Making Teacher Thinking Transparent: An Examination of Teacher Think-Aloud Instruction

by

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Abstract

Students need both knowledge of metacognitive reading strategies and how to effectively use these strategies to encounter successful reading experiences. There is growing research on the success of strategies (i.e. visualize, infer, monitor thinking, annotate text) in classroom settings. However, there is limited research on providing Black students metacognitive instruction on how to use these strategies for the improvement of their reading comprehension. For the present study, an embedded mixed methods design [QUAL + quan] was used to examine how teachers' instructional practices were influenced after receiving professional development workshops centered on metacognitive, think-aloud instructional strategies. The workshop took place for 11 weeks for three third grade, in-service teachers at a Title 1 elementary school with a predominantly Black student population. In addition to examining students' scores on the STAR Reading assessment, qualitative data sources (the Metacognitive Awareness Inventory [Schraw & Dennison, 2004], transcriptions of teacher interviews, classroom observations, field notes, and a mid-training survey) were triangulated to explore changes in teachers' instructional practices before and after the teachers' professional development. A collective case format was used to report the findings from this study.

Findings from this study suggest positive effects of metacognitive think-aloud workshops for in-service teachers. In two out of the three classrooms there was significant growth in students' STAR Reading test. Three themes emerged from the sub-questions for research question two regarding changes in teachers' metacognitive competencies and instruction: *changes in pedagogical practices, changes in reading instruction,* and *metacognitive-focused instruction*. The teachers were receptive towards the think-aloud workshops and began to implement more metacognitive think-alouds during their reading instruction. Two themes

emerged from research question three regarding teachers' perceptions of how their participation in the think-aloud workshops had an impact on students' reading performance: *strategies* and *skills*. The teachers reported improvements in students' overall reading comprehension, reading fluency, use of think-alouds in small and whole group settings, metacognitive awareness, and word attack skills. Additionally, this paper explains how the findings from this study are supported by previous research and the theoretical framework (metacognition, cognition, self-regulation and culturally responsive teaching). The paper concludes with implications for practice and plans for future research on think-aloud instruction.

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List of Abbreviations

CRT   Culturally Responsive Teaching

MAI   Metacognitive Awareness Inventory

NAEP   National Assessment of Educational Progress

NCES   National Center for Education Statistics

SES   Socioeconomic Status

SPSS   Statistical Package for Social Sciences

STAR   Standardized Test for the Assessment of Reading

USDA   United States Department of Agriculture

Chapter 1. Introduction

During the 1950s to the mid-1960s, one of the prevailing influences of teaching and learning was the behaviorist theory. According to the behaviorist theory, learning to read was conceived as a conditioned behavior, and was not to be conceptualized as growth or development (Alexander & Fox, 2004; Skinner, 1974; Strike, 1974). Glaser (1978), an advocate of behaviorism in reading education, believed understanding the physiological and environmental foundations of human behavior would solve the problems with reading. Furthermore, Alexander and Fox (2004) stated learning was a result of repeated promptings and controlled environments. Students' thoughts and reflections were not considered nor encouraged. Over the last 60 years, however, Alexander and Fox (2004) reported there has been a shift in teaching and learning from the perspective of students as empty vessels needing strict repeated and controlled stimulations in order to learn, to valuing students' thoughts, urging students to take control of their learning actively, and encouraging self-regulated learning. While behaviorism may have dominated the psychological research during the 1950's to 1960's, theories related to human thought impacting human action and viewing reading as a mindful habit were steadily developing (James, 1890).

The era of information processing began in the mid-1970's (Alexander & Fox, 2004). During this time, there was recognition of how readers' prior knowledge has an impact on their reading comprehension, and that readers' prior knowledge "was powerful, pervasive, individualistic, and modifiable" (Alexander & Fox, 2004, p. 42). There was an increase of study of how readers' took control of their comprehension and organize information in their mind (Allington, 1980; Anderson, 1977; Paris, Lipson & Wixson, 1983). This type of mental control and organization is often referred to as self-regulation. In contrast to the behaviorist theory, self-

regulation theory is individualistic and is not as computer-like as behaviorism (Alexander & Fox, 2004). Students are seen as individuals with various learning abilities and preferred learning strategies rather than everyone learning the same way. It is now expected for students to set academic goals, reflect on reading behavior, and control their reading behavior when comprehension is impeded. Self-regulated learning includes controlling one's learning and adjusting when comprehension of the content of a text is not met (Chen, 2017). Self-regulation strategies such as making goals, monitoring behavior and adjusting learning efforts are not automatic; students must be taught how to apply self-regulation strategies by their teachers through explicit instruction. *Explicit instruction* is a powerful and effective teaching method used to model literacy skills and strategies to students in a direct and engaging manner leaving little room for misconceptions and confusion (Duffy, Roehler, Meloth, Vavrus, Book, Putnam, & Wesselman, 1986; Reutzel, Child, Jones, & Clark, 2014). There are planned strategies teachers use to support their reading comprehension (i.e., reread sentences when meaning is misconstrued or use context clues to define unfamiliar words). Unfortunately, many teachers do not demonstrate transparency and express their mental processes of using reading strategies while reading a text to reveal to their students the metacognitive and cognitive processes which should occur while reading (Curwen, Miller, White-Smith, & Calfee, 2010; Pratt & Martin, 2017). In the 1950s and early 1960s, it was assumed teachers did not have adequate knowledge to make decisions regarding curriculum, and they had to stick to specific procedures when teaching (Goodman, 2011). However, now it is encouraged for teachers to use their knowledge and strategies for reading to support their students' reading.

