al., 1997; Mertens & Flowers, 2004). As these studies have chronicled general patterns of success, a series of case studies have shown how specific teams of teachers have created responsive climates for learning (Strahan, Faircloth, Cope, & Hundley, 2007; Strahan & Layell, 2006; Strahan, Smith, McElrath, & Toole, 2001). In these studies, teams of teachers accomplished high levels of success with students in challenging settings. Teachers were especially successful in establishing supportive relationships with individual students and encouraging them to develop stronger academic momentum (Strahan, 2008).

In his review of research on the impact of organizational structures at the middle level, Erb (2001) emphasized the connectedness of teaming for adults and students.

> Middle schools that have undergone organizational transformations have been shown to improve not only the work life for teachers, but also the organizational climate and support for students. These intermediate results have also been shown to lead to improved academic performances for students—of all types of backgrounds. With transformed organizations, middle schools raise the tide that lifts all ships. (p. 196)

Kain's (2001) analysis of professional learning in team contexts showed that the nature of relationships among team members often determined the extent to which teams facilitated professional growth.

> In the team environment, teachers are invited to seek ways to make learning more invitational, interactive, and relevant. Clearly, many teachers do this apart from teams. However, given the regularity of meeting with colleagues to examine our work, we are far less likely to continue the deadening practices that can so easily predominate when we work in isolation. Teaming is an invitation to reinvent teaching because our conversations lead us to see that there are other possibilities. (p. 210)

Kain noted that the nature of conversations among teammates shaped these relationships. In the most successful professional learning communities, teachers:

- focused conversation more on teaching than on troubles with students
- took time to discuss core areas of their work such as assessment and technology

- worked together to create curriculum, and
- shared professional literature and resources (pp. 212–213).

In describing his own experiences as a member of a team, he concluded

> Sometimes we all read the same thing; other times, one team member brings an idea drawn from personal reading to discuss with the rest of us. In either way, we create a learning perspective together that helps to develop as teachers. We expect to grow professionally because we work together. (p. 213)

Professional Growth toward Instructional Improvement

To examine more specifically the nature of teacher learning across time, Feiman-Nemser (2001) reviewed research on professional growth and identified a continuum of learning experiences from pre-service through induction to ongoing professional development. "Many contemporary reforms call for content-rich, learner centered teaching, which emphasizes conceptual understanding and gives all students opportunities to think critically, solve problems, and learn things that matter to them and have meaning in the world outside of school" (p. 1015). Understanding how teachers learn to think in these ways requires researchers to consider both collaborative and individual responses. Noting that "generic and generalized models of learning to teach provide limited help in thinking about how teachers learn ambitious forms of teaching" (p. 1040), Feiman-Nemser identified four tasks essential to continuing professional development:

- Extending and deepening subject matter knowledge for teaching;
- Extending and refining repertoire in curriculum, instruction, and assessment;
- Strengthening skills and dispositions to study and improve teaching;
- Expanding responsibilities and developing leadership skills. (p. 1050)

Once teachers have resolved issues of induction, learning to connect students and subject matter becomes a central focus. To do so, they must extend their own understanding of content to "deal more effectively with concepts, topics, and procedures that students find difficult or confusing" (p. 1039). Having developed a basic repertoire of instructional strategies that work for them, they can now concentrate on expanding their expertise. Just as students must learn how to learn to be successful, teachers need to develop a disposition that values continued growth. "In order to continue learning in and from teaching, teachers must be able to ask hard questions of themselves and their colleagues, to try something out and study what happens, to seek evidence of student learning, and explore alternative perspectives" (p. 1040). This disposition leads naturally toward more active roles in collaborative development, a task that often nurtures leadership.

The general progression of teacher growth is thus a broadening of perspectives, first from a focus on what the teacher does toward attention to what students are learning, then toward responsiveness to individuals. In their review of research on the processes of teacher development, Hammerness, Darling-Hammond, and Bransford (2005) concluded that this progression is more a general trajectory than a set of stages.

> Descriptions of classroom practice suggest that some teachers eventually develop a strong focus on student welfare and learning that drives their teaching decisions and self-improvement efforts, whereas others stop short of this state, developing techniques that "work," in that they get teachers through the day, but do not result in high levels of learning for students or high levels of teacher concern when learning does not occur. (p. 379)

Studies of teacher development have shown that collaboration with colleagues is a key factor in continued professional growth. In her longitudinal case study of reform in an elementary school, Coburn (2001) described ways that teachers worked together to understand instructional improvement initiatives. Conversations that occurred formally in grade level meetings and informally with clusters of their closest colleagues demonstrated a process of "sense making," which enabled teachers to integrate new ideas into their work in their classrooms. Coburn concluded, "work with other teachers helped them grapple with multiple and sometimes conflicting messages" (p. 162). Other studies have documented similar dynamics (Grossman, Wineburg, & Woolworth, 2001; Little, 2002; Wilson & Berne, 1999).

