Read, Baby, Read: Developing Content Knowledge to Positively Impact the Practice of Teaching Nonfiction Reading

Sarah Sugarman
Aspire Monarch Academy
Mills College
sarah.sugarman@aspirepublicschools.org

The field of teacher research is increasingly including self-study as a valid and reliable method with which teachers can study and improve practice. In this self-study, I develop knowledge of myself as a nonfiction reader and use it to inform my instruction. Guided by the work of Schoenbach, Greenleaf, Cziko, and Hurwitz (1999), I use metacognitive reading logs to examine how I think when I read and to select reading strategies around which to develop lessons for my third-grade students. In three cycles of action research, I teach the lessons and analyze them through journaling and dialoging with two critical friends. I find that empathizing with a novice experience of reading helps my lesson content become more rigorous and my pedagogy become more authentic and inclusive of my students as co-constructors of knowledge. These findings have implications for my practice, for teacher professional development, and for the field of teacher cognitive psychology.

Keywords: teaching nonfiction; metacognitive reading; personal content knowledge; self-study methodology

You gotta read, baby, read.
Say what?
You gotta read, baby, read.
Say what?
The more I read, the more I know.
The more I know, the more I grow.
The more I grow, the more ideas flow.
And knowledge is power!
And power helps others!
And I want to – yeah!
You gotta read, baby, read.
Say what?
You gotta read, baby read.
Say what?

– Morning chant, Aspire Monarch Academy

A few weeks into the beginning of the school year, my class solved a mystery. The squishy ball that we use for morning games and greetings went missing. During recess I discovered a note on my desk that read, "Thanks, Sarah!" signed with the borrower's initials. (Unbeknownst to my students, I had arranged for our principal to "borrow" the ball and leave this note as a clue.) My third graders, after two weeks of reading *Cam Jansen* (Adler, 1980)*, Nate the Great* (Sharmat, 1989)*,* and *Clue, Jr.* (Hinter & Teitelbaum, 1994) mysteries in order to learn how to make reasonable predictions supported by text evidence, exploded with excitement at the opportunity to become real, live detectives.

At my prompting, and almost without seeming to notice the academic intrusion, they eagerly filled in a graphic organizer outlining the parts of our mystery. During lunch recess, without telling me, more than half of the class spontaneously split into groups to collect handwriting samples from adults around the school to match with the note. When we returned to class, they insisted that we solve the mystery that day. Our principal, the students proudly discovered, had indeed "borrowed" the ball for her one-year-old twins to play with and had left the thank-you note signed with her initials on my desk.

My students turned their completed graphic organizers into full drafts, then wrote mysteries of their own invention, including all the necessary components of a suspenseful narrative. They read and analyzed each other's work as they developed their ability to make reasonable predictions based on text evidence, to adjust their thinking when outcomes did not match their predictions, and to evaluate whether text evidence logically led to solutions. They practiced literacy skills that will benefit them throughout their academic, personal, and professional lives. Meanwhile, we had fun.

I cannot help but contrast this mystery unit with my literacy instruction in the semester leading up to the California Standards Test (CST) the previous year. With only a few points to go, my school made a gigantic effort to raise our Academic Performance Index (API) above 800, an

achievement that would put us on par academically with schools in much more privileged communities. Despite my growing discomfort with my instructional choices, I based a large portion of my reading lessons on discrete comprehension skills and sample test questions. For more than a month I suspended the use of books in guided-reading lessons in favor of test passages with multiple-choice questions similar to those my students were likely to see on the CST. My students, picking up on my increasing frustration, were less engaged in the reading lessons. In the end, their achievement on the test was disappointing, as only 20 percent (four students) performed at the Proficient or Advanced level in English Language Arts. Furthermore, our school-wide API went down. Even more disheartening for me was the feeling that my teaching had sucked much of the life out of reading. I had not effectively modeled for my students my own abilities as a skilled reader or the many reasons – in addition to succeeding on a test – that life-long readers read.

In today's educational climate, my students must be increasingly successful on high-stakes standardized tests if our school is to retain its autonomy. Without our autonomy, we would lose much of what makes our school successful, including abundant collaboration between teachers, a rigorous yet flexible curriculum, and a closely knit feeling of community. The ability to test well will also benefit my students at many critical junctures in their academic and professional careers. For these reasons, I am morally obligated as an educator to prepare my students to achieve on standardized tests. However, when my literacy instruction focused primarily on isolated skills, it did not reflect the reasons I hope to instill in my students for reading, which are also the reasons I choose to and love to read. This disconnection led to boredom and frustration in my teaching, which quickly spread to my students' learning. Moreover, it did not seem to work, as the majority of my students became neither successful test-takers nor successful readers. After a year and a half in my class,[*] according to both the Developmental Reading Assessment (DRA) and the English Language Arts CST, 16 of my 20 students (80 percent) were performing below grade-level in reading.

Despite the recent trend in literacy education toward scripted programs that teach reading as a series of basic phonics and comprehension skills, studies have shown that reading is a highly complex process influenced by many factors both internal and external to the reader (Fielding & Pearson, 1994; Fountas & Pinnell, 2001; Schoenbach, Greenleaf, Cziko, & Hurwitz, 1999). The reading apprenticeship model developed by Ruth Schoenbach and her colleagues (1999), for instance, views reading not as a composite of phonics and comprehension strategies transmitted directly from teacher to student, but as a complex, active process of problem-solving. Good readers are those who are not only motivated and engaged in reading, but are also socially active readers who strategically monitor and control their understanding of a text and their goals as readers and learners. The teacher's responsibility is not to transmit a body of knowledge and skills, but to serve as a model reader who "demystifies" the reading process. Students "need to see what happens inside the mind of a proficient reader, someone who is willing to make the invisible visible by externalizing his or her mental activity" (Schoenbach et.al., 1999, p. 21). The reading apprenticeship model identifies four dimensions of reading, two of which encompass strategies for monitoring and increasing reading comprehension. The cognitive

---

[*] Teachers at my school stay with a group of students for two years. At the outset of this study, I had taught this group of students for a full year as second graders and one semester as third graders.

reading dimension focuses on a reader's repertoire of thinking strategies for making sense of texts. Many of these strategies involve monitoring whether comprehension is occurring and, if not, using problem-solving strategies to aid and restore comprehension. Examples of such problem-solving strategies include questioning the text, rereading to clear up confusions, summarizing or paraphrasing, and visualizing what is described. Understanding one's purpose in reading a text and how one's reading processes are linked to one's purpose are also components of the cognitive dimension (Schoenbach et. al., 1999).

