

PROFESSIONAL DEVELOPMENT THROUGH CLASSROOM COACHING^{*}

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Abstract

This paper presents preliminary results from an ongoing study of classroom coaching in elementary mathematics classes. Seven teachers who have been involved in a professional development program for several years are released from the classroom to work as coaches. I have been observing the coaches in their coaching work, and also observing the teachers whom they are coaching. The purpose of the research is to ascertain whether coaching is effective in improving instruction in mathematics. In this paper I identify three styles of coaching I have observed, and discuss their promise for promoting classroom change.

Purposes

The main purpose of this ongoing project is to investigate the efficacy of classroom coaching in improving instruction in elementary mathematics classrooms. The coaches involved in this study have been participants in a state-funded professional development program for a number of years. That program includes three major aspects:

- an intensive 3-week summer institute focusing on mathematics content, pedagogical content knowledge, and leadership skills;
- summer lab schools for children organized and run by participants, who themselves, with staff support, provide professional development for team teachers who teach the classes;
- comprehensive follow-up activities including workshops with leading national and international mathematics educators.

Part of the leadership development strand has included training in classroom coaching, using a peer coaching model. With private foundation funding, the coaches in this study have been released from classroom duties to be full-time coaches in mathematics in their districts. This ongoing study has been designed to ascertain the impact these coaches are having in the classrooms in which they work, and indirectly, the impact of the professional development in which they have participated. In particular, the study was designed to document how coaches worked, how they interpreted their roles, and how they affected the teachers with whom they worked.

Background

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In the last edition of the *Handbook of Research on Teaching*, the chapter on mathematics education (Romberg & Carpenter, 1986) hardly mentions research on in-service teacher education. As Grouws pointed out (1988), and as is still the case, there is little information available about the overall design features of in-service education programs which maximize changes in teacher beliefs and ultimately classroom practices. Grouws called for studies that focus on the impact of various features of in-service education on classroom practice. More recently, the *Handbook of Research on Teacher Education* (Sikula, 1996) does not even include coaching in the index of the volume. The meager research that has been reported in mathematics about classroom coaching as a means of professional development predicts considerable promise for this technique. For example, Becker and Pence (1999a,b) identified classroom coaching as the most important component of a professional development program for secondary teachers. In these studies, the coaching was done by the authors, who also designed and implemented the whole professional development program. Coaching that was intended as a non-evaluative mechanism for identifying the impact of the professional development itself became the most important aspect of the in-service for participant teachers. Those studies concluded that coaching might itself be a worthy, though time-consuming and expensive, planned component of professional development.

There are a number of models of coaching extant within the educational community. For example, Evered and Selman (1989) define coaching as conveying a person from where he or she is to where he or she wants to be. The metaphor of an old stagecoach communicates this perspective. In this model the teacher is considered a thoughtful decision-maker who, through support and collaboration, can further develop her/his ability to reflect on and improve instruction. A second model is content-focused coaching (Institute for Learning, 1999), which focuses on the content of the lesson in relationship to issues at the core of the teaching-learning process. From my reading and viewing of videotapes in which content-focused coaching is used, it appears to be a bit more directive, in that the coach may use the pre-conference to “teach” content to a teacher who seems to lack content knowledge related to the lesson, may interrupt the lesson and even take it over, and may provide her/his own solutions during pre- or post-conferences. However, both models have the following characteristics in the ideal situation: a pre-conference to discuss the lesson and its goals and the teacher’s focus for the observation; an observation of the lesson in which the coach records as much data as possible; and a post-conference to debrief. Coaching might also include demonstration lessons, co-teaching, or joint lesson planning. In this study I applied aspects of both models during observations of coaching sessions as seemed appropriate. That is, I focused on interactional moves of the coach, such as listening skills, strategic questions, and use of feedback, as well as content specific moves, such as clarifying the goals of the lesson, anticipating and diagnosing difficulties, or reflecting on students’ attainment of lesson goals.

Methodology

This was a qualitative study using participant observation techniques (Glaser & Strauss, 1967). Observation sessions varied depending upon what the individual coach had planned and how s/he worked with teachers. For example, one coach, Lewis, is working with two fourth grade teachers at the same school. They plan lessons together in a meeting a day or two before the lesson. Then the coach views half of the lesson with one teacher and half with the other, and holds a joint post-conference with both teachers during lunch. Because of scheduling and prohibitive distances involved, in this case I meet with the coach before the lessons to determine what was discussed in the pre-conference. Then we jointly observe the classes, interacting with the children as they work on activities. I observe the post-conference, providing my input when asked or when it adds to discussion of, for example, student work. In this case I am more on the observer end of the participant-observer continuum.