Spillane (1999) conducted systematic observations with 25 elementary and middle grades math teachers who had participated in districtwide reform initiatives

and reported high levels of implementation on surveys. Over time, only four of these teachers demonstrated teaching practices consistent with the reform. In contrast to their colleagues who tended to work individually, these four had created functional "enactment zones" which Spillane defined as "the spaces where the world of policy meet the world of practice" (p. 407). Enactment zones featured ongoing deliberations with colleagues and facilitators, reading and discussing documents related to the reforms, and watching and discussing videotapes.

In her review of more than 60 studies of teacher learning, Borko (2004) drew similar conclusions, noting that the most powerful instances of teacher learning were "situated." Professional development occurred in contexts that featured interactions among individual learning, group learning, and professional development programs. In the studies she reviewed, researchers reported that individual growth occurred in three intertwined dimensions: deeper comprehension of subject matter, more explicit understanding of student thinking, and development of new instructional practices. Borko concluded,

> The most dramatic learning occurred when individual teachers were able to rethink and redesign instructional practices in response to their insights regarding students' thinking processes. Even when teachers incorporated instructional strategies for eliciting students' thinking into their lessons, this level of responsive teaching was difficult to accomplish. (p. 6)

To understand how the dynamics of collaboration affects teacher learning, Shulman and Shulman (2004) proposed a model of Teacher Learning Communities. Working from their earlier research on teacher learning, they concluded that whether or not a person becomes an accomplished teacher depends on the interaction of the individual and the environment.

> A teacher can develop a new vision of teaching based on encountering role models, reading cases, viewing tapes, holding discussions with peers, reading theoretical accounts, etc., and be quite displeased with the status quo. Nevertheless, he or she can be unwilling to change in that direction, insufficiently motivated to change, inadequately supported by his or her context or peers to take the risks of forgoing extant practices, or exert the efforts needed to change, and the like. (p. 261)

The Dynamics of Professional Growth

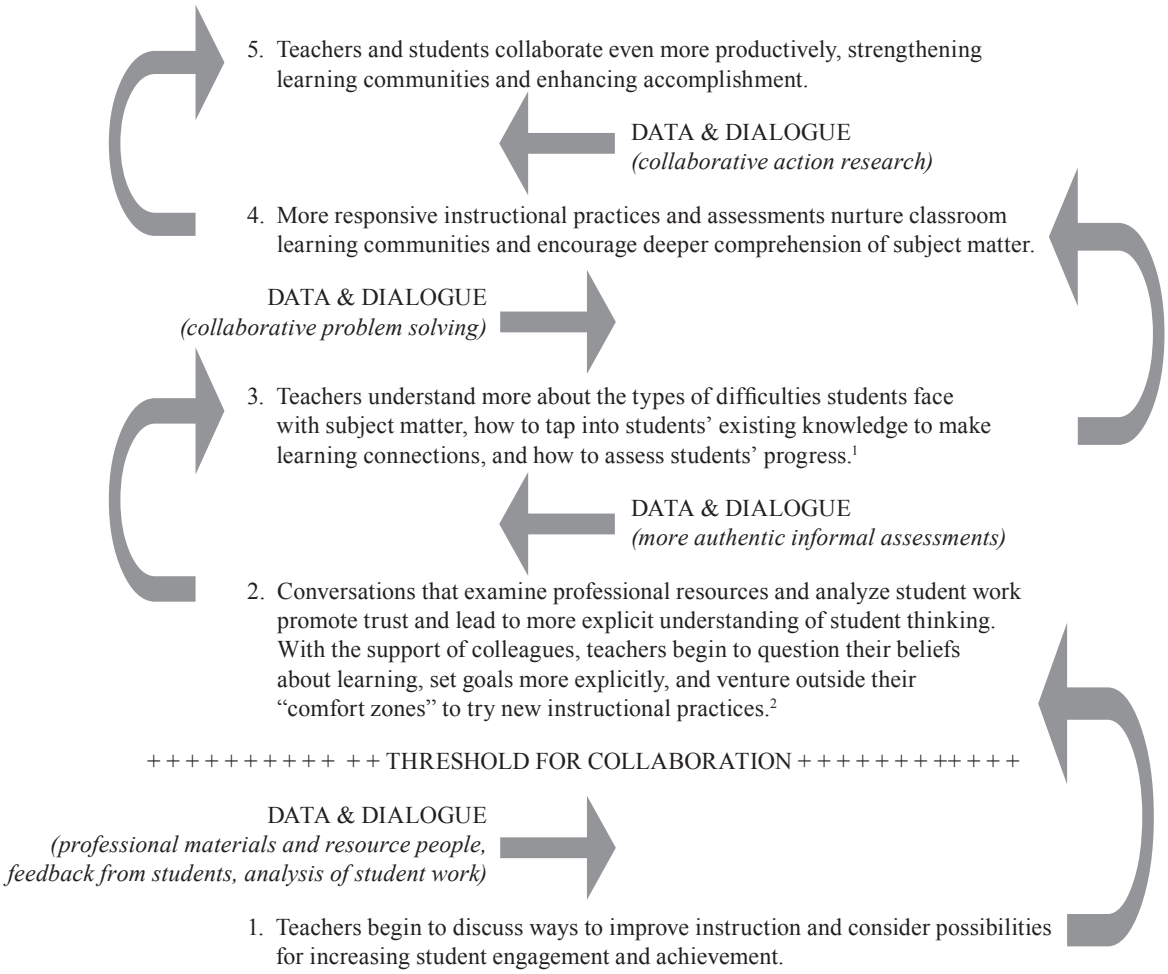
These investigations have documented ways that collaboration enhances professional growth. Longitudinal studies characterized these dynamics as "spirals of growth" in which participants learn to improve instruction through dialogue with colleagues and data from students (Strahan, 2003; Strahan & Ponder, 2005). For purposes of this investigation, we developed a conceptual framework that might describe the evolution of these dynamics in a literacy coaching initiative. This framework envisioned professional development as a spiral of growth fueled by discussions with coaches, sharing resources with colleagues, and analyzing data from student assessments. A diagrammatic representation of this conceptual framework is found in Figure 1.