The knowledge-building dimension is rooted in brain research, which demonstrates that "readers do not passively absorb information from the text, but rather actively mobilize their own knowledge structures to make meaning in interaction with the text" (Schoenbach et. al., 1999, p. 34). Particular words, ideas, or situations in a text trigger associations and knowledge in the mind of a good reader who then checks incoming information against that knowledge and adjusts his or her thinking about the text if necessary. Using one's awareness of text structure as well as activating discipline- or discourse-specific knowledge are also important aspects of the knowledge-building dimension (Schoenbach et. al., 1999).

In contrast to the reading apprenticeship model, "repeated studies have demonstrated that instruction in isolated grammar, decoding, or comprehension skills may have little or no impact on students' activity while actually reading" (Schoenbach et. al., 1999, p. 7). Feeling pressure to ensure my students' success on the standardized test, I found myself susceptible to teaching reading as a series of such isolated skills. For instance, I would have my students read a decodable book and search for a target phonics sound, read a series of short nonfiction passages and identify each author's purpose for writing the passage, or read sample paragraphs written by adults pretending to be children and analyze them for errors in sentence structure, descriptive detail, and punctuation. Over the course of a year, this type of instruction led to a moderate increase in my students' achievement on some multiple-choice test items and on certain literacy activities. However, even an intensive focus on discrete phonics, grammar, and comprehension skills could not offer my students sufficient opportunities to employ problem-solving strategies in making meaning from a text, thus impeding their overall progress in reading comprehension.

My students' struggles underscored the fact that my experience of reading and my teaching of reading had become divorced from each other. Throughout my life, reading has been a process that brings me both a sense of mastery and a feeling of joy. For me, reading is a process of gathering loose strands of sentences into meaningful thoughts that can both tunnel deeply into a single topic and reveal the connections between disparate topics. My experience of reading has almost nothing to do with applying isolated skills. My reading instruction, with success on a standardized test driving it, did not reflect this experience. While I understood the importance to my school of my students' succeeding on the test, I was also saddened by the contrast between my reading experience and the reading experiences I offered my students. With occasional exceptions such as the mystery unit, I had not yet successfully taught them to understand literacy as more than the application of isolated skills. I was frustrated by my instructional choices and wanted to teach reading in a manner more consistent with my own experience as a reader. The questions that thus framed this study initially were 1) how can I, a proficient reader, better

understand what I do when I read? and 2) how I can use that understanding to improve my instruction so as to better help my students comprehend their reading?

Teacher Knowledge and Teacher Practice

Much research has demonstrated the positive effects on classroom practice of teachers developing their self awareness (Hamachek, 1999; Korthagen & Kessels, 1999; LaBoskey, 2004; Van Manen, 1977). However, while teachers' developing self awareness improves their practice, self awareness and its effect on practice are difficult for outside researchers to study. In the current educational climate, with its intense focus on "research-based" teaching practices that can be scientifically observed and measured, good teaching has thus come to be defined largely according to observable procedures. Teacher cognition – what and how teachers think while doing their work – has been largely ignored in favor of a focus on pedagogical actions, which are more easily observed.

Shulman (1986) argued that while pedagogical skills are essential to good teaching, the pendulum of research and policy in teacher development has swung too far toward pedagogy, giving insufficient attention to teachers' knowledge of subject matter, specifically "how subject matter [is] transformed from the knowledge of the teacher into the content of instruction" (p. 11). In response to this "missing paradigm" in the literature, Shulman put forth a new paradigm of teacher knowledge that blends knowledge of content with knowledge of pedagogy, which he refers to as pedagogical content knowledge. He suggested that the nature of teachers' subject matter knowledge, and specifically how they translate that knowledge into successful pedagogy, is a worthy area for further study.
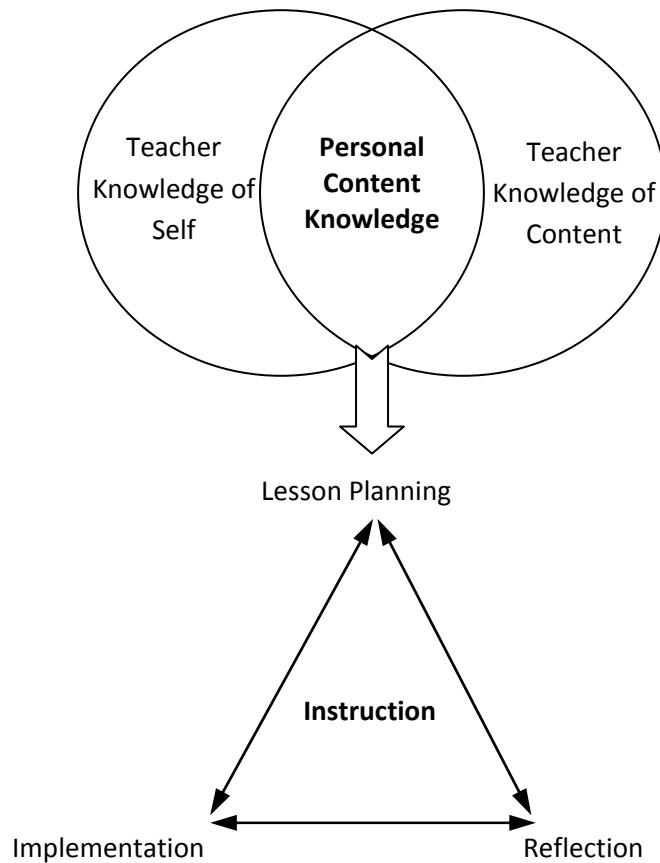
Shulman failed to suggest a solution, however, to the fact that teachers' cognitive processes are by nature internal and thus difficult to observe from without. Here, self-study presents itself as a logical methodology with which teachers may begin to address the "missing paradigm" by making explicit the processes by which they translate their content knowledge into practice. My research is therefore located at an intersection of the self-study literature and the literature on teacher cognitive psychology. It explores a domain of teacher knowledge that Shulman does not discuss: that of *teachers' own awareness* of the process by which their subject matter knowledge can be translated into successful pedagogy. The focus of this study is not only on developing my self knowledge, and not only on developing my content knowledge, but on how developing my awareness of my content knowledge can improve my professional practice.

I will refer to the intersection of self knowledge and content knowledge as *personal content knowledge*. Personal content knowledge refers to a teacher's awareness of how she personally does the syntactical work of the content that she teaches. As Shulman (1986) asserted, "The ultimate test of understanding rests on the ability to transform one's knowledge into teaching. Those who can, do. Those who understand, teach" (p. 16).

