

Fostering Pre-Service Teachers' Pedagogical Content Knowledge through Collaborative Coaching

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This study uses activity theory to examine collaboration between graduate students (in-service teachers) serving as literacy coaches and undergraduate students (pre-service teachers) functioning as tutors in a university reading clinic. The participants tutored students in grades first through sixth for seven weeks. The purpose of the study was to understand how this experience shaped the pre-service teachers' pedagogical content knowledge. The data showed that through various types of collaboration, the participants' knowledge of struggling readers grew. Implications include creating and examining additional "spaces" for pre-service and in-service teachers to collaborate in order to strengthen pedagogical content knowledge.

Pre-service teachers need to be competent in their ability to teach reading to various students. However, research has shown that becoming an effective elementary reading teacher is a lengthy process and can take two to three years of sustained professional development (Duffy, 1993). One way to advance pre-service teachers' knowledge of reading, according to Haverback and Parault (2011), is through domain-specific field experiences. Traditional teaching field placements offer pre-service teachers opportunities to work with students in schools while building on the knowledge they gain from their course work (Eick, Ware & Jones, 2004). However, these traditional field experiences provide few opportunities for pre-service teachers to develop essential pedagogical content knowledge (PCK) such as coping with learners' difficulties, following learners' development, and tracking the impact of their teaching (Ragonis & Hazzan, 2009). In contrast, domain-specific field experiences offer pre-service teachers opportunities to

"practice" in disciplinary teaching situations with the goal of improving their PCK.

A reading clinic is one type of domain-specific field experience that is often used in teacher education (Fresko & Wertheim 2006). Research shows that participation in reading clinics is beneficial for both tutors and tutees (Hayden & Chui, 2013). However, few studies examine the impact of such experiences on collaboration or the potential of tutoring to shape one's PCK.

Thus, we designed a study to examine the collaboration between graduate in-service teachers (ISTs) serving as literacy coaches and pre-service teachers (PSTs) functioning as tutors in a university reading clinic. Thus, these two systems, the ISTs and PSTs, that were once separated, now are engaged in a collaborative domain-specific learning experience. The purpose of this study was to understand how this experience shaped PSTs' PCK. By analyzing the various data sources from all participants, the findings of this study look to contribute to research on

reading clinics and professional collaboration.

Theoretical Framework

Activity theory is a framework for understanding how an outcome is realized through interactions among subjects, tools, and the history and rules of the community being studied (Engeström & Miettinen, 2003). Activity theory is rooted in Vygotsky's cultural-historical theory, but differs because the actions within a system are driven by a motive or object and result in a collective (not individual) outcome (Baran & Cagiltay, 2010). The result is expansive learning. This perspective provided an ideal framework for studying how the interaction between both activity systems (the ISTs and the PSTs) shaped the PSTs' PCK. In the current study, the motivation driving the PSTs was a desire to improve the reading ability of their reading clinic client. The ISTs wanted to improve the ability of the PSTs to plan and provide effective instruction. The discussions taken up by participants in both systems provided a rich context to study the expansive learning related to the PSTs' development of PCK.

Literature Review Reading Education Field Experiences. Domain specific field experiences, such as tutoring in a reading clinic, can have a positive impact on PSTs' understanding of pedagogical practices in reading because it allows them to put literacy theories into practice (Haverback & Parault, 2011). In addition, when joined with self-reflection, these experiences have generated positive effects on professional growth in a variety of settings (Collet, 2012; Hoffman, et al., 2014). For example, Collet (2012) found that when literacy coaches modeled, made recommendations, asked probing questions, affirmed teachers' appropriate decisions, and used praise, the coaches in her study

were able to scaffold teachers toward interdependence and collaboration.

Reflective Professional Collaboration. Reflective professional collaboration can deepen and refresh teachers' content knowledge and advance their pedagogical practices (Chen, 2012). Positive examples of this type of collaboration have been documented worldwide (Chen, Chen & Tsai, 2009). Fishbaugh (1997) noted four types of collaboration: supportive, facilitative, informative, and prescriptive. The term "supportive" refers to the ways collaborators help each other and recognize each other's work. "Facilitative" focuses on assisting fellow collaborators solve problems, while "informative" involves sharing information and offering assistance to colleagues. Finally, "prescriptive" indicates a path of action for individuals to take. These types of collaboration can be mutually beneficial to all involved in the relationship. However, most research on reflective professional collaboration is conducted within the same professional tier. Same-tier collaborations, such as PST/PST, offer horizontal scaffolds in peer learning. Cross-tier collaborations, such as PST/IST, have the potential to generate vertical scaffolding due to modeling and mentoring from experienced teachers (Chen, 2012). While both types of collaboration are beneficial, there is a need to understand what happens within cross-tier collaborations.