From the bottom up, the growth spiral might begin with discussions of instructional practices and student performance, guided by professional readings and available assessments of student achievement. Dialogue sessions might grow more sophisticated and sources of information more comprehensive as teachers focus increasingly on student learning and the interactions among instruction and understanding. At each step of the way, participants could gather relevant data and use these data to guide decisions. Working from this conceptual framework, researchers generated three questions that guided this investigation:

1. How did participants change their instructional practices as they engaged with the Connected Coaching initiative?
2. How did collaboration with teammates, the literacy coach, and other colleagues influence changes in practices?
3. How did participants' efforts to improve instruction impact student learning?

Methods and Data Sources

Central Middle Schools serves just over 600 students, 35% of whom are racial minorities and 45% of whom qualify for free or reduced-price meals. In 2004, the school did not meet the Adequate Yearly Progress goals specified by federal NCLB legislation. In spring 2005, the school board commissioned a Reading Task Force of teachers and administrators to analyze data from achievement tests, review research on instructional improvement, and develop a framework for increasing literacy. One of the major recommendations of the task force was to implement a literacy coaching process at the middle school and



1 Bransford, J., Brown, A., & Cockring, R. (2000). *How people learn*. Washington, DC: National Academy Press, p. 45.

2 Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher, 33*(8), 3–15.

Figure 1. Professional Development as a Spiral of Growth

high school. Working with a university in the region, district administrators wrote and received a grant to develop a "connected coaching" approach that would promote collaboration among classroom teachers, coaches, and university faculty. In May 2005, administrators recruited teachers to become literacy coaches. Melissa, the middle school coach, worked with four middle school teachers at each grade level. During the second year of the program, she shifted from a caseload approach to a schoolwide approach, working with teams of teachers and providing professional development at grade level meetings.

As the project began, researchers invited teachers to work with them to construct case studies of their participation. Janice and Robert were two of the 10 teachers who volunteered. Robert, a seventh grade math and science teacher, had teamed with Melissa the year before when he was a first-year teacher. When Melissa became the literacy coach, Janice, a student teacher at Central the year before, was hired to teach social studies and language arts. When we completed our analysis of data from the first year, we decided to focus more specifically on Janice and Robert during the second year as they were the only participants who were teammates. This study reports responses from them and their students across the two years of the grant project (2005–07).

Researchers functioned as participant observers in working with these teachers and their students. Participant observations occurred in a variety of

settings: team meetings, classrooms, and small group sessions with students. For most observations, researchers recorded narrative field notes later in the day. In addition to this broad-based participant observation, research assistants conducted formal interviews at the end of each semester and a series of informal interviews as part of team meetings. Researchers completed structured observations in participants' classrooms, recording descriptions of lessons in 10-minute segments, noting details regarding the teacher's procedures, efforts to promote engagement, classroom management, and responses to individual students (five observations each year).

During summer 2007, researchers constructed preliminary case reports for each individual using procedures recommended by Yin (1994) to interpret data in relationship to the research questions. They studied interview transcripts, observations, field notes, and student work samples to identify themes and illustrations. From this initial analysis, they generated initial organizers and revisited data sources in a recursive fashion. Researchers shared case reports and served as critical readers for each other, asking questions to clarify connections among emerging descriptions and data sources. To construct this final report, the researchers selected illustrative descriptions to portray each of the participants in a narrative case report, drawing quotations from interviews to provide as much of the teacher's voice as possible.

Results

Robert's Efforts to Improve Instruction

Robert joined the faculty of Central Middle School in 2004, the year before the Connected Coaching project began. Before becoming a middle school math and science teacher, Robert worked in sales. It did not take him long to realize he wanted a career that would allow him to have a more positive impact on his community. To learn more about teaching, Robert worked as a substitute and teacher assistant in the middle grades. He then began coursework to complete his licensure requirements and was hired as a lateral entry teacher.

