

COACHING: ONE MATHEMATICS SPECIALIST'S STORY

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It's Monday morning. I walk into the office, speak to the office staff, and get my key. I turn to open the door and hear, "Ms. Doyle, Ms. Crane's biweekly data doesn't look good. I want you to work with her." This is a very familiar request that I have heard numerous times from my principal. So, I place a note in Ms. Crane's mailbox letting her know that I would like to meet during her planning period the next day.

I hadn't worked with Ms. Crane on an individual basis and was hopeful that she would see our working together in a positive light. What I knew of her was based on what I had observed during quick walk-throughs in her classroom and during grade-level meetings. I knew that she had been teaching for four years and had taught only fifth graders. Her classroom was set up in rows, and from what I had observed, she was a very traditional teacher. She used manipulatives occasionally, but even these were used in a very traditional, scripted manner with little student exploration.

As I walked up the three flights of stairs to my office, the word "relationship" kept coming to mind. In my Education/Leadership courses, the relationship between the coach and the teacher was an important topic. My instincts told me that I might need to devote a little extra time to the relationship aspect as I approached this new coaching endeavor. Since I was assigned to work with Ms. Crane, I needed to make sure she realized that the focus of our working together would be to assist her in modifying and adjusting her instruction so that all her students are able to learn the mathematics content. It was very important that she saw me, not as an evaluator, but as a "partner" working to provide the best instruction so that all of the students can become mathematically proficient.

I looked on my book shelf and found my copy of *Content-Focused Coaching* by West and Staub [1]. It would be great if we could do all of the components: the pre-conference, observation, and post-conference. However, I knew from experience that two out of the three would be an accomplishment. I had previously highlighted different sections of the book, and

located the section entitled, “Getting to Know the Teacher.” I wanted to have specific questions in mind for our first meeting. As my eyes roamed over the page, I saw that the first highlighted sentence read: “The purpose of the first conversation is to establish a mutual agreement to work together, to begin to define the parameters of that work and to lay out a plan of action, or at least a framework that feels comfortable and productive to both parties” [1].

“Wow,” I thought, “that’s a lot for one possibly twenty-minute conversation.” I decided to begin with only four of the suggested questions or topics. I selected the following because I thought they would lead to an informative discussion:

- What is your favorite subject to teach?
- What are your feelings about math?
- What is your math history?
- Tell me about your students.

Tuesday afternoon arrived and I headed to Ms. Crane’s room. We exchanged pleasantries. I had a flashback to the *Content-Focused Coaching* book. I had highlighted “...that there be no hidden agenda.” Should I tell Ms. Crane that I was told to work with her because her biweekly data was low? Would it be dishonest not to mention this? As if she read my mind, she said, “I know my biweekly data wasn’t the best.” I let her know that the principal had shared this with me. I asked her to tell me why she believed her students scored so poorly. She explained that she had been out three teaching days and hadn’t taught all of the skills that were tested. However, her students had caught up and she had retested them. She shared the students’ tests; they had done very well on the multiple-choice assessment. I indicated that I still wanted to work with her on the next strand even though she might not need assistance with teaching the fraction concepts. She responded with a slightly reluctant, “That will be fine.” I ignored her hesitation and began to ask some of the questions that I had selected. I learned that reading was her favorite subject. She indicated that mathematics was “okay” and that “sometimes it was fun to teach it.” She had a minor in history and described herself as “having very little math” in school. Ms. Crane considered her students to be very good readers. She said they enjoyed doing math problems on the board and that they were very active. She also mentioned that they could get very noisy and boisterous when she tried to put them in groups or partners, and this was her reason for using row seating. Ms. Crane said that all of her students do well except for three or four that “don’t seem to get it” unless she pulls them aside during her planning period.

I confirmed that geometry was a future strand that she was to teach. She said that she intended to use her geometry plans from the previous year. I suggested that she bring them to our next meeting so that we could adapt them to meet the needs of the three or four students that usually “don’t get it.” When I asked her for the best time to meet before her first geometry lesson, I was surprised when she suggested the next day during her planning period.

During the course of the day, I reviewed the NCTM *Principles and Standards* for geometry, the Virginia *Standards of Learning* objectives, as well as my school system’s Curriculum Compass [2, 3]. This was a strategy that I learned from the Leadership courses. Each time we took a content course, we followed up in the Leadership course by investigating the NCTM *Principles and Standards* and the *Standards of Learning* objectives for the strand. I continue to do this because it provides a clearer picture of the prerequisite knowledge that the students need and gives me a better understanding of what the true conceptual knowledge should look like.