The focus of this study is to develop my personal content knowledge about reading, specifically reading nonfiction, in order to investigate the impact of doing so on my instruction. I want to answer the question: *How does developing my personal content knowledge in reading nonfiction*

impact my reading instruction? Figure 1 illustrates the conceptual framework underlying my question.

Figure 1: Conceptual Framework

Methodology

Self-Study

As this project is rooted in the exploration of my personal content knowledge and the relationship of that knowledge to my teaching practice, it is a self-study. Self-study is, most broadly, a process of self-reflection, critique, and improvement. As LaBoskey (2004) explained, self-study methodology "seeks to determine whether or not our practice is consistent with our evolving ideals and theoretical perspectives" (p. 820). It is also "improvement-aimed" in that "we wish to transform ourselves first so that we might be better situated to help transform our students … and the institutional and social contexts that surround and constrain us" (pp. 820-821). In this study, I seek to align my practice more consistently with my theoretical perspective on the purposes of nonfiction reading. By increasing my understanding of myself as a reader I hope to transform the context in which my students learn. As "the aim of self-study research is to provoke, challenge, and illuminate rather than confirm and settle" (Bullough & Pinnegar, p. 20), I am prepared for the likelihood that my question will lead to further questions and that this study will lead to further studies.
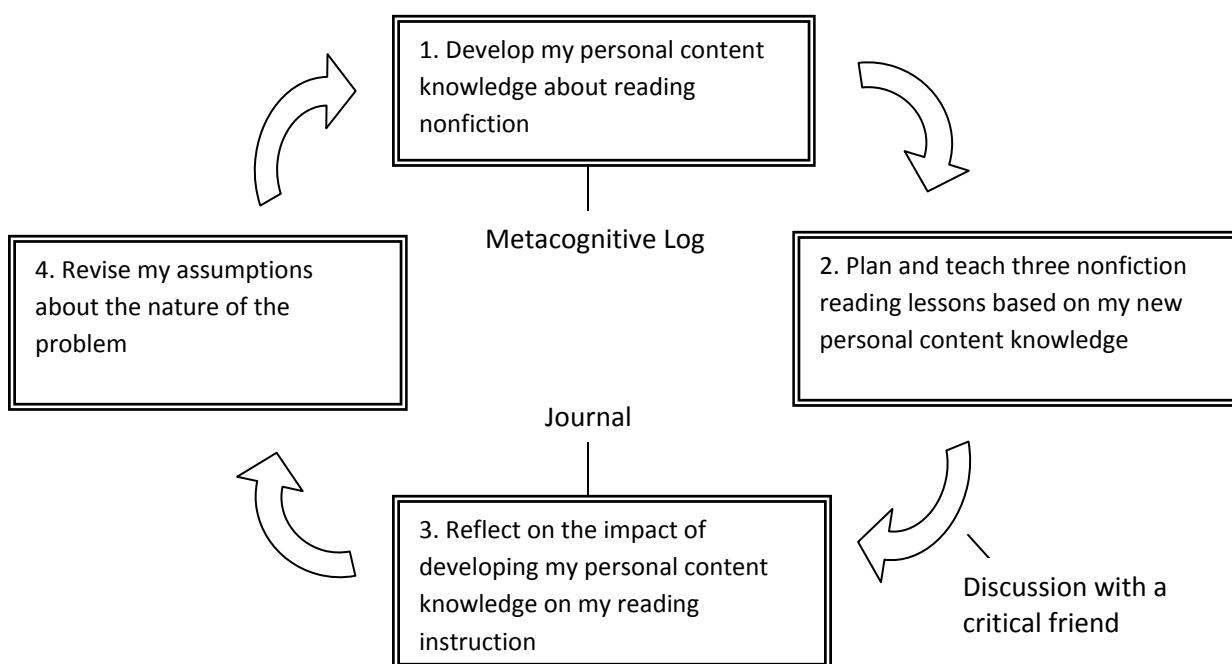
Self-study methodology also makes certain epistemological claims. Most fundamentally, it blurs the traditional distinction between research and practice. The self-study tradition is based on the belief that teachers who engage in it can themselves generate knowledge and theory (LaBoskey, 2004). Importantly, the objective of teachers' knowledge-production is not for those outside the classroom – researchers, policy-makers, administrators, and so on – to gain understanding of classroom practice but for teachers themselves to do so. Thus, self-study is one response to the lack of credibility that the current educational climate grants to teachers' knowledge of their own practice. The challenge is not simply to reveal that "teachers think, believe, or have opinions but that they know. And, even more important, that they know that they know" (Fenstermacher, 1994, pp. 50-51). In this project I am both teacher and researcher, generating a form of knowledge that is uniquely relevant to improving my practice.

At heart, self-study methodology is fundamentally driven by a concern for integrity. It investigates the question, "How do I live my values more fully in my practice?" (LaBoskey, 2004, p. 831). Its goal is to uncover, understand, and heal the gaps between one's ideals and the reality of one's teaching. As such, it is a methodology well-suited to helping me study the disconnection I feel between my experiences with and beliefs about reading and the reality of my reading instruction within the current educational climate.

Data Collection and Analysis

I adopted an action research approach to test the assumption that my students' reading comprehension and my reading instruction were both suffering due, in part, to my failure to draw sufficiently upon my personal content knowledge in reading nonfiction. In each of three cycles of action research, I engaged in four steps, as illustrated by the following diagram:

Figure 2: Action Research Methodology

1. Develop my personal content knowledge about reading nonfiction

Metacognitive Log

2. Plan and teach three nonfiction reading lessons based on my new personal content knowledge

Discussion with a critical friend

3. Reflect on the impact of developing my personal content knowledge on my reading instruction

Journal

4. Revise my assumptions about the nature of the problem

Consistent with an action research model, data collection and analysis unfolded together throughout each of the three research cycles, as follows:

   1.) *I developed my personal content knowledge about reading nonfiction by keeping a metacognitive reading log.*

The metacognitive reading log is a means of "focusing [readers] on their own internal metacognitive conversation[s]" (Schoenbach, Greenleaf, Cziko, & Hurwitz, 1999, p. 67). While reading a text, the reader stops to write down any thinking processes occurring during the reading. Examples of sentence starters to use in such a log include:

> I got confused when…
> I was distracted by…
> I started to think about…
> I got stuck when…
> The time went quickly because…
> A word/some words I didn't know were…
> I stopped because…
> I lost track of everything except…
> I figured out that…
> I first thought…but then I realized… (p. 68)

In addition to these sentence starters I used visual notes such as circling, underlining, starring, and arrows to help me track my thinking.