With Melissa as his teammate in 2004–05, Robert planned with her on a regular basis. When Melissa became coach at the beginning of summer school, she asked him if she could "try out" some ideas for coaching by working with him that summer. She began by sitting in on his classes. Later he reported,

> I'd be in the midst of a lesson and she would raise her hand and ask a question. One time, we were doing two step algebra problems with the kids and some of them were struggling with the order of operations. So she said "well isn't it kind of like the, please excuse my dear aunt sally, except you go backwards?" They had some fun trying to come up with the reverse acronym and trying to say it backwards. So you know it's just that kind of stuff. I would say that informal stuff has probably been maybe more beneficial to the students than the formal stuff. (Interview, December 2005)

When school started, Robert placed a great deal of emphasis on understanding his students. Using data from informal weekly assessments and the district's benchmark tests, he integrated information to better evaluate their levels of understanding.

> For the first half of the year I meticulously go over those and try to track their progress and see what concepts they're not picking up right away. I take a lot of pride in knowing my students. That's what the first line is about for me, to get to know them.

As the school year progressed, Robert focused on teaching science in ways that would engage students.

> I found a lesson where they design balloon racers. The challenge was to design a car that can be powered from a nine inch balloon that will travel at least 5 meters. I shared it with another teacher and we did this cross team thing where my team raced against his. The engine was basically a straw and a balloon. I came up with this kind of junk box with cardboard, paperclips, etc. They absolutely obsessed over it for an entire week. They were really figuring out how to overcome friction and that was the big physics lesson. Then, of course, we related it to laws of motion and action. Many of them, not all of them, but many of them went home and redesigned their car. They got help from parents and brothers and then came back into the classroom and they were like "I worked at home last night." They could see that sometimes the best designed test or best designed experiment has flaws in it when it comes to implementation. We are trying to build them up to the science fair which will be our focus next semester. (Interview, December 2005)

A continuing question for Robert was "how to get students to accept the fact that they need to come into the classroom and give it their best shot." He was especially concerned about students who struggled with literacy.

> We take notes a lot. I try not to use the book and I'm not the kind of teacher who says "OK, open up chapter or section such and such and take notes." It's guided. I write on the board at the most basic level. I try to use lots of examples and I'm always encouraging them to discuss because I think that motivates them. The kids that really concern me are the ones that can't write. You maybe could consider them "dysgraphic" or they are so self-conscious about their spelling that they don't want to put things down on a piece of paper to where you can see it. When I give them any type of reading, I'm thinking about how this particular child is going to take a look at this and say "no way." So I tear it down so they can read through it. (Interview, December 2005)

During the first summer of the Connected Coaching project, Robert participated in a workshop with a focus on science-based literacy. He helped generate a list of essential vocabulary terms that were shared with all of the science teachers when school started. He volunteered to continue to work with some of the other science teachers to develop ways to incorporate technology more intensively. Beyond these initiatives, he continued his quest for engaging activities.

> What I am trying to do is come up with lessons that are the "super lessons" with multiple entry points for students, where no matter what you do with them, they will come back with something. I am going to the NCTM website. Instead of trying to pull little pieces together into a lesson, I am trying to look for a lesson that once I read through it I say "oh yes." For example, I have a problem here that incorporates palindromes and then that works into a second lesson. I wish I could do those kinds of lessons day after day, but it will take time, a lot of years before I get there. (Interview, November 2006)

He worked with Janice and Melissa to develop a stronger system for monitoring individual performance. They created a portfolio of work samples in which students did a math or science activity and incorporated writing. Students completed a portfolio cover where they showed a key concept from math or science and expressed their understanding of the concept through either an illustration or a story problem. "I did my first round this year, and at the end of the first nine weeks, I was really pleased with what I saw. I got a lot of positive feedback from that" (Interview, November 2006). These portfolios gave Robert another vehicle for improving vocabulary instruction. For terms related to formulas, students kept a special section in the portfolio in which they wrote the formula in words, drew pictures, and explained how to apply the formula.

As he made these changes in instruction, Robert continued to express concern for students who were not doing as well as they could.

> I'm getting a feeling from a lot of them that they have thrown in the towel, that they want to fly under the radar in class. They don't want to go up to the board. They don't answer questions. They are disengaged … it is a great big red flag. The ones that are trying to be invisible and remain unseen, I try to work with them intensely to get them to become part of the classroom. I pair them up in groups, putting them with the right people who can help them. I have held study sessions with them … I got some kids to come in and do some peer tutoring. Three of the ones I am really worried about stayed after school and one of them said "Mr. B., so-and-so explained it to me a different way, and now I get it. She explained it to me better than you did … no offense." I said none taken, I was just happy. I wasn't even in the room and I knew that there was more learning taking place in that hour than would take place in 3–4 class sessions. When I checked in, I could tell by the mood and what was being said. (Interview, November 2006)

