Reading Horizons

Exploring Effective Professional Development Strategies for In-Service Teachers on Guiding Beginning Readers to Become More Metacognitive in Their Oral Reading

Sharon M. Pratt[*]   Anita M. Martin[†]

[*]Indiana University Northwest, prattsh@iun.edu

[†]Indiana University Northwest, anitmart@iu.edu

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Abstract

This case study explored professional development centered on explicit teaching strategies with in-service first-grade teachers as they engaged beginning readers to consider stronger self-awareness of their thinking processes as they read. In this paper, we report on how teacher beliefs shifted regarding the impact of explicit versus implicit instructional practices that increased their students' metacognitive awareness and regulation. Teachers adopted specific instructional strategies over the course of the professional development that positively impacted their students' achievement, including one teacher's use of peer coaching. As teachers observed their students doing more than they thought they were capable of, their beliefs about beginning readers' capabilities to selfmonitor their oral reading and explain their thinking processes increased, thus positively impacting the value they placed on the role of explicit metacognitive instruction in early literacy instruction. Our study demonstrated effective components of professional development include integrating reflective and collective reflection within a teacher-driven inquiry model.

KEYWORDS: Self-monitoring, beginning readers, think-alouds, professional development, teacher beliefs, metacognition

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Sharon M. Pratt
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This case study explored professional development centered on explicit teaching strategies with in-service first-grade teachers as they engaged beginning readers to consider stronger self-awareness of their thinking processes as they read. In this paper, we report on how teacher beliefs shifted regarding the impact of explicit versus implicit instructional practices that increased their students' metacognitive awareness and regulation. Teachers adopted specific instructional strategies over the course of the professional development that positively impacted their students' achievement, including one teacher's use of peer coaching. As teachers observed their students doing more than they thought they were capable of, their beliefs about beginning readers' capabilities to self-monitor their oral reading and explain their thinking processes increased, thus positively impacting the value they placed on the role of explicit metacognitive instruction in early literacy instruction. Our study demonstrated effective components of professional development include integrating reflective and collective reflection within a teacher-driven inquiry model.

In our current educational climate, teachers are required to demonstrate increased student performance in reading, sometimes at the expense of developing an inner awareness and self-regulation of learning (Borkowski, 1992; Brandmo & Berger, 2013; R. Fisher, 2002; Gonzalez-DeHaas & Willems, 2016; Yu, 2013). Teachers ask students questions centered on recalling story content rather than questions looking for answers that demonstrate a more comprehensive, inferential understanding of the nuances of the story and the author's intent. However, the Common Core State Standards for English Language Arts (CCSS; National Governors Association Center for Best Practices [NGA Center] & Council of Chief State School Officers [CCSSO], 2010) ask students to go beyond literal recall to a deeper level of comprehension, in which students evaluate text structure and author positions.

Reading is more than accumulating a set of mechanical skills to accurately pronounce words; it is the acquisition of a deeper understanding and evaluation of a text's message, and involves metacognitive awareness and problem solving (Duke & Pearson, 2002; Elosua, Garcia-Madruga, Vila, Gomez-Veiga, & Gil, 2013; Sprainger, Sandral, & Ferrari, 2011; Wade, 1990). Essentially, reading is a strategic process in which readers become metacognitively aware of what they are thinking as they read, as well as a process of learning how to use strategies to improve their understanding (Goodman, Martens, & Flurkey, 2016; Schmitt, 2011). Self-monitoring and self-correcting during oral reading are strong indicators of beginning readers' development of critical metacognitive strategies and should be a part of any early literacy curriculum (Bergeron & Bradbury-Wolf, 2010; Kragler, Martin, & Schreier, 2015).

Literature Review

Drawing on research that supports reading as a strategic process involving metacognitive awareness and problem solving (Duke & Pearson, 2002; Wade, 1990), our research design is grounded in the theoretical framework of metacognition as we investigated (a) teacher beliefs about facilitating beginning readers' development and (b) effective professional development that considers the teachers' needs in relation to the students' needs as they relate to metacognition and beginning readers. Using the ideas of Flavell (1979) and Baker and Brown (1984), we define metacognition in reading as the knowledge and regulation a reader has over his or her own thinking activities, using strategies. Metacognitive strategies are "routines and procedures that allow individuals to monitor and assess their ongoing performance in accomplishing a cognitive task" (Elosua et al., 2013, p. 1429). Understanding what various reading strategies involve (declarative), how to execute these strategies (procedural), and when and why a strategy should be employed (conditional) are three aspects involved in constructing metacognition while reading (Paris, Lipson, & Wixson, 1983). When readers learn to consciously apply metacognitive strategies during reading, they come to understand how reading works and how to identify and repair comprehension breakdowns (Afflerbach, Cho, Kim, Crassas, & Doyle, 2013; Afflerbach, Pearson, & Paris, 2008).