I also referred back to *Content-Focused Coaching*; specifically, the core issues in designing a mathematical lesson. I thought that these would be good questions to keep the conversation focused on the mathematics content and student learning. I decided to focus my questions on: 1) the goals of the lesson; 2) students’ prior knowledge and difficulties; and, 3) how the lesson helps students reach the goal. There were so many interesting questions to choose from that would provide a great deal of insight into Ms. Crane’s teaching and beliefs about student learning, but I thought that if I tried to focus on too many I wouldn’t be able to devote enough time to each one. Time is always a factor when working with teachers—there never seems to be enough of it!

The Pre-Conference

On Wednesday, Ms. Crane brought one lesson plan to our pre-conference. It consisted of pages from the teacher’s edition of a mathematics textbook. She indicated that this was the lesson she had planned to teach. It was a lesson plan on congruence. There was a warm-up activity, teacher modeling, a practice page, an independent workbook page, and a closing activity. As I glanced over the lesson, I remembered the textbook lesson that I had adapted during the Leadership course. It was very similar to this one. I am still impressed by how much of the work I did in the Leadership course continues to be relevant in my day-to-day work as a Mathematics Specialist.

Looking over the lesson, I came to realize that we needed to do a great deal of work with it to make it more effective. I also realized that I would have to provide some effective questioning in order to guide Ms. Crane so that she could understand how the lesson could be changed to meet the needs of *all* of her students. In addition, I had to make sure that the beginning of our working relationship remained positive. I didn't want Ms. Crane to feel that I didn't see any value in her selection of a lesson plan.

Before we started discussing the lesson, Ms. Crane let me know that she only had twenty minutes of planning time. The time factor appeared yet again. This didn't give me very much time for effective questioning or discussion. I decided to concentrate on the goal of the lesson and the students' prior knowledge and possible difficulties. I believed that discussing these issues first would be a good way for her to begin incorporating her students' specific needs as she planned her lesson. Even though we might not adapt the actual lesson, I would feel that we made some progress if I could get her to think differently about her approach to the lesson.

Ms. Crane described the goal of the lesson was for students to identify congruent, non-congruent, and similar figures. She indicated that her students could identify shapes that were the "same," but didn't understand the terms congruent, non-congruent, or similar. When I asked her about areas that her students might have difficulty with, she indicated that the vocabulary might be a problem for about four of the students and she listed them by name. I asked her to show me where in the lesson plan she would provide the necessary assistance for these students. She glanced through the lesson, and then responded that she would have to add it in, "probably while the other students were doing the textbook page." I knew that our time was up, so I asked her to think about what type of assistance she would give and if she would use manipulatives to supplement the textbook with this group. I hoped that these questions would provoke some thought about using manipulatives rather than just the textbook.

We really could have used at least an hour and a half or more to discuss the lesson, but I felt that I had given Ms. Crane some important issues to think about in this short amount of time. I let her know that I was looking forward to observing her lesson on Thursday.

The Lesson

I was excited about observing Ms. Crane's lesson. I wondered what type of support she would provide to those students she identified as needing additional assistance. Would she attempt to make any changes at all?

Ms. Crane began the lesson as outlined in the teacher's edition. The lesson was very traditional. The students repeated and recited the definitions for the vocabulary. Ms. Crane showed the students how to check the figures visually for the same size and shape and then refer back to the definition to decide if the shapes were congruent, non-congruent, or similar. As I observed the lesson, I wished that there had been more time in our conference to discuss using tracing paper and questions that she could ask to lead the students to form their own definitions. Even though the lesson didn't demonstrate best practices, the majority of the students showed an understanding of the concepts.

Situations like this usually pose a dilemma for me. It's true that I wanted the students to gain as much understanding from the lesson as they possibly could—but how will a teacher begin to realize that her instruction isn't building mathematical thinking and conceptual understanding in her students, especially when the students are able to demonstrate mastery on assessments? In many cases, I have found that most teachers determine the success of a lesson based on test scores and believe that, if the students are passing, there is no need for changes in instructional delivery. As a Mathematics Specialist, I often wonder how I can get teachers to understand that it is possible and valuable to teach for conceptual understanding and still have the students do well on assessments.