In his quest for more engaging lesson activities, Robert volunteered to work with other science teachers on a new grant designed to strengthen the integration of science and technology. During summer 2007, they revised a traditional demonstration activity called "Hail in a Test Tube" to create an inquiry-based lesson. The original lab was a simple experiment in which students would create a "below zero degrees" environment in a test tube half filled with water then add a small piece of ice to see how layers of ice form around that piece, as happens when hail forms in the atmosphere. Originally, Robert intended to begin the unit with a lecture on terms like "updraft" and "convection" and then use the lab activity as a demonstration. In talking with

his colleagues, he decided to try using the lab itself as the introduction to "better fit the inquiry model." To prepare students for the lab, he showed a severe weather video that explored a variety of different weather events and their causes. He engaged students in a discussion after this video and prepared them for their time in the lab the next day. He also showed a *BrainPop* clip on severe weather that included a short quiz that the class took together. Although the first group to try the lab activity experienced technical difficulties, the second group experienced the dramatic results of seeing the immediate crystallization in the test tube. Most groups were able to run the lab a second time to confirm their results. They also created a graph using *LoggerPro* to chart sensor readings. This helped them understand the concept of super cooling the water to create below-zero conditions in the test tube and explain how this lab simulated weather events.

Over the two years of this study, Robert changed his instructional practices in several ways. He gathered information about his students more systematically, searched for more engaging lesson activities, used literacy strategies to guide reading, developed more comprehensive vocabulary strategies, and worked with his teammate to create a portfolio system. Over the summers, he worked with other science teachers to infuse literacy strategies with science concepts and incorporate technology more proactively. He and his teammate worked with Melissa on a regular basis to find ways to engage reluctant students. Consequently, students became more successful.

Janice's Efforts to Improve Instruction

Having worked as a student teacher at Central the year before, Janice began her first year of teaching very familiar with students and with the curriculum. She reported that teaching was her "third career." Originally trained as an illustrator, she saw parallels with that work and teaching. "In illustration, basically what you are doing is you are learning to teach everybody because illustration is about the study of concepts" (Interview, December 2006). Her second career was teaching computer classes in the corporate world. "That taught me a lot too because of the fact that I had to learn to get those concepts to very different levels—an engineer was not on the same level as a person who had never successfully had a job in his life." As soon as she was hired to teach language arts and social studies as Robert's teammate, she asked Melissa to help her design "literature circles" she could use to integrate her social studies and language arts lessons. Together they identified a number of African folk tales that she could use with her social studies unit on Africa.

When school began, Janice integrated the use of journals with literature circles. For example, she featured African folktales in her social studies unit. Beginning with an oral reading of an African folktale featuring Anazi the spider, she led a discussion of the tradition of "tricksters" in many societies. Next, she introduced the essential elements of folktales. In their literature circles, students analyzed other folktales, created illustrative drawings, and wrote personal responses in their journals.

From the beginning, Janice seemed to be attuned to student responses to lesson activities. For example, in one of her first email messages to Melissa, she wrote:

> I emailed J. and J. about DK (675 lexile). His test scores have consistently been dropping. In addition, his reading journal entries barely scratch the surface and show some comprehension problems. He suggested that Ron Weasley's character does not change at all because he still likes Harry. He has read books 4 and 5, and, if you have read them as well, you know that Ron changes tremendously in those books. He also did not have a real clear picture (at least on paper) of how the other characters view Harry. His entries are simplistic and he does not pick up on the concepts we are studying…I am feeling too inexperienced to answer this question for myself. Any ideas? (September 11, 2005)

Later that semester she reflected on ways she had learned to be more observant of students' responses and attitudes.

> A lot of it is just visually seeing the difference in the kids' attitudes in what you are doing. When the piece of the puzzle falls into place for them, it is really obvious in how they approach the product. (Interview, December 2005)

Her attention to students' responses led her to place more emphasis on heightening their explicit attention to learning strategies. Looking back at her first year, she noted:

> I learned this last year, that if you let students know from the beginning that they are going to write about strategy and about how well that lesson worked for you, eventually they can start talking about it on their own. By the

> end of this year, if it works as well as last year, they will be able to really evaluate themselves critically and get to a point they are pulling from text, comparing themselves with others, and finding strategies that will work better for them. (Interview, December 2006)

Students' strategy journals became a central source of information for Janice.

> I have been keeping strategy journals this year where they write up their experience after a project. It is very simple—what did you like? What didn't you like? There is not much more to the journals than that. I keep those journals because I like to take them home and respond back to them while the lesson is still fresh in their minds. That has been one of the best tools I have had. (Interview, December 2006)

At the end of the first year of the project, Janice reported that students on their team did very well on end-of-grade tests. "There was huge amount of growth. They all grew in scale score. There were kids with 14, 15 point gain." (The expected gain is three points. Interview, June 2006). Over the summer, she worked with Robert to expand the use of journals. "He did math journals this year and he really enjoyed doing them and thought they were very, very helpful." She volunteered to attend two of the collaborative planning sessions sponsored by the grant and hoped that her entire grade level might begin to coordinate plans for integrating journals and literacy strategies across the curriculum.

During the second year of the project, Janice expanded her repertoire for interpreting students' responses to lessons by combining reflective observations with analysis of student work samples more systematically.