Whereas some research indicates metacognition increases with age (Baker & Brown, 1984; Flavell, 1979; Paris, Wasik, & Turner, 1991; Yaden, 1984), findings reveal even young readers are able to independently control variables related to themselves, their reading, and the text (Bergeron & Bradbury-Wolf, 2010; Brenna, 2011; Goodman et al., 2016; Juliebo, Malicky, & Norman, 1998; Kragler et al., 2015; Martin & Kragler, 2011; Schmitt, 2001). Clay (1991) and Schmitt (2011) describe early strategic reading as involving three processes: (1) self-monitoring to determine if spoken text makes sense, (2) problem solving to work on confusions or inaccuracies, and (3) self-correcting to fix reading miscues. Early readers can differentiate and report which strategies they use to clarify decoding and reading comprehension. Kragler et al. (2015) demonstrated first-through third-grade students could use more than one strategy at a time, attending to both meaning and accuracy of printed text, and thus provide evidence of beginning readers' cognitive flexibility.

Teachers play a significant role in helping students self-monitor their own reading (Forbes, Popard, & McBride, 2004; Lee & Schmitt, 2014; McNaughton, 1981). McNaughton's (1981) seminal study demonstrates teachers' immediate correction of students' miscues negatively impacts students' self-correction attempts in both present and future reading. Delaying correction gives readers time to self-correct and internalize their use of strategies to independently clarify their reading. Lee and Schmitt (2014) extend

this finding by revealing teacher scaffolding through carefully chosen prompts positively correlates to students independently using reading strategies in subsequent readings.

Another highly effective instructional technique to develop readers' metacognition includes teachers modeling their own thinking processes verbally for their students through think-alouds (Afflerbach & Johnson, 1986; Baumann, Jones, & Seifert-Kessell, 1993; Garner, 1987; Silbey, 2002). Research indicates teaching students to think aloud while reading improves their ability to monitor their own comprehension, including learners in preschool and lower elementary (Dorl, 2007; Ortlieb & Norris, 2012; Sainsbury, 2003), struggling readers (Migyanka, Policastro, & Lui, 2005; Smith, 2006), and English language learners (Ghaith & Obeid, 2004; McKeown & Gentilucci, 2007). The subconscious thought processes that students cannot visually see become concrete as teachers demonstrate how they regulate their understanding while reading a text.

Effective instructional practices using think-alouds include gradual release of responsibility by asking students to also model their own thinking through peer mentoring models (Lapp, Fisher, & Grant, 2008; Oster, 2001). When teachers think aloud, they take much of the cognitive load, so interspersing teacher think-alouds with opportunities for students to try out the strategies, as well as explain their thinking to peers, gradually releases responsibility to the students (D. Fisher & Frey, 2015). By asking students to think aloud, teachers reinforce thought processes and reading behaviors for future applications (Block & Israel, 2004). Students begin to take up the language the teacher modeled, as students in turn model their thinking for peers, which increases the authenticity of their stated thinking (Fawcett, 1993; D. Fisher, Frey, & Lapp, 2011).

Peer modeling of thinking, or peer coaching, is also well supported by reciprocal teaching (RT) research, which positions students in taking over the teacher's role of demonstrating reading strategies for their peers (Klinger & Vaughn, 1996, 1998, 1999, 2000; Palincsar & Brown, 1984; Palincsar, Brown, & Martin, 1987). Typically, RT has been studied with students in fifth grade or older, but more recent research demonstrates the potential that scaffolded RT practices have for beginning readers (Pilonieta & Medina, 2009; Pratt & Urbanowski, 2016;). When provided with a scaffolded, gradual release of responsibility instructional routine, students in kindergarten through third grade appear to be able to demonstrate reading strategies to peers. As students model their thinking processes to one another, they begin to mentally internalize these processes, which increase their abilities to use these metacognitive strategies rather than request assistance from their teachers (Vygotsky, 1978).

However, even though teacher think-alouds have been shown to be effective, teachers do not regularly model their own thinking processes (D. Fisher et al., 2011; Lapp & Fisher, 2007; Pressley, 2002; Schmitt & Baumann, 1990; Walker, 2005). Since thinking processes are subconscious for proficient readers, becoming consciously aware of one's own thinking processes takes practice and is enhanced by focused professional development (D. Fisher & Frey, 2015; D. Fisher et al., 2011; Ness, 2014, 2016). Teachers benefit from guidance in choosing appropriate stopping points for think-alouds and scripting out what to say. Additionally, teachers often augment their ability to progress from providing examples of what one does while reading, to actually explaining the thinking that occurs during reading. Multiple exposures to the think-aloud strategy, both in professional development modeling and in teacher to teacher practice, promote teacher confidence and improved implementation of think-alouds. Professional development opportunities including these facets are thought to be effective in enhancing teachers' efforts at modeling and gradual release strategies.

The research is clear there is no specific formula or one perfect way to design and provide professional development related to teaching and learning, but positive results are derived from sustained, high-quality professional development (Darling-Hammond, 1997; U.S. Department of Education, 2000; Whitehurst, 2002). This begs the question, What does *high quality* or *effective* professional development involve? (Loucks-Horsley, Stiles, Mundry, & Hewson, 2009). The literature more clearly indicates what excellent professional development does not do, rather than what it does well. Significant numbers of teachers lack opportunities for professional growth and the acquisition of new skills and knowledge, and when these initiatives are present, sufficient sustainment of support is rarely realized due to lack of commitment by school districts or insufficient funding in school budgets. In addition, new ways of thinking about learning have facilitated new views on what "good" professional development should embody (Camburn & Han, 2015; McElhone, 2015). So, the emphasis has shifted from acquisition of declarative, memorized knowledge through lecture or verbal reports of steps and methods to teacher-driven inquiry learning that includes the examination of one's own teaching practice. In this vision, reflection takes center stage and examining one's beliefs becomes the foundational piece on which experiences are built, enhanced, and sustained (Camburn & Han, 2015; Kayapinar, 2016; Schon, 1987).