   2.) *I chose one reading strategy evident in my metacognitive reading log, around which I planned and taught three lessons to my third-grade students.*

In identifying my reading strategies, I relied on the cognitive and knowledge-building dimensions of reading. I studied my thinking patterns for evidence of problem-solving strategies that aid comprehension, such as questioning, rereading, summarizing, visualizing, predicting, adjusting one's thinking, and making connections to prior knowledge. When I discuss my findings, I will explain how and why I selected the particular reading strategies I taught to my students. To provide a context for that discussion, I offer a brief summary of the lesson cycles here.

Cycle 1: Text features. The first cycle of lessons corresponded with a science unit on animal life cycles. It focused on using nonfiction text features such as titles, tables of contents, chapter headings, indices, and captions to achieve a reading purpose. In Lesson 1, I taught my students that nonfiction readers choose a purpose for reading by first identifying what they want to find out. I modeled choosing my own purpose (understanding the stages in the life cycle of a butterfly), and had them each select a purpose for reading a nonfiction book about an animal. In Lesson 2, I taught my students about nonfiction text features by reading aloud a Big Book about butterflies, pausing to describe each text feature, and having a student put a sticky note in the book to mark the spot. In Lesson 3, I asked students to help me use each text feature in the Big Book to predict whether or not I would achieve my purpose by reading there. They then

practiced using the text features in their own books to predict where they should read to achieve their reading purposes.

Cycle 2: Questioning the text. The second cycle of lessons, two months later, corresponded to a science unit on simple machines and focused on questioning a text. In Lesson 1, I put an adult-level scientific article on the overhead projector and read it aloud to my students, simultaneously thinking aloud and taking notes on the article. I asked the students to observe me asking questions about the text and then try to do the same with a student-level article on simple machines. In Lesson 2, students worked in pairs using the simple machines article, taking turns being the "reader" who took notes on the text while thinking out loud and the "observer" who noted what thinking strategies the reader used. In Lesson 3, we reflected on the previous two lessons and developed a list of strategies that good readers use when questioning a text.

Cycle 3: Finding or inferring answers. The third cycle of lessons occurred immediately after Cycle 2 and focused on seeking answers to one's questions either by locating an answer in the text or by making an inference. In Lesson 1, we discussed different types of questions that readers might ask about a text (vocabulary, why, how, who/what/when/where, is this similar to something I already know), and students sorted their questions about the simple machines text using a graphic organizer. In Lesson 2, we learned that there are questions with and without answers in the text. Students used a graphic organizer to track which of their questions had answers in the text and which did not. In Lesson 3, we used a "mystery box" activity to practice using clues along with our prior knowledge to make reasonable inferences about what was in the box. Students then worked in pairs to use clues from the text as well as their prior knowledge to make reasonable inferences about answers to their text questions.

3.) *Throughout my teaching, I reflected on the relationship between my personal content knowledge and my reading instruction via journal entries and conversations with two critical friends.*

After teaching each lesson I wrote an entry describing my thoughts and feelings about the lesson and the impact of increasing my personal content knowledge on my reading instruction. I evaluated this impact based partially on my intellectual experience while teaching the lesson. I noticed to what extent the thinking strategies I used during my actual reading experience were useful or relevant in teaching my students to read. I also reflected on the ways my students engaged in the lesson, and whether I noticed them using similar thinking strategies when learning about reading as I had used while I was reading. In evaluating the connections between my personal content knowledge and my teaching, I relied on the help of two colleagues, one at my school site and one in my graduate cohort (see Appendix A for our discussion protocol). According to Loughran and Northfield (1997), the participation of colleagues who have had an opportunity to independently reflect on the data is critical to achieving reflective transformation. The inclusion of multiple perspectives also increases the validity of one's findings that, without having been critically reviewed by colleagues in the field, would otherwise remain merely personal. With my colleagues' help I began to see patterns in my data that served as my initial findings. I investigated these initial findings in subsequent cycles of research, and relied on them to structure my systematic analysis after the conclusion of all three cycles.

4.) I revised my assumptions about the relationship between my personal content knowledge, my reading instruction, and my students' reading comprehension.

At the conclusion of all three research cycles I inductively analyzed the lesson plans, journal entries, and notes from my conversations with my critical friends. I began by inserting comments wherever I noticed a relationship between my instruction and my personal content knowledge and then coded these comments according to four of the patterns my critical friends had helped me to identify. After coding the data, I grouped it according to category and reflected on each category as a whole. These categories developed organically from my data, in that the frequency with which each occurred in my journals, lesson plans, or critical friend conversations made it an obviously salient element of the study. They also relate closely to my conceptual framework (see Figure 1). From the outset of the study, I set out to examine how my personal content knowledge influenced my lesson planning, content selection, and implementation, which then became the coding categories for my formal analysis. As I will discuss further, the fourth category – the process of developing my personal content knowledge – was a surprising addition and as such became an important part of my findings. Table 1 shows the coding categories that I used during this stage of the analysis.

Table 1: Coding Categories

Code	Category
P	**Process** of developing personal content knowledge
LP	**Lesson planning** influenced by personal content knowledge
C	Lesson **content** influenced by personal content knowledge
I	Lesson **implementation** (pedagogy) influenced by personal content knowledge

Findings and Discussion

In keeping with its action research design, this study began with an assumption. I assumed that developing my personal content knowledge and deliberately using it to plan, implement, and reflect on my instruction would positively impact the practice of teaching my students to read nonfiction. Overall, developing my personal content knowledge did indeed positively impact my teaching practice. In addition and unexpectedly, I discovered how to develop my personal content knowledge such that it most effectively impacted my practice.

Co-Construction of Content Knowledge

Drawing on my personal content knowledge in teaching my students to read changed my understanding of the way knowledge is constructed in my classroom. Rather than knowledge-construction about the reading process residing totally with me, it had to reside jointly between me and my students. In Cycle 1 on using text features, I had not yet achieved this understanding, and thus found only a minimal relationship between my personal content knowledge and my instruction. After sorting and categorizing the data from my first metacognitive log according to the types of thinking they revealed, I noticed that setting a purpose for my reading and using nonfiction text features (titles, tables of contents, chapter headings, indices, and so on) to achieve that purpose were skills I employed when reading a nonfiction article on literacy instructional strategies. In my metacognitive log for Cycle 1 I wrote, for instance,

- I am going to skip the [how to teach] fiction section since that is not what my project is about and go straight to [how to teach] nonfiction. Maybe I will come back and read the fiction section afterward, maybe not.