> I save a lot of work samples and I do some anecdotal notes on the kids, just short things and drop it in my work sample file. Every so many weeks, I look at that file. Also, with the kids that have other issues that are impeding their work, sometimes I will just document what has happened for a couple of days to see if there is a pattern I am missing. (Interview, January 2007)

Janice shared an illustration of this system in her description of her response to students' confusion with an assignment. She became concerned that some of the students were not really seeing how their experiential learning activities contributed to deeper levels of understanding. "I do a lot of project based learning but one of the things I realize is that I have all of these logical, mathematical learners in my class, and they had no idea that point A was going to point D" (January, 2007). When it came time for students to write editorial cartoons at the end of a unit, Janice realized that some of them seemed lost.

> They were expressing concern that they didn't have anything to do their cartoon on. I told them, "You took notes. We did a debate on this. We watched that Great African Cake. I drew you editorial cartoons. I sat up here and showed you 50 of them." They had no clue that the unit was culminating in this cartoon or that they were to use all of the things we had done. They were so surprised that they could use the stuff we had been looking at. Now, every time I do a project, from the time I begin the unit until the end, I tell them, this is going to lead to this. Literally I remind them to keep notes. The amazing difference came when they realized that "oh, all of these things we are doing go together, it's like a puzzle. It fits." Now I reinforce where we are and where we are going every single day. (January, 2007)

As she looked ahead to her work over the summer, Janice considered several possibilities for improving instruction. She planned to work with Melissa and another teacher to develop a unit based on music from Muslim cultures in Africa. "We are going to give an old unit a new twist where the kids will be able to read it and see it in a different way" (June 2007). She also planned to ask Melissa to help her find ways to use more visual images to teach reading comprehension. "Maybe we'll try graphic novels and ask the kids to look at the characters and read, literally, the idea in the pictures. How are they showing you that emotion?" (June 2007).

Like Robert, Janice improved her teaching dramatically over this two year period. From the beginning, she asked Melissa for ideas. Together they crafted literature circles with journal entries and then developed a more sophisticated system of strategy journals. She began to construct detailed case profiles for individual students. To ensure that students internalized the connections between strategy lessons and content activities, she learned to teach much more explicitly, reminding students often of how the pieces of the pedagogical "puzzle" fit together. She participated in summer workshops to improve

integration of literacy and social studies and became a leader among the teachers seeking to enhance interdisciplinary learning.

Collaboration with Teammates, the Literacy Coach, and Other Colleagues

At the end of the first year of the project, Robert reported that the best part of his year was thinking and planning with Janice.

> This year has been so incredible for me because I'm working with a highly motivated bunch of kids. We had a really good year and Ms. D. and I have been a really good team. We have managed to stay positive and not let the dangerous attitude of "it's not cool to be smart—it's not cool to be motivated by school" get started. In our classrooms, we try to make it more like "you know we can still be cool and everything—and we can be highly motivated students." We try to maintain a really positive attitude for the kids and they start to feed off of that. We did our best to communicate, to have the clearest picture of what was happening in each others classrooms. We did "drop everything and read" for the entire year. For about 178 days we did 20 minutes of silent reading. (Interview, June 2006)

As the second year began, Janice and Robert asked Melissa to begin working with them to gather information about individual students who seemed to have difficulty reading. Melissa scheduled a time to read with these students. On one occasion, one of the researchers was able to observe one of these meetings.

> Andre was a little bit shy initially but responded well to Melissa's questions and the kinds of encouragement that she gave him. He did not bring a book with him so Melissa read the back covers of two Walter Dean Myers books to him. Then she asked him to read the first page from one of the books. He read very fluently with lots of expression. He self-corrected on two occasions when he wasn't sure about a word. For example, he first pronounced, "blared" as "bleared" and then used context to figure it out. Next, Melissa conducted a conversation about reading using questions from her reading inventory. Andre explained that he really liked to read aloud and liked to listen to teachers and other students read aloud. He felt he read very slowly and wanted to be able to read faster. When he read silently, he had a very difficult time paying attention. (Researcher's Logbook, September 14, 2006)

After conducting these interviews, Melissa met with Janice and Robert to brainstorm ways to follow up with these students. They decided that Melissa would try meeting with small groups of students "in book club fashion" to offer them choices of supplemental texts and discuss these with classmates. They identified seven students who would benefit from this intervention. Janice and Robert encouraged them to read their selections as part of "sustained, silent reading time," a practice they expanded during the second year of the project. They also invited research assistants to observe these "book club" students in small group activities and talk with them individually about their responses. This collaboration produced individual learning profiles that are reported in the next section.

Another example of collaboration was an integrated unit titled "Empty Bowls." Working with the rest of the seventh grade teachers, Robert and Janice developed a unit of study about hunger and its effects globally and locally. Lessons included cooperative group activities in which students examined the causes and effects of hunger, conducted statistical analysis, and wrote to political leaders advocating for policy changes. Additionally, as a reminder of the many empty bowls around the world, each student created a clay bowl with an artist's statement to accompany it. These bowls were sold at a large culminating event and proceeds donated to a local food bank.