As I continued to observe the lesson, I noticed that Ms. Crane had been fairly accurate in identifying which students would have difficulty. She pulled those students to a round table away from the whole group. I expected her to go over the textbook page. However, she took out vocabulary picture word cards and used these to review the concepts. The vocabulary picture word cards had the definition and an example. She also had cut out shapes in different sizes for the students to categorize and describe as congruent, non-congruent, or similar. As I watched, I thought that this would have been a great activity for the whole class if they could have also worked in small groups. As Ms. Crane continued with the small group lesson, my mind jumped to envision the students working in pairs and discussing how to compare the shapes. However, the small group lesson proved to be very traditional as well. Ms. Crane talked the group through comparing the shapes just as she did with the whole group. One student, however, took one shape, placed it on top of another, and then observed that it was congruent. "Yes, great strategy!" I thought. I had hoped that Ms. Crane would use this as a teachable moment and let the students discuss this strategy and possibly share others; however, she proceeded with the lesson as before.

After Ms. Crane completed this activity, she sent the students back to their seats to complete the textbook page.

Many questions came to mind as I observed the small group interaction. Was she unsure how to use manipulatives to bring out conceptual understanding? Did she not encourage the new strategy because she didn't know what questions to ask? How would she have responded if I had chosen to interject with a question?

The Post-Conference

Ms. Crane sought me out during her lunch break. She was anxious to know what I thought about her lesson. I didn't want to put her off, but I needed more than ten minutes for us to discuss my observations. I commented on her selection of manipulatives and asked if we could meet after work. She agreed.

I decided to focus only on the small group portion of the lesson unless the other areas came up during the course of the conference. I began the conversation by asking Ms. Crane how she thought the lesson went. She thought the lesson was effective. She shared that she believed that the students understood the concepts, especially the small group. I asked her how the students showed her that they understood. She explained that she watched them categorize and group the shapes, and they completed the textbook page correctly. She showed me the textbook work where the students wrote the words congruent, non-congruent, or similar. I then asked her to explain what in her lesson helped those particular students she thought were going to have difficulties mastering the concepts. She indicated that it was pulling them aside and using the cutouts and vocabulary cards. I asked Ms. Crane what her thoughts were about the student that had put one shape on top of another. She indicated that she saw it, but that pursuing it would get the students off task. She indicated that the students couldn't do that with the *SOL* Test. I used this opportunity to suggest that the students could trace the shapes as another strategy. I offered to come to her class and model a lesson on congruence using different strategies. She asked if I could come in the next day since that would be the last time she would be teaching this concept. I usually prefer more time to prepare, but I felt that it was important not to let this opportunity pass, so I agreed. Ms. Crane began to look at her watch and stated that she really had to leave. I felt that we had just gotten started, but it was after school and we were on her personal time. As she was leaving, I posed a question: Would the small group activity have been as effective if she'd used it with the whole class? I also asked her to think about how the small group lesson may have been different had the students worked in pairs to discuss and categorize the shapes.

Conclusion

This initial coaching experience with Ms. Crane opened the door to more coaching opportunities with her. Even though I would have preferred to have had more time for lesson co-planning and conferencing, the work that we did set the foundation for our extended coaching relationship. I realize that there was so much more that needed to be addressed; but realistically, a Mathematics Specialist has to take the time she is given and prioritize which topics to address. It would have been wonderful to get more involved with the mathematics and adapt the lesson, strategies, and tasks that were used. However, even with the time constraints, I believe that the questions that I posed provided the opportunity for Ms. Crane at least to start thinking about student learning as she plans her lessons. Since this first coaching opportunity, we have worked together many times and she has responded in a positive manner to my suggestions. We have looked at student work, co-taught together, and I have modeled lessons for her. I realize that if I had tried to cover all of her weak areas at one time, she might not be as receptive as she is now to further coaching. Ms. Crane continues to be open to trying new strategies and looking at her students' learning differently.

References

- [1] L. West and F.C. Staub, *Content-Focused Coaching: Transforming Mathematics Lessons*, Heinemann, Portsmouth, NH, 2003.
- [2] *Principles and Standards for School Mathematics*, National Council of Teachers of Mathematics, Reston, VA, 2000.
- [3] *Standards of Learning for Virginia Public Schools*, Board of Education, Commonwealth of Virginia, Richmond, VA, 1995.