Beliefs are one of the greatest impediments to implementing new ways of teaching because of their enduring influence on teachers' decision making and classroom practices (Martin, Park, & Hand, 2017; Pajares, 1992). Pedagogical shifts do not occur in isolation of consideration of one's beliefs about how students learn and thus how teaching should be enacted. Shifts in beliefs can be observed through consideration of teachers' professed beliefs (spoken words), intended beliefs (planning actions), and enacted beliefs (actions in practice). This is supported by research that continues to examine the impact of what teachers know and believe, and how this affects their planning and subsequent instructional practices in the rough and tumble of the classroom (Bingham & Hall-Kenyon, 2013; Crawford, 2007; Teng, 2016; Windschitl, 2003). Crucial, then, is this study's conceptualization that reflecting on beliefs is integral to changing teaching practices because of the entangled nature of beliefs and practice (Martin, Park, & Hand, 2017; Bingham & Hall-Kenyon, 2013; Fang, 1996; Luft & Roehrig, 2007; Nespor, 1987; Teng, 2016; van Driel, Beijaard, & Verloop, 2001).

Foundational to this study are two conceptual models regarding the entangled nature of beliefs and practice: the Sensible System Framework (Leatham, 2006) and the Coherence Theory of Justification (Thagard, 2000). Leatham's (2006) work is related to the notion teachers hold sensible belief structures that cohere with their practice and self-study of their own beliefs can help teachers make their beliefs more evident in their enacted classroom practices (Lovin et al., 2012). This is reiterated by Rokeach (1968) as well as by Ajzen and Fishbein (1973) in their Theory of Planned Behavior, which posits beliefs are predispositions to actions. Thagard's (2000) Coherence Theory of Justification argues belief structures are more similar to a floating raft than a firm foundation, allowing related sets of beliefs to cohere with one another. The fundamental principle of the Coherence Theory of Justification is the relationship between the beliefs about what is significant, and when one belief shifts, others must realign to accommodate the shift in the modified belief. This realignment is achieved through a reflective equilibrium involving reflection on events that don't cohere with the present belief structure. Undergirding these frameworks is the idea beliefs are modified when new beliefs are admitted into the belief structure to accommodate new experiences and information, and the overall belief structure shifts to allow for the new beliefs, which then allows the structure to reach a stage of equilibrium once again.

Our review of the literature demonstrates a gap in how professional development may impact teacher beliefs and practice related to using think-alouds to promote metacognition for young readers. Emerging research demonstrates how to create effective professional development for promoting students' metacognitive development when reading; however, these findings have not directly addressed how professional development may encourage teachers to shift their beliefs regarding pedagogical practices or the effectiveness of teaching beginning readers to become more metacognitive in their reading (D. Fisher et al., 2011; Ness, 2014, 2016). Additionally, because comprehension is the goal of literacy instruction, much of the research in the area of readers' metacognition has focused on this literacy component to the exclusion of oral reading (Joseph & Eveleigh, 2011). To begin to fill these voids in the literature, we explored the following question:

What impact does professional development in instructional practices for developing metacognition in beginning readers have on the following:

- teacher beliefs about beginning readers' metacognitive ability,
- students' self-correcting behaviors while reading,
- students' ability to explain their thinking processes about self-monitoring their reading?

Methods

To better understand how professional development in metacognition in literacy instruction impacts teacher beliefs and their students' metacognitive awareness, we used a case study approach to depict the complex phenomena surrounding professional development of teachers. The advantages of case study design include its inherent ability to analyze phenomena in a real-world context and more deeply explore possible casual links or factors that may otherwise be unattainable (Fetterman, 1982; Stake, 1995; Yin, 2003). Although one case study may not provide widely generalizable findings, building up cases of rich data can help establish bodies of knowledge and develop frameworks to improve fields of research and practice (Lijnse, 1995; van Driel et al., 2001; Yin, 2003).

Participants

A relationship was established with the teachers and the school in this study through engaged opportunities for pre-service teachers in field placements. Thus, the researchers were aware metacognition was an area the school wanted to embed in literacy instruction more purposefully. The first-grade team included a range of teaching experience, 7–25 years, and two of the teachers held master's degrees. In the 2015–2016 academic year, K–5 student enrollment was 514, with 92 students in first grade. Student enrollment was diverse: 55% Caucasian (284 students), 30% Hispanic (155 students), 7% multi-racial (38 students), 6% Black (32 students), and 1% Asian (3 students). Eighty-nine percent of students qualified for free or reduced lunch services. The school has received the state department of education's highest rating for academic performance for the past 2 years.

Data Collection

      This study involved a pre-post design for teachers and students. Teachers completed an anonymous online survey (see Table 1) regarding their beliefs about early readers' metacognitive ability as well as their instruction in metacognition awareness.

Table 1
Teacher Survey

1. What do you think affects beginning readers' ability to self-monitor and self-correct their oral reading?

2. What do you think affects beginning readers' ability to talk about their thinking processes when they self-monitor and self-correct?