Pedagogical Content Knowledge. Pedagogical content knowledge (PCK) (Shulman, 1987) reflects the ways teachers understand content (the what of teaching), and the ways teachers understand pedagogy (the how of teaching). In other words, PCK is a form of practical knowledge that teachers use to guide their actions in classrooms (Van Driel & Berry, 2012).

For over 20 years, PCK has provided an invaluable construct for those seeking to

understand the nature of teachers' knowledge and their decision-making processes (Darling-Hammond, 2016). Experienced teachers can guide the development of PSTs' PCK through observation and discussion of those teachers' practices (Burn, 2007). Furthermore, focused support and evaluative feedback can foster PCK in PSTs when they are situated in a context that allows them to be exposed to multiple instances of an event. This allows preservice teachers to have opportunities to develop an understanding of the range of practices needed for various situations (Clark, Helfrich, & Hatch, 2015).

The university reading clinic provided such an opportunity and thus, the intent of this study was twofold: 1) to understand what types of collaboration emerged between PSTs and ISTs in a university reading clinic, and 2) how did those collaborations foster PSTs' pedagogical content knowledge?

Methodology

Since collaboration between coaches and tutors has not been thoroughly studied in the university reading clinic setting, a collective case-study approach (Yin, 2009) was most appropriate for this data set which is part of a larger coaching styles study. Specifically, we used an exploratory case study design to focus on the process, not each individual IST and PST partnership. This provided a deeper understanding of how collaboration between these two systems shaped PSTs' PCK (Creswell, 2005).

Context. The study took place during a seven-week reading clinic at a southeastern university. For an hour each week, a group of PSTs (tutors) worked with ISTs (coaches) enrolled in the graduate reading program. In addition, the PSTs had 10 hours of internship a week at a local school. Previously, the reading clinic tutors were only graduate students, but due to the desire to provide

PSTs with a domain specific field experience and give the graduate students an opportunity to practice literacy coaching, the partnership between the two courses began in the fall before this study took place in the following spring.

The PSTs worked in pairs to tutor at the clinic. Each PST taught one component of the lesson plan (supported reading, word study, and fluency) while the other tutor observed and took anecdotal notes. The graduate students (coaches) collaborated with the tutors by providing written feedback on lesson plans prior to implementation and facilitating 20 minute reflective post conferences with the tutors after each session.

Subjects. The tutors, 23 elementary education majors, were juniors enrolled in an elementary reading methods course. The first author was their instructor for the course and met with them exclusively for the first five weeks of the semester before transitioning to splitting the class time between instruction and tutoring in the reading clinic. The coaches, four teachers with between one and eight years of teaching experience, were enrolled in the graduate course connected to the reading clinic. Their instructor, the second author, shared readings and research on effective ways to form collaborative, supportive relationships with the graduate students prior to them coaching the tutors. The reading clinic clients, 10 children from diverse cultures and varied socioeconomic backgrounds, were in first through sixth grade.

Data Collection. Data collection focused on the types of collaboration between PSTs and ISTs in the university reading clinic and how those collaborations shaped the PSTs' PCK. Evidence included artifacts from the course such as the PSTs and ISTs' weekly self-reflections, lesson plans, and anecdotal notes taken during the clinic sessions. The faculty teaching the undergraduate and graduate literacy courses

connected to the clinic also took detailed field notes while observing the clinic sessions and post clinic conversations.

Data Analysis. Analysis of the reflections, lesson plans, and field notes followed a three phase process (Miles & Huberman, 1994). In the data reduction phase(s), collected data were analyzed to identify collaboration patterns between the coaches and tutors using Fishbaugh's (1997) four types of collaboration: supportive, facilitative, informative, and prescriptive. The data was also analyzed using conceptualizations of PCK by drawing on the seven categories identified by Van Driel et al. (1998) in their comparative survey of five influential models of PCK including knowledge of: subject matter, representations and strategies, student learning, general pedagogy, curriculum and media, context, and purposes.