I then noted how I used a text feature in the article to achieve my purpose:

- Skipped to nonfiction.
- Used the heading to find it. (Jan. 2, 2009)

I therefore planned and taught three lessons on setting a reading purpose and using nonfiction text features to achieve that purpose. I taught these lessons to my students, assuming that they would acquire my knowledge of how I set a purpose and use text features. Ironically, though I had purposefully designed the lessons to teach my students my knowledge of a reading strategy, after Lesson 2 I reflected, "I am not really having any strong feelings about this lesson with regards to its relationship to my own reading strategies" (Research Journal, Jan. 19, 2009). Something was off about the way I had used my personal content knowledge to plan and implement my instruction.

My mistake lay in the qualitative difference between the knowledge I had to construct to design the lesson and the knowledge my students had to construct to participate in the lesson. Even though on the surface we all used the same the reading strategy – nonfiction text features – I built my understanding of how I use text features from observing my mind at work while reading, and my students also built their understanding of how I use text features by observing my mind at work while reading (much of the lesson involved my students observing me reading a Big Book on butterflies and responding to me thinking aloud). I never asked them to observe *their* minds at work while reading. As a result, the thinking my students were required to do during the lessons was "pretty low on Bloom's taxonomy – it was really a purely knowledge- and comprehension-based lesson" (Research Journal, Jan. 19, 2009).

Contrary to what I had assumed initially, I could not simply translate my personal content knowledge directly into lessons. I had to find a way to transform it into something personal to my students, something they could understand on their own terms and use in their own way. In contrast to teaching the *what* of the subject matter – facts, information, ideas – I was teaching my students the *how*. Merely telling them about the thinking process of a proficient reader, or even showing them such a process, was not enough; they had to experience it and observe it in themselves. They had to understand not just how I think, or how a generic "good reader" thinks, but how they could think like good readers. I still wanted to use my personal content knowledge as the basis for my reading instruction. However, I had to figure out how to do so without assuming that it was enough for my students to mimic me.

In discussing my dilemma with Debbie,[*] another educator and one of my critical friends, I realized that I had to change my conceptualization of the role my personal content knowledge played in my lesson planning and implementation. While my personal content knowledge could

---

[*] Names are pseudonyms.

be the inspiration for my teaching, it could not be the goal for my students' learning. The goal had to be for me and my students to develop *together* an understanding of how to read nonfiction. We had to co-construct content knowledge, supported, but not dictated, by my understanding of my own content knowledge. Rather than knowledge-construction residing with me, it had to reside jointly between us. Debbie helped me to trace the development of my thinking thus:

Table 2: Development of Thinking

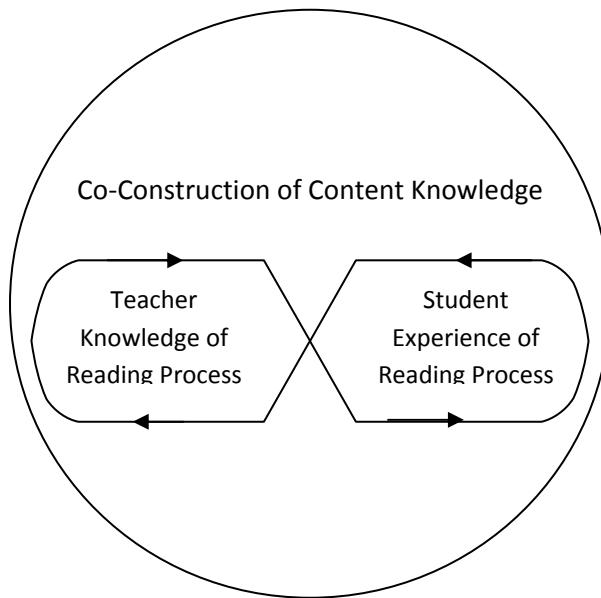| Not	But
- First, I discover something about the nature of proficient reading. - Next, I plan lessons to teach the students to do what I discovered. - Last, my students learn to do what I discovered.	- First, I discover something about the nature of proficient reading. - Next, I plan lessons *to help my students discover the same thing.* - Last, my students learn to do what *we* discovered.
"*I* am such a good reader who is teaching you what good readers do, so I want you to watch what I do and copy it."	"We are *all* good readers who are asking ourselves what good readers do, so I want you to notice what *we* do and try it" (Critical Friend Conversation, Feb. 28, 2009).

Nadya, a colleague and another critical friend, confirmed my growing feeling that my students and I had to be partners in constructing knowledge about what it means to read nonfiction well. After talking with her I reflected:

> I think there is a sweet spot that this study is attempting to clarify, between what I do as a reader and *what my students and I experience/construct together* during reading instruction. Originally, I imagined the bridge to stretch between what I do as a reader and what my students do as readers. Instead, I now see the crux of it all as the "shared reading" that we practice together. My teaching points are the foundation, the pillars of the bridge, so to speak, but all of us work out the arc of the bridge: what it means to be good readers. It is not enough for me to simply notice what I do as a reader and "tell" my students, even in the most kid-friendly terms, to do it. They must be active participants in constructing the meaning of good reading and together we must understand it on *their* terms. I already understand it on my terms (or at least I will after doing the metacognitive log) but neither of us understands it yet on their terms. That understanding is what this study is attempting to help me discover. That understanding is what we are trying to build together. (Critical Friend Conversation, Feb. 7, 2009)

My conversations with Debbie and Nadya marked a qualitative shift in my thinking about my research problem. I had been imagining that my understanding of my reading process would be the same as the understanding of the reading process that my students would construct. I now

assumed, however, that we needed to co-construct an understanding of the reading process that would not be exactly the same as my personal understanding of my reading process. While our understanding could be inspired by my personal content knowledge, it would be unique to our community. Figure 3 illustrates this relationship.

Figure 3: Co-Construction of Content Knowledge

Co-Construction of Content Knowledge

Teacher Knowledge of Reading Process

Student Experience of Reading Process

Empathy With Novice Experience of Reading

To better prepare myself to co-construct knowledge about nonfiction reading with my students, I had to empathize as closely as possible with their experience of nonfiction reading. This finding was unexpected, as it concerns the process of developing my personal content knowledge, rather than the impact of that knowledge on my teaching practice. It is nevertheless a critical finding in that developing such empathy enabled me to more effectively transform my personal content knowledge into opportunities for me and my students to co-construct knowledge about reading.

The contrast between the two metacognitive logs that I completed for this study underscores this finding. I completed my first metacognitive reading log using an article on literacy instructional strategies. Even before I had analyzed the log or planned the lessons, I reflected in my journal on my choice of reading material, noting, "I already have so much background knowledge about reading instruction that the process of reading such an article is quite different from the process my students go through when reading nonfiction texts" (Jan. 8, 2009). My students' relative lack of background knowledge about most topics that they encounter in nonfiction texts renders their experience of trying to comprehend such texts very different from mine in reading about something with which I am intimately familiar. I did not struggle to comprehend my chosen text, and therefore did not need to problem-solve as strategically as I would when reading a more challenging text.