3. Do you think teaching metacognition to your students will help them in their ability to self-monitor and self-correct while they read?

   i. If yes, what makes you think this? Have you done this before?

   ii. If no, why do you think it won't affect it? Have you considered doing this before?

4. Do you currently teach your students how to self-monitor and self-correct their reading?

   i. If yes, please describe how you teach this skill.

   ii. If no, why do you not teach this skill?

5. Have you created any goals or do you have any future plans in the area of teaching metacognition to your students?

   i. If yes, what are those goals or future plans? Why do you think this is best practice for this skill?

   ii. If no, what is the reason you haven't?

The protocol used in data collection about students' thinking processes while self-monitoring and self-correcting their reading has been validated (Pratt & Martin, 2017). Students participated in a semi-structured reading interview in which researchers probed their thinking processes for self-corrections, attempts to self-correct, and repetitions while reading a leveled text (Fountas and Pinnell Benchmark Assessment System, 2nd ed.) at 90%–98% accuracy level. Table 2 delineates the list of prompts used to probe students' thinking. Additional data sources included (a) running records of students' reading, (b) researcher notes of professional development sessions, (c) audio recordings of the second and third professional development sessions, (d) teachers' written lesson plans, (e) teachers' written reflections of implemented lessons, and (f) teachers' ratings of students' independent application of reading strategies. These data sources were purposely selected to reveal all three aspects of teacher beliefs: (1) expressed beliefs: audio recordings of professional development sessions and teacher surveys; (2) intended beliefs: written lesson plans; and (3) enacted beliefs: teachers' reflections of implemented lessons and evidence through data gathered from students.

Table 2
Prompts for Student Interviews

If student repeats words…

1. Why did you repeat the words (state repeated words)?

2. What were you thinking when you repeated these words?

If student attempts to self-correct reading errors…

1. First you said (state what student said that was an error), but then you (state his or her attempt to self-correct error). Tell me why you did that.

2. What were you thinking when you (state what student did in attempting to self-correct reading error)?

If student successfully corrects reading errors…

1. First you said (state what student said that was an error), but then you (state what student did to successfully self-correct reading error). Tell me why you did that.

2. What were you thinking when you (state what student did when successfully correcting reading error)?

3. You said (state what student did to successfully self-correct the error). How did you know to do that?

Professional Development Sessions

The teachers were engaged in professional development over a five-month period (January–May 2016), which included three 2-hour professional development sessions. The first session included a discussion between the teachers and researchers related to the students' pre-data (collected by researchers just prior to the study), including text levels, accuracy percentages, and self-correction ratios. After reviewing this data, researchers asked the teachers to formulate their first priority in improving students' self-monitoring while reading. Teachers determined they would implement teacher think-alouds by using guided practice with the Clicks and Clunks strategy for self-monitoring (Klinger & Vaughn, 1998; Pratt & Urbanowski, 2016). Clicks and Clunks is a strategy from RT, in which students clarify their understanding of a text by determining whether the reading is making sense (a Click) or not (a Clunk). If readers notice their reading of the text is not making sense, they are taught to use strategies that would change the reading from a Clunk to a Click.

The second session centered on a collaborative discussion of teachers' perceptions regarding the effectiveness of their first set of lessons, including how well their students independently took up the targeted strategies. Upon reflection of this discussion, the first-grade team concluded all students should continue to work on self-monitoring their reading with peer coaching, wherein first-grade students would be paired and then explain their Clicks and Clunks as they were reading aloud. Additionally, the teachers decided to differentiate instruction to address their students' contrasting levels of metacognitive awareness and self-monitoring. The teachers stated they believed students who had not adopted the Clicks and Clunks language to self-monitor their reading were hindered by their decoding abilities. To teach the most basic readers that the goal of reading is comprehension, the teachers decided to implement the Clicks and Clunks strategy utilizing picture sequencing cards and oral storytelling. However, they concluded other students were ready to work on self-correction strategies of visualizing, retelling, and rereading.

The third professional development session encompassed a discussion and teacher reflection on the implementation of peer coaching and how well the students took up the teacher-selected differentiated approaches of picture sequencing with Clicks and Clunks or self-correction strategies of visualizing, retelling, and rereading.

Data Analysis

All sessions included first-grade students reading aloud to the researchers. Readings were audiotaped and transcribed, then coded by one of the researchers for "explained" or "not-explained" regarding student thinking. The second researcher reviewed 10% of the manuscripts, and inter-rater reliability was 98.5%. Additional data collected from the running records of students' reading included text levels, accuracy percentages, and self-correction ratios. Audio recordings of the professional development sessions were transcribed by a research assistant and reviewed for accuracy by the researchers. Cross-comparative coding was employed to analyze the data sources for themes in teacher beliefs and shifts in these beliefs over the course of the study (Strauss & Corbin, 1998). Trustworthiness of the data analysis was achieved through (a) inter-rater reliability of coding, (b) triangulation of data sources, (c) peer review at an international literacy conference, and (d) member checking with study participants.