In the data display phase(s), the coded data was organized into compressed visual displays to illustrate the outcomes of the data reduction phase within and then across cases. During the third phase, drawing and verifying conclusions, the coded data, as well as the visual display of this data, were further analyzed for similarities and differences within and across cases. Interpretations were made about the tutors and coaches' reflective professional collaboration and the PSTs' PCK related to teaching struggling readers. By collecting multiple forms of data, we were able to triangulate the data which helped ensure the interpretations made were accurate (Denzin, 1970; Eisenhart, 2006).

Findings

The cross-case analysis revealed that reflective professional collaboration occurred between the PSTs and ISTs and that the PSTs' PCK, related to struggling readers, was evident while tutoring in the reading clinic.

Collaboration and Pedagogical Content Knowledge. Collaboration and shifts in knowledge were observed during the interactions between the PSTs, ISTs, and clients by the instructors of the class, as well as within the written self-reflections, lesson plans, and final exams of the participants. Fishbaugh's (1997) four types of collaboration and Van Driel et al. (1998)'s conceptions of PCK guided the analysis of the data.

Supportive. This type of collaboration was seen when the ISTs collaborated with the PSTs regarding planning for the clinic sessions and making diagnostic decisions. Georgia, a PST, learned in the reading methods class about different ways to build fluency. In Georgia's mind, fluency was just about reading quickly so she had the idea of using timers to support the client's reading speed. However, Delores, an IST, was quick to point out that speed alone is not fluency. The timing of reading passages must be accompanied by some type of comprehension questions to focus the client's attention on the bigger picture of fluency. Georgia said, "It was an aha moment of when class and clinic collided and I got it." Collaborating with Delores, helped build Georgia's knowledge of general pedagogy PCK specifically related to fluency. Thus, enhanced learning occurred as a result of these two activity systems sharing multiple perspectives to address disruptions to both systems (see Figure 1). The disruption in the PSTs' system was that the clinic client needed additional support with fluency. The disruption in the ISTs' system was that there was a misconception related to the PSTs' developing PCK related to fluency.



Figure 1. PST and ISTS data analyzed using Activity Theory.

In their reflections, the participants noted that this supportive collaboration was mutually beneficial because: 1) it relieved some of the ISTs' responsibilities of preparing each week for tutoring, and 2) the PSTs were able to engage in conversations with ISTs about concepts they were learning in their reading methods course, furthering their understanding.

Informative. Numerous examples were seen in the data related to PSTs and ISTs engaging in informative collaboration, which according to Fishbaugh (1997), occurs when individuals share information with each other. Since the PSTs tutored with the guidance of the ISTs, a lot of information was shared before, during, and after the clinic sessions. This collaborative sharing of information supported the PSTs' knowledge of reading by building on their existing and new literacy knowledge.

In one example, Jessica, a PST, made a comment to Mya, an IST, about how a clinic client was struggling to decode certain words while reading. Mya and Jessica discussed different strategies to support the client with decoding. "Some of the stuff she [Mya] was talking about I had heard of, like put your finger on the word to help them break it apart, but other stuff, I had no clue." Mya reminded Jessica that learning to teach reading is a complicated process and takes years. In fact, that is why Mya returned to the master's program, to become better at teaching reading. "That made me feel better," said Jessica. Jessica's observation of the

student was informative, as was Mya's explanation. Their collaboration benefitted Jessica's developing PCK of representations and strategies to support struggling readers.

Facilitative.

Facilitative collaboration focuses on working towards solutions related to difficulties that arise within the activity. An example of this collaboration was seen as Tori, a PST, shared her frustration about a post clinic session with IST Kelly. "We need to improve our talk after the sessions. I am not sure where to start with the client next week." Tori wanted Kelly to give her ideas during their post clinic conversation about supporting the client's reading progress. Tori wanted facilitative collaboration with Kelly, but did not know how to ask for that type of help. The instructors encouraged Tori to send an email to Kelly, who was actually quite willing to help problem solve before the next clinic session. As a result, Tori developed knowledge of context, specifically the reading clinic, and how to solve problems in that context such as helping the client become a better reader and learning how to ask her coach for support. The coach, Kelly, saw that simply providing Tori with the "answers" was actually not furthering her problem-solving skills.

Prescriptive.

In professional collaborations that are prescriptive, one group member may indicate a path of action for other individuals to take. These types of collaborations were most often seen at the start of the semester when the PSTs relied more heavily on the ISTs to guide them while writing the lesson plans for the reading clinic. Sarah, a PST, shared her thoughts about this type of collaboration. "I get to see teaching in action, teach, and get feedback immediately on my teaching from an expert." The ISTs provided detailed support for the PSTs on how they could improve their interactions with the clients while adding to their

developing knowledge of subject matter, specifically reading.