To test the assumption that empathizing with a novice's experience of reading nonfiction would help me develop more nuanced personal content knowledge, for my second metacognitive log I read an article from the magazine *Scientific American* on the topic of active galactic nuclei – a topic which I knew almost nothing about. I spent the better part of an hour reading this one-page article, taking nearly six pages of notes on my thinking strategies, which, given the immense challenge it was for me to construct meaning from the text, proved to be more numerous as well as more rigorous than those from my first metacognitive log. As I read this article, I stopped to think nearly six times more frequently than I did when reading the article about teaching reading (53 compared to 9 times per page); and I used nearly twice as many types of thinking strategies (14 compared to 8) in the latter article than in the former. In both articles, I used reading strategies from the knowledge-building dimension, including making connections to my prior knowledge, developing discipline-specific vocabulary, and using text features to navigate through the text. I also used strategies from the cognitive dimension in both articles, in that I set a reading purpose, re-read to restore comprehension when I had become distracted, and paraphrased the authors' main ideas. In the second, more challenging article, however, I also hypothesized the meaning of new vocabulary, paused to adjust my thinking and correct misunderstandings, visualized what the author was describing and drew pictures to represent my visualizations, noticed when re-reading added to my previous understanding or failed to do so, made lists paraphrasing the author's main points along with my confusions, and asked questions about definitions of terms, questions that attempted to connect my prior knowledge to the text, why questions, and how questions (Metacognitive Logs, Jan. 2 & Feb. 17, 2009). Ironically, I had found that to most effectively study myself as an "expert" user of content, I had to engage with that content in a way that made me feel like a novice.

Empathy Leads to Rigorous Content
Struggling to comprehend a text helped me to gain a clearer picture of my nonfiction reading strategies. One impact of developing more nuanced personal content knowledge was that I understood more clearly which thinking strategies were at the heart of my reading proficiency. This understanding enabled me to select rigorous content for my reading instruction that helped my students not merely to mimic me, but to begin to truly experience the strategies that are at the heart of the reading process.

When I planned my Cycle 1 lessons around setting a purpose and using text features, I felt I had successfully translated my personal content knowledge into my practice. However, even before teaching the lessons I noted in my journal that my selection of content had missed the mark:

> These lessons do not teach the thinking strategy that occurred most often in the metacognitive log: that of monitoring and restoring comprehension, which I accomplished primarily by rereading and by questioning the text. Is that because [the latter] is a much harder thing to teach than setting a purpose and knowing text features? (Jan. 8, 2009)

When I met with Nadya, she agreed that the content of these lessons did not reflect the strategies that I used most frequently in my own reading. She also helped me to see that I had selected a

topic for the lessons that felt concrete, specific, and manageable, as well as something that my students were likely to be able to master after only three lessons. I had not attempted to translate into practice the heart of my reading proficiency: the complex, messy, interrelated web of thinking strategies that I use to monitor and restore my comprehension. Nadya also suggested that my analysis of my first metacognitive log was itself not very rigorous. She pointed out that when analyzing my reading process I only scratched the surface of my thinking strategies. For example, while I noted frequently that I "reread" parts of the text and categorized it as evidence of "monitoring comprehension," I did not probe into *how* I actually monitored my comprehension (Critical Friend Conversation, Feb. 7, 2009). Both my analysis of my reading process and the learning tasks I set for my students lacked rigor.

In Cycles 2 and 3 I was determined to rigorously analyze my metacognitive log and to select content from the heart of what it revealed about me as a reader. I decided not only to sort the data from this log into categories by thinking strategy, but to further break down those strategies into substrategies. When I did so, I discovered that though I use numerous thinking strategies, nearly half of what I do when I read is monitor my comprehension through asking and trying to answer questions about the text. While reading the one-page article about active galactic nuclei, I asked 18 questions about what I was reading, including questions about definitions of terms, questions that connected my prior knowledge to the text, why questions, and how questions. I also engaged in a constant dialogue with myself about possible answers to my questions, checking and rechecking my inferences as I read and reread, sometimes settling on answers and sometimes remaining mystified. I recorded this internal dialogue in my metacognitive log as such (italicized phrases come from the article):

- *'well-tuned'* – As in piano-tuned? Something to do with sound? No, probably not.
- *'periodic signal'* – Does that mean a sound signal? Sine wave? (Drew one.)
- *'From the frequency of the signal, it is possible to estimate the size of the black hole'* – How?
- [Rereading] *'well-tuned'* – Still don't know what this means. Could it mean a <u>clear</u> signal?
- [Rereading] *'periodic signal'* – Still thinking that's something like a sine wave.
- [Rereading] *'From the frequency of the signal, it is possible to estimate the size of the black hole itself'* – Oh, maybe a quicker signal means a smaller hole. (Metacognitive Log, Feb. 21, 2009)

The above dialogue represents a small fraction of the question-and-try-to-answer process that I went through over and over as I read, a process that is an essential component of my reading proficiency. I planned three lessons for Cycle 2 around asking questions while reading nonfiction and three lessons for Cycle 3 around answering or inferring answers to those questions. To verify that I had truly chosen rigorous content this time, content that represented an essential component of my reading proficiency, I asked my critical friend Debbie to meet with me before I had taught the lessons for Cycle 2. She confirmed that I had indeed selected content that stemmed from the heart of what I do as a reader (Critical Friend Conversation, Feb. 28, 2009).

During the first lesson of Cycle 2, which introduced my students to the idea of "talking to the text" through questioning, my students and I generated this list of what good readers do:

- Good readers ask themselves questions
- Good readers go back and reread and correct their mistakes
- Good readers put little notes, questions, and comments in the sides
- Good readers try to answer their questions by reading more

I was happy with this list, but I also noted in my journal that I was not yet satisfied with the level of rigor in their use of questioning techniques. Whereas I asked at least four types of questions while reading, many of my students asked only questions about word meanings. Had I not been so aware of my diverse questioning techniques, I might have settled for questions about word meanings as sufficient evidence that my students were constructing knowledge of the strategy I was teaching. However, with rigorous analysis of my personal content knowledge fueling my lesson planning and implementation, I did not settle for student mastery of a more concrete skill. Instead, I pushed them deeper into the process of questioning.