Findings

This study sought to understand the impact professional development has on instructional practices for developing metacognition in beginning readers in relation to (a) teachers' beliefs about beginning readers' metacognitive ability, (b) students' self-correcting behaviors while reading, and (c) students' ability to explain their thinking processes for self-monitoring their reading. Data analysis revealed four themes related to shifts in teacher beliefs and students' metacognitive awareness of their reading. Teachers, at least in some way, appeared to modify their beliefs around the teacher's role and students' capabilities in the areas of (a) implicit versus explicit instruction, (b) general versus specific instructional strategies, (c) ownership of learning, and (d) student capabilities of metacognitive awareness while reading.

Implicit to Explicit

Initially, teachers perceived their role as implicitly guiding students to become metacognitive during reading. In the pre-survey, teachers stated students "should be aware of their own thinking" and "I have them go back and reread and use their context clues for understanding." These responses exemplified the perspectives the teachers in this study brought to our first professional development session, suggesting they believed metacognitive awareness was important to reading, but seemed to lack an understanding of their own role in providing scaffolded learning opportunities that could enhance their students' development of metacognition.

Over the course of the study, teachers began to appreciate the value of explicit modeling of their own thought processes for self-monitoring their oral reading and comprehension of a text. The following response typifies their professed beliefs on the post-survey:

> First, I model my own self-monitoring. Then I teach my students how to listen to and think about the words they are reading. Then I allow them to practice the process by monitoring MY reading. They will indicate when they hear me make a mistake [by] putting their thumbs up. Eventually they will read with a partner and monitor their partner's reading with the thumbs up indicator. Eventually, I ask them to monitor their own reading.

As this quote illustrates, the teachers in this study realized the importance of explicitly describing to students both the procedures teachers used when self-monitoring their reading as well as their thinking processes for determining how to clarify one's decoding and comprehension of the text.

General Ideas to Specific Instructional Strategies

The teachers in this study progressed from broad views to more detailed notions about effective instructional practices that would enhance their students' ability to be metacognitive while reading. Pre-survey responses to the question of how they taught students to self-monitor and self-correct when reading included statements such as "I think when you give beginning readers any type of reading strategies it helps them increase their reading comprehension" and "They need methods to use when reading, so if one doesn't work they can try another." Originally, teachers believed they needed to assist students in utilizing strategies when reading but lacked knowledge about distinct pedagogical practices that would help students acquire higher levels of metacognition in the reading task.

As the researchers and teachers engaged in dialogical exchanges throughout the professional development sessions and reflected on implemented lessons, the teachers began to create a foundational sense of effective ways to guide their students in becoming more metacognitive while reading. Teachers used language from RT strategies to teach their students self-monitoring through Clicks and Clunks. They also chose three preferred comprehension strategies for self-monitoring and self-correcting: (1) visualizing, (2) retelling, and (3) rereading to clarify meaning. For students who were in the emergent stage of reading, the teachers sought the differential strategy of picture sequencing cards with correlating sentences. The following example illustrates how the teachers began to hone in on precise instructional practices to supplant their metacognitive instruction:

> I read part of a book passage thinking aloud how my comprehension process went. For example, I read … from Laura Ingalls Wilder's *Little House in the Big Woods* that talked about a game Pa played with Laura and her sister called Mad Dog. The students visualized and shared the details of the game. The text said Pa "tousled his hair" and a student visualized Pa "spiking" his hair.

By the post-survey teachers reported teaching this skill by, for example, "thinking aloud while I read aloud and during independent reading conferences." As these two quotes indicate, teachers grew in understanding specific instructional practices for metacognition must include modeling and scaffolding students in attaining the thinking processes readers use to self-monitor their understanding of a text.

Giving Up Ownership of Learning to the Student

A third shift observed throughout this study included a transfer of responsibility from the teachers monitoring accuracy and meaning to the students taking ownership of their learning about how to self-monitor while reading. Before beginning our professional development, teachers stated they asked students questions to focus on whether they pronounced a word correctly, such as "Are those the sounds of the letters you see? Does that word make sense?" This response typifies the teachers' original perspective that the students needed the teacher to help them determine if they were making sense of the text using prompting questions.

Throughout the professional development dialogue, teachers resolved to move from teacher monitoring to students taking ownership of monitoring. The first lesson plan included teachers giving students the task of monitoring the teacher's reading for Clicks and Clunks and explaining their decision. In the second lesson, teachers planned to give students more ownership by using partner reading and peer coaching. Data from the post-survey revealed teachers' responses showed a shift from teacher-directed instruction

to believing they should encourage greater student independence and ownership of the strategies. One teacher acknowledged this when she stated, "By teaching metacognition, we are teaching them to think about their reading. We are giving the students the tools and strategies they need to help them self-monitor and self-correct." As evidenced above in an earlier quote, another teacher described in detail how she moved from modeling, to guided practice, to partner reading, to independent practice, revealing a similar shift in thinking about teacher versus student ownership in this aspect of reading.

However, not all teachers altered their instructional practices in the same ways, with only one of the four teachers appearing to use peer coaching with purposeful pairing in her lesson plans. This teacher coached peer partners to become aware of and explain their thinking. The other three teachers had more abrupt changes in practice from teacher modeling with guided practice to independent application, omitting aspects of monitoring or coaching in student independent application. As we will discuss in the next section, this difference in explicit scaffolding of gradually releasing responsibility to students could be correlated to improvement in students' proficiency in self-correcting their oral reading.