Throughout the planning and implementation of the unit, the literacy coach and other specialists worked with teachers to ensure literacy strategies were woven throughout the unit. Strong collaboration between teachers and specialists produced a variety of texts, differentiated and engaging lessons, integrated content, quality student assessment, and an opportunity for both parent and community feedback. Reflecting back on the two years of the project, Janice concluded,

> I love the resources that the literacy program has brought. Just being able to have another support team that you can talk through lesson plans, that is how I tend to do things. I observe what is going on and then I will have a piece of an idea and then bounce the idea off of three more people and get three more pieces. There is more of a whole that comes into place when working with the literacy team, especially as a second-year teacher. I think I have had a much easier time than I would have had if this project had not been here. I got to watch people do things

before I tried them myself. The support from the program has been amazing. (June 2007)

Student Learning on Robert and Janice's Team

To provide a context for interpreting student achievement on Robert and Janice's team, the researchers disaggregated data from the spring 2007 administration of statewide achievement tests for the seventh grade by team. As indicated in Table 1, the average gain for seventh grade students at Central Middle School was 2.71 scale points in reading and 3.76 scale points in math. Students on Robert and Janice's team (Team 5) demonstrated growth in both reading and math that was greater than the average gain for the grade level (3.35 for reading and 4.58 for math). Although students on Team 3 made higher gains in reading, Team 5's gains in math were the highest of any team. Among students who participated in book clubs, the seven students on Robert and Janice's team made the greatest gains in both reading and math.

To assess student learning more specifically, researchers crafted case studies with "book club students" to see how they responded to instructional tasks. For example, Shari's case reports included the following types of information:

- March 19, 2007 – When Shari took the benchmark assessment in February, she got 23 correct (of 50). She got 16 correct in Reading Literature (below average), and 7 in Thinking Critically (below average). We asked her to repeat two sections of the test and tell us how she got her answers. On the passage *The Outer Banks*, she originally got 2 of 5 questions right and did so again in the interview. On two of the questions, she answered correctly (27, 28), she found it difficult to explain how she knew the answer, saying "I just chose it" and "I just thought about it." On Question # 29, Shari said, "nonfiction means it's not true" and selected D. For Question #30, she used process of elimination, saying, "The other ones didn't sound right." On Question # 31, Shari answered D, "I just guessed." Shari told us that tests like this make her feel nervous and she is afraid she will not do well. She read these two passages hesitantly and encountered few unfamiliar words. Occasionally, she referred back to the passages and identified a correct response. For the most part, she seemed to rely on logic to make "best guesses." She did not mention any use of strategies.
- June 15, 2007 – In her final interview, Shari described herself as a very good student who sticks to her goals. She said she had a good seventh grade year, worked hard on assignments and to stay out of trouble, and did well cooperating with other peer and her teachers. Teachers reported that Shari was conscientious about her work and wanted to do well. Shari's favorite kinds of assignments are hands-on activities, like science labs, simulations, and manipulatives and she also enjoys working with a partner. Shari enjoyed her involvement in the book groups and stated that it was one of the most helpful parts of school for her because

Table 1
Growth in Reading and Math on 2007 End-of-Grade Tests in Grade 7

	Average gains in reading for Grade 7 students	Average gains in math for Grade 7 students	Average gains in reading for Book Club students	Average gains in math for Book Club students
Team 1	0.69	2.90	1.00	4.00
Team 2	3.14	4.03	-1.20	3.00
Team 3	4.69	3.03	2.00	3.44
Team 4	1.69	4.28	-0.75	-2.00
Team 5 (Robert and Janice)	3.35	4.58	5.17	6.67
All Grade 7 students at the school	2.71	3.76	1.24	3.02

> it helped her gain confidence in her reading abilities. She completed several books for the group and says she is now spending about two and a half hours each week reading on her own for fun. In addition to books, Shari enjoys reading magazines. Shari's goals for eighth grade are to make As and Bs and to stay out of trouble. She wants next year's teachers to know that she has a lot of confidence.

On several occasions, research assistants were able to observe book club students during classroom lessons and debrief with them to assess their understanding. For example, this interview summary reported Tonya's responses to the closing seminar from the Empty Bowls unit.

- November 8, 2007 – I spoke with Tonya today about the closing seminar for Empty Bowls. Tonya admitted that she did not at first understand how this passage connected to Empty Bowls. She said talking about it in the group helped her realize that the "reattaching" part was about Empty Bowls. She explained it this way: "There are so many people in Africa who are hungry, that some get detached from the group or forgotten about. When they reintegrate they can talk about how they got back in to the community." I asked if she recognized any metaphors in the passage. She explained one metaphor by saying, "the branch will eventually die when it is cut off, it can't get food anymore." Her recommendation for an alternative closing activity would be to write letters to the people in Africa, like Ms. A.'s old students. "We could write to them saying we see how it is for them, we could tell them how we feel. Maybe we could do something for them instead of just watching them suffer."

These task reports provided an additional source of information for Robert and Janice. Research assistants shared their notes with Melissa who shared insights with Robert and Janice in team meetings. Together the three would examine the ways in which individual students were and were not successful, brainstorming specific strategies and resources that would be most effective for that student. These meetings typically involved making an individualized plan for that student based on the information gathered through the task reports and shared by the teachers. Robert and Janice were always both willing and wanting to look at individual students and reflect on the teaching and learning in their classrooms.