By empathizing with a novice reader, I had gained a deeper understanding of my comprehension strategies, which inspired me to raise my expectations for my students' learning tasks. As a result, I had to become comfortable with the probability that very few, if any, of my students would achieve mastery after three lessons. Once again I faced the fact that I was teaching the *how* of a discipline, rather than the *what*, and that mastery of a process is not quickly achievable, nor is it quantifiable in the ways with which I had grown accustomed to measuring student achievement. This shift in expectations accompanied the shift toward rigorous content that stemmed from gaining a clear understanding of the heart of my reading proficiency.

Rigorous Content Requires Authentic Pedagogy
In Cycle 1, even when I deliberately set out to translate my personal content knowledge into my practice, I chose a relatively insignificant piece of what I do when I read because it seemed the most concretely teachable. With Nadya's help I realized that not only the content of the Cycle 1 lessons, but also the pedagogy, hid my most fundamental skills as a reader. In teaching those lessons, I did not reveal my actual competency in real time to my students, but instead showed them a manufactured, controlled simulation. In Lesson 2, for example, I used a children's book on butterflies that I *pretended* to have read to model for my students how to use nonfiction text features to navigate through a text to achieve a specific purpose. I chose the book because it was similar to the books my students were reading as they gathered information for posters about animal life cycles. However, as I reflected afterward:

> I had to fabricate that I actually read the book and used its text features in making my example poster. In reality, I just searched the internet and got information from a few websites. I didn't crack a book at all. … In making such a choice I substituted a truly authentic reading experience with a fabricated experience. I did not take advantage of an opportunity to model for my students the real-life thinking strategies of a life-long reader. (Jan. 19, 2009)

In subsequent cycles I decided to explore the theory that empathizing with a novice experience of reading in order to select more rigorous content so that students could become co-constructors of knowledge would also require a shift in my pedagogy. My participation as co-constructor of knowledge, I decided, could not be faked. Instead, I had to truly show my students what I do when I read.

In Cycle 2, determined to authentically demonstrate for my students an element of my reading process, I selected another *Scientific American* article, one that I had not yet read. I suspected it would be as challenging for me to comprehend as the article I had read on active galactic nuclei, and I wanted my students to witness that challenge along with the strategies I used to overcome it. I projected the article on an overhead transparency and read it aloud to my students, taking notes on the text as I normally would if reading alone but also pausing to think aloud. Every few minutes I asked my students to reflect on what they noticed me doing, and I recorded their ideas on a chart. I reflected in my journal afterward that though the modeling was indeed more authentic than in the Cycle 1 lessons, I had failed to strike a balance between modeling my true reading process and putting the process into terms my students could understand. In trying to model my reading strategies authentically, I had chosen a highly confusing article. I compensated for that confusion, I realized, by oversimplifying my reading process. "To make my point," I wrote:

> I used mostly question marks because I wanted them to notice that good readers ask questions. But I did not do much more than that – only a couple times did I add words next to my question mark, for example, to expand on the question. It's another case of trying to put the material in simple enough terms for them to "get it" without compromising the essence of the skills I am teaching. I think the essence in this case may have been compromised. (Mar. 3, 2009)

Given this mixed success when using an authentically challenging article to communicate my reading process to my students, I decided that my personal content knowledge would best impact my pedagogy when filtered through student-level content. Even when using student-level content, however, I could not fake my reading process. I had to find a way to use such content to reveal how I really think when I read.

In Cycle 3, I experimented with striking a balance between authenticity and comprehensibility. Rather than using an adult-level article to model my reading process, I used a student-level article on Simple Machines, the topic of our current science unit. Choosing content that was familiar to my students helped both them and me to focus on the reading process. While I did not struggle to comprehend the Simple Machines article, I used the knowledge I had developed in my metacognitive log about what I *do* do when I struggle and tried to replicate those problem-solving strategies for my students. For example, in preparing to teach my students how to infer the answer to a question whose answer is not in the text, I looked back at my second metacognitive reading log. I noticed that when I made an inference I relied somewhat on clues from the text, but more often on my prior knowledge. In the Simple Machines article, though inferring was not a challenge, I still modeled my authentic inferring process, emphasizing using clues from my prior knowledge. After this lesson I reflected:

> Though it was perhaps slightly less "real" to use a student-level article than to use something authentically challenging for me, it was nonetheless better for modeling purposes because my students and I were less distracted by the difficult content of the article and could instead focus on my thinking strategies. I didn't have to explain my strategies quite so much, nor was I tempted to oversimplify them to compensate for the confusing content, but instead could let them speak for themselves. (Mar. 12, 2009)

I had found a balance between being authentic and being comprehensible. As my personal content knowledge about my reading strategies was well-developed, I was able to authentically demonstrate those reading strategies using a text with comprehensible content.

Implications

My Teaching Practice

This study has implications for my professional practice, for the professional development of educators, and for the field of teacher cognitive psychology. The experience of developing and drawing on my personal content knowledge in teaching nonfiction will affect the way I plan, implement, and reflect on my instruction in all subject areas in the future. I can deliberately increase my understanding of how I personally engage with subject matter and use that understanding to better plan, implement, and reflect on my instruction in every subject area. While such study could involve extended cycles of action research, it could also be as simple as taking metacognitive notes on how I solve a single math problem that requires algebraic thinking; on how I generate a hypothesis for a scientific experiment; or on how I decide on a particular adjective in a paragraph of descriptive writing. Developing my personal content knowledge, in other words, can become a routine component of my lesson planning, whenever possible through in-depth study but more often through brief, targeted reflection about specific learning tasks. I will continue, as well, to draw on my personal content knowledge in teaching reading, which I view as the subject area most critical to my students' academic success.

Including my students as co-constructors of knowledge will also positively impact my teaching in all subject areas, not only nonfiction reading. Setting firm learning goals for my students while allowing for flexibility in how we achieve those goals will allow their participation to affect our knowledge-construction process. I plan to continue to take my own role in this co-construction seriously, modeling for my students whenever possible the process by which I truly engage with our subject matter.

The Professional Development of Educators

My findings also have implications for the professional development of educators. They suggest that our professional development should include opportunities for teachers to develop both our pedagogical content knowledge and our personal content knowledge. At schools like mine, where teachers collaborate in planning and reflecting on instruction, teachers could share with each other their insights around their personal content knowledge. Such a process of collaborative inquiry could help a team of teachers better understand how competent users of content think, and thus plan both more rigorous content and more authentic pedagogy. A possible

future study could be a collaborative self-study in which each member of a team of teachers develops his or her own personal content knowledge around the same subject matter so as to explore, through their common findings, the most essential thinking strategies that comprise proficiency. Through continual reflection on the relationship between their instruction and their insights from their personal content knowledge, they could work toward implementing both the subject matter and the pedagogies that most effectively help their students become competent users of content.