Increasing Metacognitive Awareness while Reading

Students in this study increased their self-monitoring and self-correcting skills, as evidenced by the self-correction ratios from pre- to post-assessment of their reading (see Table 3). We first present the data from all four classes of first graders. In January, the average self-correction ratio for all first-grade students was 1:4.69, with six students who had zero self-corrections while reading. In May, the first-grade students' average self-correction ratio was 1:3.78, with only one student who did not self-correct any miscues while reading. This lower self-correction ratio indicates students became more aware of and proficient at correcting errors while reading orally. The post self-correction ratio average falls within an acceptable range for reading proficiency of correcting every three or four errors, as found in seminal research in the 1960s (Clay, 1991). When looking at the results through a class-by-class lens (see Table 4), variances emerge in improvement in self-correction ratios. The teacher who used peer coaching more extensively in her classroom showed the greatest increase in students who had self-correction ratios of 1:4 or lower. Her class went from 55% to 89% proficient, while the other classes ended the year at 65%, 67%, and 68% proficient in self-correction ratios.

Table 3
Study Results for Students by Grade Level

	1st Grade Pre (*n* = 83)	1st Grade Post (*n* = 78)
Self-Correction Ratio		
Average	1:4.69 with 6 students at 0 self-corrections	1:3.78 with 1 student at 0 self-corrections
# proficient at 1:4 or lower	42 (51%)	56 (72%)
Metacognitive Discussion		
# incidents explained/asked	215/326 (66%)	289/355 (81%)

Table 4
Study Results for Students by Class

	Teacher 1		Teacher 2		Teacher 3		Teacher 4	
Self-Correction Ratio	Pre/Post		Pre/Post		Pre/Post		Pre/Post	
Average	5.05/3.96		4.97/3.6		4.38/3.63		4.20/3.95	
# proficient at 1:4 or lower	9 of 22 (41%)/ 13 of 20 (65%)		11 of 21 (52%)/ 14 of 21 (67%)		11 of 20 (55%)/ 16 of 18 (89%)		11 of 20 55%)/ 13 of 19 (68%)	
Improved score	13 of 20		14 of 21		9 of 18		10 of 19	
Metacognitive Discussions	Pre/Post		Pre/Post		Pre/Post		Pre/Post	
# incidents explained/asked	69/99	75/91	48/94	87/115	41/46	59/67	57/87	68/82
Percentage	70%	82%	51%	76%	89%	88%	66%	83%

In addition, overall first-grade students improved in their ability to explain their thought processes for self-monitoring and self-correcting their reading (see Table 3). Before the professional development sessions, these first graders could explain 215 of 326 prompted incidents (66%). After the professional development sessions and teachers' implementation of their redesigned lessons, first-graders could explain 289 of 355 prompted incidents (81%). This 15% increase in the ability to explain their thinking is evidence of the teachers' efforts in implementing their lesson plans with fidelity. We suggest perhaps as teachers' beliefs about student capabilities shifted, teachers began to allow more student ownership, which impacted their ability to explain their thinking. Students also began to use some of the language the teachers had used in their lessons, by explaining their thinking with statements such as "It was a Clunk in my head, so I changed it to a Click." They began to describe how they were visualizing pictures of what they were reading about in their heads and reread the text to make sure they better understood what was happening, thus demonstrating the comprehension strategies teachers taught them in whole group and during guided reading lessons.

Furthermore, throughout this study, teachers began to believe their students were more capable of being metacognitive than they previously thought. In the pre-survey, one teacher stated, "Beginning readers have to concentrate so hard on their self-monitoring and self-correcting that they don't remember what they have read." In the second lesson's reflection, teachers all said they would implement the strategies earlier in the year as they saw it to be effective for student learning. One teacher stated her goals for metacognitive instruction were to "keep instructing the students by modeling daily and then having them show me how they use this skill on a daily basis as well." Another teacher wrote in the post-survey, "I plan on actively teaching my students how to self-monitor their reading. Personally, I see it as a Best Practice because I saw REAL results and improvements in my students' reading abilities."

Although teachers shifted toward believing their students were more capable of being metacognitive than they previously thought, they still maintained reading ability was correlated to metacognitive ability when considering comprehension of a text. The teachers stated earlier in the study that lower readers struggle with comprehending a text, as they are focused on decoding the words. Lesson two reflections indicated teachers still saw the comprehension strategies of visualizing, retelling, and rereading as more appropriate for higher than lower level readers. One teacher stated, "Next year I will use the comprehension bookmarks earlier in the year and I will use it with all of my groups, except the lowest group." Another teacher stated in our third professional development

session students' ability to take up the strategies was "very developmental" and "I know it will come, but it's just not there yet." These statements reveal the teachers thought the lowest level students were not developmentally ready to become metacognitively aware, to be strategic in their reading, or to verbalize their thinking processes for comprehension until decoding skills improved. Furthermore, these statements indicate even though some beliefs shifted, not all beliefs about student capabilities in reading comprehension were modified during this professional development initiative.

Discussion

This study aligns with previous research on teachers' beliefs and effective professional development, but also contributes to the literature by providing evidence professional development has the potential to influence teachers' beliefs about students' capabilities to be metacognitive when decoding and comprehending texts. This research demonstrates professional development can have a positive impact on instructional strategies teachers employ to increase their students' metacognitive awareness. Furthermore, this study confirms previous findings about using think-alouds and RT in reading instruction, but extends the literature base regarding the validity of connecting these two strategies.