Looking back on the two years of the project, Melissa identified Robert and Janice as one of the teams that collaborated best and whose students made the greatest gains on achievement tests. Melissa attributed their success as teachers to a variety of factors. Robert and Janice worked hard to get to know their students, constantly examining their work and behavior in an effort to understand them as people and as learners. They were committed to support every student becoming the very best learner he or she could, setting the bar high, and providing the necessary supports for students to reach it. A tremendous strength was their ability to differentiate instruction for each of their students.

Robert and Janice collaborated well with other teachers, specialists, and families. They were always open to ideas and trying new approaches with literacy instruction, assessment, and technology. Robert and Janice implemented a team approach so that students experienced consistency in management and expectations. They put a lot of effort into building positive community within their team.

> Some teams were intentional in getting to know students and in helping kids get to know each other. Robert and Janice, in particular, put a great deal of effort in developing cooperative groups, seating students so that they built relationships and supported each other. These teachers met with each other daily, discussing the progress of individual students and developing strategies/ interventions. They collaborated also on instruction … they are both using visualization, using inner voice while reading, making connections, questioning, writing to learn. They conferred with students individually and worked with them in small-group settings both during instructional time and before and after school. They can tell you a wealth of information about every single student on their team and incorporate that understanding into instructional design. (Literacy coach, email, July 2007)

Conclusions

During this investigation, case reports illustrated many of the dynamics of professional growth documented in earlier investigations. With coaches and colleagues, Robert and Janice made sense of literacy strategies through conversations in ways

similar to those in Coburn's (2001) study. Many of these conversations took place in "enactment zones" like those Spillane, Reiser, and Reimer (2002) described. In this study, professional growth often began with discussions of instructional practices and student performance, guided by observations and informal assessments of student achievement. Robert's efforts to improve his instruction centered on a quest for more engaging lesson activities. With activities like the balloon racers and hail-in-a-test tube, he began to emphasize inquiry more than direct instruction. He expanded his repertoire of assessment strategies to include informal weekly diagnostics, portfolios, and individualized observations. Janice focused many of her efforts on integrating language arts and social studies. She developed literature circles using texts related to social studies concepts and incorporated journal writing into both subject areas. She learned to make strategy lessons more explicit and added a strategy dimension to journal writing. To strengthen this emphasis, she began to examine student work samples more specifically and draw on Melissa's expertise with individualized diagnostic assessments.

As teammates, Robert and Janice participated with their grade level colleagues in formal collaborative initiatives like Empty Bowls. They launched team-based initiatives such as sustained silent reading and helped Melissa pilot book clubs for reluctant readers. These accomplishments affirm Kain's (2001) assertion that teaming is an invitation to reinvent teaching. An additional source of synergy came from their collaboration with other colleagues to develop subject-specific teaching improvements in science and language arts. These endeavors helped them question some of their assumptions about direct instruction, learn more about student reasoning, and establish goals that were more precise and individualized.

Beyond these general patterns of professional development, participants experienced spiraling growth in different ways based on the nature of their relationships with coaches and colleagues. As a first year teacher, Janice may have benefited the most from Melissa's coaching. She met with her more often, invited her into her classroom regularly, and modeled some of her lessons on her demonstrations. With a bit more experience, Robert sought Melissa's counsel on specific topics such as integrated units and working with struggling students.

In their own ways, Robert and Janice ventured outside their "comfort zones" to try new instructional practices. Robert gave up a bit of his inclination toward teacher-directed instruction as he incorporated more hands-on inquiry activities into lessons and developed procedures for peer tutoring. Janice learned to assess reading and writing more individually as she collaborated with Melissa and Dave in diagnostic teaching sessions. Robert and Janice gained fresh insights into the ways their students approached instructional tasks. They expressed thoughtful reflections in their interviews and cited specific observations and work samples as evidence of student understanding. Both espoused a "relational" view of teaching to help them fully reach their students, often looking to their students for affirmation. With these aspects of professional growth, Robert and Janice demonstrated the type of collaborative problem solving that previous studies have documented (Borko, 2004; Coburn, 2001; Spillane, 1999). They shared student data with each other on a regular basis and made systematic efforts to teach diagnostically.

While limited in scope, these insights suggest that teachers improve their practice in a non-linear, spiraling fashion fueled by relationships as well as by the interpretation of data from students. As cases in professional development, Robert and Janice demonstrate some of the possibilities for beginning teachers to accomplish great success with their students. Collaboration with Melissa and Dave may have accelerated their professional growth, as did the support they received from each other, their subject area colleagues, and their students. Recognizing this potential, the district decided to continue funding coaching positions when the grant ended. This commitment will enable researchers to continue studying the nature of collaborative professional development. Analysis of these dynamics with a broader group of participants may offer additional insights for nurturing instructional improvement by facilitating deeper conversations about learning and teaching.

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