In another case, I spend the whole morning at a school with the coach, Nellie, and the two fifth grade teachers with whom she is working. We have a brief pre-conference with each separately, one before school, the other during a break, identifying areas of focus for the observation. We observe the whole mathematics lesson of each teacher, with the coach making notes that she hands to them during the post-conference. The post-conference usually takes place with both teachers during lunch. There are other variations but space limitations preclude discussing these.

All notes from observations and interviews with teachers and coaches are typed and expanded, with patterns and questions to investigate further identified as work progressed (Glaser & Strauss, 1967). The aim is to identify patterns of coaching work and its impact on teachers, and subsequently, to ascertain how participation in the professional development program has affected the coaches and their work. Data include field notes, interview transcripts, and artifacts from the classrooms such as assessments.

Data Sources

The study is ongoing during the 2000-2001 academic year. Seven coaches are being observed, each with at least one teacher, for a total of 13 teachers and 7 coaches. Due to space limitations this paper will discuss the case of three coaches, here called Lewis, Nellie, and April to preserve anonymity.

Lewis is a former middle school teacher who has been with the professional development project for three years. This is his third year as a coach. Lewis is a European American male who has been teaching over 20 years. He works in a small district of eight K-8 schools in northern California. This district uses *Mathland* as its curriculum at the elementary level, and *Connected Mathematics* for middle school. *College Prep Math* is also used for

two eighth grade algebra classes. Lewis is working with two fourth grade teachers, Sally and Susan, both young and relatively new teachers.

Nellie is a former intermediate school teacher who has been with the professional development project for two years and is in her second year as coach. Nellie is a European American female with over 30 years of teaching experience. She is working with two female fifth grade teachers, one in her first year of teaching. Nellie works in a small K-8 district in an urban area with a very diverse student population. Many students are emerging English learners, especially in the primary grades.

April is a former primary teacher who works in a small-city unified (K-12) district. April is a European American female with 15 years of experience. She has been in the project for five years and a coach for three. April is working with two first and two second grade teachers and I am also observing two other teachers with whom she has worked in the past (third and fourth grades). Here I will be focusing on her work with the primary teachers.

Results

At this point in the study three different modes of coaching have been identified based upon how the coaches interact with the teachers with whom they are working and on how they seem to define their role. I am calling these: coach as collaborator, coach as model, and coach as director.

Coach as collaborator. Lewis is an example of what I am calling a “coach as collaborator.” He endeavors to be one of the group of three who are working on this lesson together. Thus the post-conferences tend to be about the structure of the lesson rather than specific as to how each teacher implemented the planned lesson. In fact, by viewing half of each lesson for Sally and Susan, Lewis cannot really ascertain how the second teacher developed the core of the lesson [he does switch order each visit]. Lewis does not keep written notes from the lessons, and does not give the teachers written feedback. However, he works closely with children, frequently asking questions, and seems to have a good sense of what they are understanding. For example, in one lesson the teachers were developing multiplication facts greater than 10; they wanted children to work them out without use of the standard algorithm. In Sally’s class, as students shared their methods orally, it was clear that this was difficult for those who knew the algorithm. One girl even verbalized the whole standard algorithm by visualizing it in her head (the problem was 12×6). Both Sally and Susan noted in the post-conference that students seemed wedded to an algorithm. Lewis had noticed in his questioning of children in both classes that many did have other strategies for figuring out 12×6 . Lewis suggested to the teachers that they ask children to find more than one way to do the problem to get them beyond an algorithm. Sally and Susan liked this suggestion, and in later observations, both were observed asking for more than one way in other contexts.

Although much of his work is collaborative, it is clear that Lewis has a slightly different role from that of the teachers. He provides performance assessment practice items for teachers' use, scores them for the teachers, and does the class presentations of the problems and the rubric scoring to help children get familiar with that type of testing. Although Lewis does not provide feedback specific to how a teacher organized the lesson, he does concentrate on what students seemed to understand. By being active in the classroom, watching and questioning students, he gleans considerable information about student understanding to share with teachers. From Lewis' perspective, perhaps the most important part of his role is encouraging and facilitating the team planning and reflection that are occurring. Without his presence as coach, this level of collaboration would not be taking place. The planning time forces each teacher to think through the lesson, its goals, and how they plan to implement them beforehand. Because they are working as a team in this way, they have a mutual responsibility for the lesson and its pros and cons. The teaming that Lewis has encouraged has extended to consistent planning throughout the week, even when he is not visiting. Thus Lewis' model encourages the elimination of the isolation many teachers in the USA feel by working alone in their own classrooms.

On the other hand, lack of specific feedback to each teacher precludes Lewis from the possibility of influencing the teachers' teaching strategies. A lesson may be the same but may be implemented in quite different ways. Thus Sally has a need for full control at all times in her classroom, so that she shows students exactly how she wants them to do problems. This discourages multiple methods of solution, such as sought for 12x6. Susan's more open style generates more ways of solving problems. Peer visits or feedback on pedagogy might provide both with more ideas on instructional strategies that would lead to further mutual professional growth.