These types of collaborations also benefited the ISTs because it gave them experience working with novice teachers, a task that many of them will experience if they move out of the classroom and into literacy coaching positions after graduation from the master's program. The ISTs focused on developing the PSTs' knowledge of student learning. The PSTs' written reflections included descriptions of specific instances when the IST said or did something that shaped her knowledge of the client's learning. For example, Kerry, a PST, wrote: *I hope that when I get my first job I have a literacy coach like Mya because knowing that someone is in the school who can help me understand things like kid watching makes me less stressed. I did not even catch that [the client] was not paying attention to the text features so of course his understanding of the nonfiction book was not as strong.*

Discussion

As stated earlier, the purpose of this study was to investigate what types of collaboration emerged as two typically separate systems, PSTs and ISTs, worked together in a university reading clinic and how those interactions fostered PSTs' PCK. Research suggests that teachers with strong PCK know the most powerful ways to represent subject matter, and what makes learning content easy or difficult for students (Carré & Ovens, 2006). The ISTs (coaches) and PSTs (tutors) in the reading clinic were able to identify how to move forward to address many of the problems they sought to solve. These problems, which mainly related to their client's struggle with reading, were primarily supported through facilitative and prescriptive collaborations.

Based on activity theory, it was hypothesized that a great amount of

expansive learning would be reported by the PSTs due to the fact that the two systems (PSTs and ISTs) came together. During the tutoring, the PSTs collaborated with the ISTs to gauge and address the needs of the clinic clients during the tutoring sessions. Furthermore, as the PSTs and ISTs worked together, they created knowledge that would not have been otherwise possible if the two "activity systems" had not come together in discussion and reflection on practice. In this article, we discuss four types of collaboration that shaped the PCK of the PSTs. However, it is beyond the scope of this article to identify if one type of collaboration lead to more or greater PCK.

Implications

We followed up with the PSTs one year after the tutoring experience in the reading clinic. We wanted to understand their thoughts about partnering with the ISTs for tutoring and if they perceived this opportunity impacted their experience in student teaching. The students expressed that the experience was valuable in several ways including: planning for guided reading, assisting struggling readers, and supporting fluency. One PST shared, "The woman I worked with already had experience as a classroom teacher so it made it easier to relate to her knowing that I will one day be in her shoes."

The reading clinic provided a specific space for the PSTs to engage in learner centered decision making. Too often in K-12 schools, instruction is boiled down to pre-planned, scripted lessons written by a publishing company that has no knowledge of the students. As teacher educators, we need to engage our PSTs in authentic tasks that build their PCK by engaging them in supported, self-initiated decision making about student learning.

Before concluding, it is important to acknowledge the limitations of the study. This collective case study, although not generalizable, does begin to paint a picture of how PSTs develop PCK through collaboration with ISTs. Other investigations could look across multiple case studies to gain a better understanding of how teachers develop PCK within domain specific field experiences and what role collaboration plays in that development. Obvious limitations include: the number of participants that they were students of the two researchers, and we did not administer a pre or posttest to assess their PCK. Despite these limitations, the strengths of this study included thick rich description and data collection focused on individual voices.

Conclusion

Through the process of learning, practicing, and reflecting PSTs connect educational theories to actual teaching (Chen, 2012). Thus, higher education institutions across the country are exploring practicum possibilities that offer a “reality check” for students, often in domain specific content. This particular study hoped to better understand the impact of partnering PSTs (tutors) with ISTs (coaches) in a reading clinic context and specifically how collaborating shaped the PSTs’ PCK. We assert that developing PSTs’ PCK, specifically in literacy, must be a vital part of all teacher education programs. Domain specific field experiences, such as reading clinics, hold promise as a tool to facilitate that development because PSTs have an opportunity to apply their skills in a real context and reflect on their existing knowledge of the field. Therefore, we argue, that it is necessary to create and examine additional “spaces” for PSTs and ISTs to come together to strengthen literacy practices as well as collaborate. Furthermore, these

spaces foster opportunities for PSTs and ISTs to contextually develop analytical skills for future and current classroom practice. Research, such as ours, contributes to the conversation of imagining new ways and rethinking typical practicum contexts.

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