The teachers in this study reconsidered their beliefs that correlated with their implementation of the planned metacognitive lessons with their first-grade students. We posit the newly acquired belief that their students were more capable of being metacognitive while reading was the overarching belief that impacted the other beliefs. Moreover, this shift in belief was substantiated when teachers observed their students being able to do and say more in think-alouds and peer coaching than they originally thought (Martin, Park & Hand, 2017; Thagard, 2000).

The first graders in this study could express their thought processes regarding self-monitoring and self-correcting as they read, which is consistent with previous research that even very young readers are able to independently control variables related to themselves, their reading, and the text (Juliebo et al., 1998; Kragler et al., 2015; Martin & Kragler, 2011; Pilonieta & Medina, 2009; Pratt & Martin, 2017). Nevertheless, the strength of this research lies in the fact that teachers initially believed it was beyond the capability of beginning readers to concurrently focus on conscious monitoring of accuracy and comprehension. However, as the teachers provided explicit instruction in metacognitive thinking processes for self-monitoring and self-correcting, they were surprised at what their students could do and expressed their newly held beliefs that their students were more capable of discussing their thinking processes than they previously thought. The change in teachers' expressed beliefs supports the Coherence Theory of Justification (Thagard, 2000) in that teachers' observations of what their students were demonstrating in metacognitive awareness did not cohere with their present belief structure regarding beginning readers' ability to be metacognitive while reading. The teachers had to realign their belief structure with what they were observing in their classrooms, thereby adjusting their practice based on their realigned belief structure. This is the ideal demonstration of the entwined nature of beliefs and practice. We propose beliefs do not determine practice, but practice can impact teachers' beliefs as they enact new instructional strategies in their classrooms, and it is the dialectic process of examining and reconsideration of beliefs-to-practice-to-beliefs that ultimately allows one's belief structure to reach equilibrium, or a balanced state of coherence. Our study is unique in its ability to capture such an elusive construct within literacy instruction.

Our study also contributes to the relatively sparse understanding of effective professional development for in-service teachers in guiding their students to be more metacognitive while reading (D. Fisher et al., 2011; Ness, 2014, 2016). We build on research

supporting professional development going beyond mimicking best practice pedagogies to providing opportunities for teacher-driven inquiry learning, where teachers have a place and a space to reflect on their own teaching practices and the ways they self-monitor and self-correct their own reading through the use of think-alouds (Camburn & Han, 2015; Loucks-Horsley et al., 2009; McElhone, 2015). We submit involving the teachers in making decisions regarding how to implement research-based instructional strategies in ways most appropriate for their student population was paramount in emboldening teachers to participate not just in the discussion in the professional development, but also in implementing new instructional strategies in the classroom with fidelity. The teachers in this study were able to adapt and modify instructional practices as they considered the range of learners in their classroom and their differing skill levels and instructional needs. Furthermore, our study presents the notion that when teachers are asked to reflect on enacted beliefs, even relatively short professional development sessions on metacognitive instruction can cause teachers to question their belief structure.

Teacher reflection was a critical aspect of the professional development impacting teacher beliefs in this study (Camburn & Han, 2015; Kayapinar, 2016; Schon, 1987). Teachers individually reflected on their beliefs about metacognition and literacy instruction in the pre- and post-surveys of their beliefs as well as individually wrote reflections on what they observed in their classrooms after implementing the instructional strategies for metacognition. The teachers then collectively brought their reflections to our discussions in the professional development sessions, where they shared their thoughts and insights on how the instructional strategies and practices impacted their students' metacognitive awareness. It was through this integration of individual and collective reflection that we believe teachers began to reconsider their previously held notions and had insights into how their observations were not coincidences, but were demonstrated across all classrooms that enacted similar instructional strategies. We add to the professional development literature by demonstrating the importance of integrating both individual and collective reflection for teachers reconsidering their beliefs and practice.

What is also learned from the differential implementation of the peer coaching strategy in this study is that providing a time for teachers to commit to implementation of instruction in a professional development session is critical for integrity and fidelity. The teachers discussed what they were going to do and wrote notes for how to implement the strategies in their classrooms, but did not complete the lesson plans until after the professional development session. We suggest from our observations and discussions with the teachers that physically writing the lesson plans during the professional development session might have enhanced teacher implementation of the new instructional strategies for all four teachers; however, depending on their beliefs structures, some of the teachers' beliefs may not have aligned with the professional development strategies or the implicit beliefs about student capabilities. We look forward to pursuing this aspect of the study in follow-up research.

This study builds on previous research about metacognition and reading by demonstrating the value of explicit instruction in guiding readers to be more aware of their thinking processes. Think-alouds are intended to be verbal expressions of one's inner thoughts in order to make subconscious thinking more concrete for others (Block & Israel, 2004; D. Fisher et al., 2011; Silbey, 2002). However, teachers do not regularly model their own thinking due to the difficulty in making the thinking clear for students. Literacy experts state teachers need to go beyond providing examples to also stating the thinking behind these examples (D. Fisher & Frey, 2015). The teachers' beliefs about the impact of explicitly

explaining their thinking seemed to realign with beliefs about students' capabilities as they witnessed increases in students' metacognitive awareness and strategy use. Furthermore, this research supplants previous research that reports on the student impact when teachers are explicit in their thinking processes by stating their thinking during self-monitoring and self-correcting in oral reading and comprehension of a text.