Coach as director. Nellie is an example of what I term "coach as director." Nellie's model of working with Harriot and Debra is much more directive. Although in the pre-conference she asks them what they would like her observation to focus on, Nellie feels free to interject her opinion on something that occurred in the lesson even if that was not the specific focus of the observation. For example, in one observation of Harriot, the teacher had the children start on a two-day lesson in which they had to measure 100m outside the room. After some measurement of the room and estimation of 100m, she asked how they would actually measure 100m. By very persistent questioning and major hints, she finally got someone to say what she had intended: to make a longer measuring instrument than the meter stick using register tape. Nellie felt that Harriot should have given students more opportunity to develop their own method rather than leading them to "her" way. She **told** Harriot that after the observation, and wrote it in her notes to her. While Lewis might have raised a question and collaboratively worked with the teachers to come up with alternative strategies, Nellie was very explicit as to what Harriot should have done.

Although Harriot and Debra teach at the same school, there has been no attempt at team planning and in fact on each visit they have been teaching totally different units of content. Nellie seems to view her role not so much as “fixing” teachers but very directly providing guidance and alternative strategies that she believes will work. As Nellie is much older than either Harriot or Debra, the relationship seems to be a motherly one, in which direct guidance is accepted rather than resented. Thus Nellie seems to have quite good rapport with both teachers. However, I have yet to see either teacher subsume Nellie’s suggestions into her own repertoire of teaching strategies. Perhaps Nellie’s style is not supporting instructional change in the way she might like because she is not promoting thoughtful decision-making and self-reflection with these two teachers.

Coach as model. April exemplifies “coach as model.” April has developed a unique way of working with teachers new to her. First she presents several model lessons, leaving the teachers materials and ideas on how to continue that work until her next visit. Then she moves into modeling a peer coaching model, in which she is the teacher and the classroom teachers act as coach for her. Then she plans to facilitate, by covering their mathematics classes, their serving as peer coaches for each other.

For example, I observed two second grade lessons that April did several weeks apart. In the first lesson, April was investigating growing patterns. She first modeled finding the first five steps in a geometric pattern on the overhead projector, engaging the children in finding the pattern and describing how it was growing. Next children were given pre-made patterns to copy with cubes, then extend to the fourth and fifth steps. Patterns ranged in difficulty and were exchanged as children completed them. April did this lesson in both classes for each teacher, then left the materials behind asking them to give children more practice in finding growing patterns and extending them. At the next lesson, a two-day one, children had to complete five steps of a pattern with cubes, then color in the first five steps on inch grid paper, then make a poster of their pattern and a description of how it grew. This lesson ramped up the concept as children had to also fill in a table showing how many cubes were used at each step; this was also modeled with the whole group. Interestingly, April adjusted her instruction of the second lesson in the second class as one aspect, looking for patterns in a 100s chart, confused the children. This difficulty and her adjustment provided interesting topics for discussion after the lesson.

Thus April is acting as a model on several dimensions. She presents exemplary lessons and is always prepared with materials, manipulatives, and everything needed for the lesson. Her lessons always begin with a whole-group activity in which she models what she would like the children to do. She clearly does long-range planning as teachers can infer from the work she leaves them to do. She wants them to do peer visits, so she first models that to help them understand and feel comfortable with it. Perhaps it is April’s background in primary school that makes her affinity for modeling so ingrained.

Summary

This study identified three different ways of coaching. These could be considered to range on a continuum from less to more directive. April is perhaps the least directive as she tries to stimulate professional growth in teachers through modeling. Lewis is still quite non-directive, but he does raise questions regarding instruction that he tries to work through with the teachers through collaborative dialogue. Nellie is the most directive of this group, explicitly giving her opinions and suggestions even if not requested. Since I have yet to see the teachers with whom April is working teach on their own (this is a slow development April has planned), I cannot judge directly how her approach will impact their teaching. But teachers seem somewhat awed by what their children can do mathematically and seem eager to emulate April's approach to classroom discussion. Lewis seems to have had a positive affect on the teachers with whom he works by encouraging their own decision-making and by encouraging the collaboration which they have transferred to all lessons. Nellie's approach seems to have the least potential for stimulating teacher growth; no substantial changes in teachers' instruction is evident at this point in the study.

Of course these are three individuals who have a personal style that must match their own personality. I would not want to generalize that everyone should work in one style. However, these three cases are thought-provoking and stimulate questions that will be investigated with the rest of the sample of coaches:

Is there a style of coaching that is most efficacious in promoting growth in teachers?

Is there a range of skills and dispositions that are needed by a coach?

What is effective coaching?

How does a coach develop a practice of effective coaching?

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