Teacher Cognitive Psychology
Finally, in this era of standardization, where many school districts adopt scripted curricula that leave little room for variation in content, pedagogy, and assessment, this study suggests that more attention be given, in both policy and practice, to the essential role of teacher knowledge in planning, implementing, and reflecting on instruction. Developing my personal content knowledge enabled me to empathize with my students, heightened the rigor of my instructional content, made my lesson planning more flexible and inclusive, and helped me discover a pedagogy that empowered my students to become co-constructors of knowledge. Merely following a teacher's guide or unquestioningly teaching skills that will be tested would not have provided as many opportunities for improvement to my professional practice. My own knowledge, along with my deliberate development of that knowledge, played a critical role in making me a better teacher.

This study therefore suggests that there is an additional component of Shulman's (1986) conception of pedagogical content knowledge. In the quest to understand what teachers know and how they come to know it, one must investigate teachers' knowledge of pedagogy, their knowledge of content, and also their *self-knowledge* as it intersects with pedagogy and content. A prerequisite, in other words, to developing pedagogical content knowledge is developing personal content knowledge, especially when it comes to the *how*, or the process, of engaging with subject matter. While outside researchers may find ways to undertake this investigation, my study suggests that teachers themselves must play an active role in identifying what they know and how they come to know it. The challenge for the field of teacher cognitive psychology – which, like all educational research, is dominated by university researchers – is to include teachers in the process of exploring what it means to understand in order to teach.

Studying our own cognitive psychology could have important implications for our profession. Becoming deeper knowers of what we know and how we come to know it empowers us to critique our own practice. In sharing a process of self-critique with our colleagues, we can support and mentor each other more effectively. We can thus simultaneously personalize our professional development and build community with other professionals. Furthermore, administrators and policy-makers are more likely to view our decisions about curriculum and assessment as valid when we can prove that we have based them on knowledge of our professional practice. Finally, our students will have a better chance of becoming self-aware, critical builders of knowledge when surrounded and supported by self-aware, critical adults who are themselves invested in building knowledge about improving their practice.

Epilogue

This research focused on my own knowledge and practice. While my students' low reading achievement provided the impetus for the project, as a researcher conducting a self-study I did not collect data on their reading achievement. As a teacher, of course, I assessed and monitored their progress continually, and as a matter of interest can report anecdotally on changes I observed in their reading by the end of the school year. Though it is likely that my research affected these changes, a formal analysis of that relationship was outside the scope of this study.

From the very first cycle of research, my students' engagement in reading nonfiction increased noticeably. Especially by the second and third cycles, in which I tried to make transparent my own reading strategies while explicitly encouraging their knowledge construction about the reading process, most of them asked more questions, volunteered more observations, and paid closer attention to nonfiction texts than I had seen them do before. Also, according to the Developmental Reading Assessment (DRA), which assesses reading engagement, fluency, and comprehension, my students made measureable progress by the end of their third-grade year. Table 2 shows the distribution of my students' reading achievement before and after this study.

Table 3: Reading Achievement Distribution

Years Below Grade Level	Number of Students: January 2009	Number of Students: June 2009
0	4	12
0.5	10	2
1	1	1
1.5	1	2
2	2	1
2.5	2	2
TOTAL	20	20

Though not all of my students reached grade level, by the end of the year 60 percent were reading at or above grade level, as opposed to 20 percent when the study began. I felt confident that the 15 percent of students who were within one year of reaching grade level could achieve success in the coming year, assuming they continued to have strong instruction in fourth grade. The remaining 25 percent of students more than one year below grade level were obviously of great concern to me. Their ongoing struggles underscore the need for me to continue to develop my personal content knowledge so as to provide exemplary reading instruction to them and to all of my students, present and future.

References

Adler, D. (1980). *Cam Jansen: the mystery of the U.F.O.* New York: Viking Press.

Bullough, R. V., Jr., & Pinnegar, S. (2001). Guidelines for quality in autobiographical forms of self-study research. *Educational Researcher, 30*(3), 13-21.

Fenstermacher, G. (1994). The knower and the known: The nature of knowledge in research on teaching. In L. Darling-Hammond (Ed.), *Review of research in education* (Vol. 20, pp. 3-56). Washington, D.C.: American Educational Research Association.

Fielding, L. G., & Pearson, P. D. (1994). Reading comprehension: What works. *Educational Leadership, 51*(5), 62-68.

Fountas, I. C., & Pinnell, G. S. (2001). *Guiding readers and writers, grades 3-6: teaching comprehension, genre, and content literacy.* Portsmouth, N.H.: Heinemann.

Hamachek, D. (1999). Effective Teachers: What they do, how they do it, and the importance of self-knowledge. In R. Lipka & T. Brinthaupt (Eds.), *The Role of Self in Teacher Development* (pp. 189-225). Albany: State University of New York Press.

Hinter, P. & Teitelbaum, M. (1994). *Clue Jr.: the case of the secret message.* New York: Scholastic.

Korthagen, F., & Kessels, J. (1999). Linking theory and practice: Changing the pedagogy of teacher education. *Educational Researcher, 28*(4), 4-17.

LaBoskey, V. K. (2004). The methodology of self-study and its theoretical underpinnings. In J. John Loughran et al. (Eds.), *International Handbook of Self-Study Teaching and Teacher Education Practices* (pp. 817-869). London: Kluwer Academic.

Loughran, J., & Northfield, J. (1997). The nature of knowledge development in the self-study practice. Paper presented at the American Educational Research Association. Chicago: Mar. 1997.

Schoenbach, R., Greenleaf, C., Cziko, C., & Hurwitz, L. (1999). *Reading for understanding: A guide to improving reading in middle and high school classrooms.* San Francisco, CA: Jossey-Bass Inc.

Sharmat, M. (1989). *Nate the Great and the Halloween Hunt.* New York: Yearling Book.

Shulman, L. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4-14.

Van Manen (1977). Linking ways of knowing with ways of being practical. *Curriculum Inquiry, 6*(3), 205-228.

Appendix A:
Critical Friend Conversation Protocol

1. What patterns do you notice in the data (metacognitive log, journals, and lesson plans)? What stands out to you?

2. What discrepancies or conflicts do you notice in the data? What surprised you?

3. What themes do you notice emerging about how my reading instruction is impacted by my personal content knowledge? What evidence supports those themes?

4. What am I missing or overlooking about the relationship between my personal content knowledge and my reading instruction?

5. Are my plans for my next cycle(s) of research adequate to address the missing pieces and to continue exploring the emerging themes? If not, how can I improve them?