The disparate impact demonstrated by the four teachers' implementation of gradual release of responsibility to students utilizing the peer coaching strategy refines previous findings demonstrating that when students model their thinking aloud to peers, there is an increase in their application of metacognitive strategies (Baumann et al., 1993; Fawcett, 1993; D. Fisher & Frey, 2015). The teacher who implemented peer coaching as an intermediate step from guided practice to independent practice validated the impact of the full implementation of the gradual release model (Duke & Pearson, 2002; D. Fisher & Frey, 2007; Pearson & Gallagher, 1983). Her students showed the greatest improvement in self-monitoring their oral reading and ability to discuss their thinking when prompted. Because she specifically took the time to train her students how to coach each other, through peer modeling and questioning, the students were able to try out their thinking with the support of a peer who was also learning the same strategy. This preliminary finding demonstrates the importance of peer coaching in teaching young students to be metacognitive and further emphasizes the value of RT methods with beginning readers (Pilonieta & Medina, 2009; Pratt & Urbanowski, 2016). We suggest that when students can explain their thinking to their peers, they increase the ability to independently transfer self-regulation of thinking processes to novel situations.

Implications

The study's findings have implications for professional development of teachers and effective instruction in metacognition for early readers. As revealed by the shifts in teacher beliefs and practice observed in this study, giving teachers ownership of the instructional practices to be implemented with their students is a key factor for garnering teacher support. This includes mutual data analysis of their students' reading habits and mutually constructing the next phase of professional development, whereby teachers and researchers review instructional strategies that are most effective in meeting their own students' needs. The value of teacher voice in effective professional development cannot be overstated, at least for the teachers in this study. When teachers are asked to reflect privately and then negotiate publicly among peers about their beliefs and observations of student learning, a rich community of practice is created that increases the desire to implement the changes with fidelity. The findings from this study suggest professional development is enhanced when it includes the time for teachers to complete instructional planning during the sessions. We also found collaborative post-teaching reflection impacted teachers' desires to continue to implement changes in their classrooms.

Based on the data collected in this study, implications can also be drawn for effective instructional strategies that encourage beginning readers to be more metacognitive in self-monitoring decoding and comprehension. Teachers should use clear, consistent language in explicitly describing their thinking processes to students. Most importantly, gradual release of responsibility, with teacher modeling, guided practice, and peer modeling through RT, is critical to supporting students in moving to independent use of metacognitive strategies.

Limitations

Although case studies cannot be generalized to larger populations or to make grand claims, they can present unique in-depth perspectives into the experiences and factors

surrounding a phenomenon or context (Stake, 1995; Yin, 2003). This study was conducted in one elementary school, with one grade level, and thus the study's findings may not be generalizable to different demographics or settings. The participants and context of the school and teachers who participated in this study were described in detail, so readers can determine whether transferability is applicable and relevant to their own situations.

Because this study focused primarily on the impact of professional development on teachers' beliefs, the researchers did not observe the teachers in their classrooms during implementation of planned lessons. This limits the ability to verify instruction was carried out as teachers reported in their written lesson plans, written reflections, and oral conversations. We do note, however, teachers appeared to be candid with the researchers about their individual levels of implementation in their classrooms, but future research should connect professional development with the reality of classroom practice.

Future Direction

As we seek to better understand teachers' beliefs related to early readers' metacognitive awareness, research could consider not only the impact of professional development on actual classroom practice, but also longitudinal considerations of teacher beliefs and the length of time/resources needed to make substantive lasting changes in overall belief structures. Furthermore, research could be designed around a longitudinal study demonstrating how beginning readers develop metacognitive awareness over time and how effective instructional interventions, such as those implemented by teachers in this study, have lasting impacts on students in retaining and generalizing these strategies. Based on the finding in this study that teachers do not believe readers who are struggling are able to learn how to independently self-monitor their own reading, further research exploring teachers' beliefs about lower performing students and their ability to adopt metacognitive awareness and skills would be beneficial.

As our study demonstrates, teachers play a significant and irreplaceable role in guiding students to become metacognitive in their learning, rather than passive recipients of knowledge. Professional development can impact teacher beliefs about students' capabilities to be metacognitive and thus impact instructional practices that further affect students' reading development. Guiding students to be more metacognitively aware of their reading can ultimately set students on a trajectory of self-regulation of learning and thus ignite a passion for reading and learning.

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About the Authors

Dr. Sharon M. Pratt is an Assistant Professor of Education at Indiana University Northwest's School of Education. Her research interests include literacy development of emergent readers and professional development for urban teachers related to metacognitive literacy strategies and integration of literacy with STEM and problem-based learning. In addition, she studies the art of co-teaching and how pre-service teachers build understanding in the interpersonal collaboration of co-teaching partnerships.

Dr. Anita M. Martin is an Associate Professor of Education at Indiana University Northwest's School of Education. Her research focuses on urban environments and how pre-service teachers, teachers, and students take up problem-based learning, STEM, engineering design, and literacy-rich professional development opportunities. She studies the role of teacher beliefs, risk, and effectual reasoning during implementation of innovative pedagogical practices in STEM and Literacy.