Metacognition, as it relates to reading, is the conscious effort to monitor and control one's thoughts while reading (Flavell, 1979). According to Flavell, there are three categories within

metacognitive knowledge: *person*, *task* and *strategy* (1979). Flavell suggested the category of a person relates to an individual's beliefs about their abilities, the task category concerns what you know (your cognition) about the task at hand, and the strategy category involves the strategies a reader will use to receive the desired reading outcome. It is essential to monitor and control thoughts while considering one's abilities, cognition, and repertoire of strategies during a reading task when reading demands are complex, causing hindrance within comprehension. Obtaining the awareness of one's knowledge of the factors (i.e. preferred learning environment, background knowledge, how, when and why to use strategies) contributable to a particular reading outcome is the demonstration of metacognitive knowledge. Ultimately, metacognitive development alerts the reader there is a limitation in reading comprehension, and therefore gives the reader the option to make decisions regarding their comprehension.

Moreover, the theory of metacognition in reading served as the foundation for this study. The intervention for this study focused on reading instruction centered on metacognition and the influence of metacognitive reading instruction, if any, on students' reading performance, particularly students from underserved populations in schools. The researcher was interested in exploring how students' metacognitive development may, or may not, be linked to their reading performance. Even more, the researcher was interested in gaining understanding of how teachers' metacognitive knowledge and transparency during reading instruction may or may not have an influence on students' metacognitive development, and consequently, their reading performance.

Statement of the Problem

Not only is it uncommon for teachers to overtly express their invisible use of strategic reading while reading aloud to their students, numerous scholars have suggested factors such as

disparities in school funding, lowered expectations for students of color, opportunity gaps (Gorski, 2013), test biases, and overall systematic structures in place at schools designed to stunt the academic growth of students of color (Cohen, 1969; Gay, 2018; Irvine, 1990; Ladson-Billings, 1995a; Love, 2019) that are contributable to the differences in the reported standardized assessments. Differences in the academic achievement between students of different races and economic backgrounds is often known as the *achievement gap*. The National Education Association defines the achievement gap as "differences in academic performance between groups of students of different backgrounds and have been documented with respect to students' ethnic, racial, gender, English learner, disability, and income status" (2015, p. 1). Since the late 1960s, the National Assessment of Educational Progress (NAEP) has documented the academic trends of school-aged students using the NAEP reading assessment (Lindo, 2006), which has demonstrated achievement gaps between Black students and White students, as well as between students of low socioeconomic status and students of higher socioeconomic status.

Representatives from NAEP administer the reading assessment every two years to fourth- and eighth-grade students; the most recent results were published in 2019. The evaluation consists of students reading a grade level text and answering comprehension questions to assess students' knowledge, skills and reading performance (NCES, 2017). According to NAEP's achievement report card published by the National Center for Education Statistics (NCES), in 2019, 35% of the fourth-grade students in the nation performed either at or above the proficient level on the reading assessment. In the state of Alabama, 28% of the fourth-grade students scored at or above the proficient level on the reading assessment. Also, in Alabama, 53% of the students in fourth grade are White, and among the students in this racial group, 38% (45% in the nation) scored at or above proficiency level on the reading assessment in 2019; whereas 34% of

Alabama's fourth grade students are Black and only 13% (18% in the nation) scored at or above proficiency level on the NAEP reading assessment (NCES, 2019). The numbers show that statistically, White students attain higher scores on this reading assessment than Black students.

As reported by the United States Department of Agriculture (USDA), the National School Lunch Program is a program which provides either low cost or free lunch at school each day for students who hold a status as being a homeless, migrant, or foster child, or if their family's income is 130% or more below the federal poverty level (2017). Exploring the socioeconomic statuses (SES) in the United States, 45% of students who are not eligible for National School Lunch Program, an indicator of low family income, scored at or above proficiency; while only 16% of the students who are eligible reached or surpassed proficiency on the reading assessment. This means 84% of the students who are not financially advantaged (according to the National School Lunch Program) scored below proficiency on the NAEP reading assessment. Similar to the assessment score breakdown by race, there is another discrepancy between different groups of students.

The assessments in Alabama are aligned with the Common Core State Standards (CCSS), which means, according to NAEP, overall, students in Alabama are displaying a lack in the ability to perform rigorous reading tasks such as inferring when texts convey implicit ideas, evaluating texts for purpose, summarizing to determine main ideas and supporting details of texts, and making connections to gather context clues to determine the meaning of unfamiliar words. There are numerous variables (testing bias, education debt, and teacher instruction) to examine to help make sense of the discrepancies in achievement.

There is the possibility of disconnect between opportunities available to students and what they are expected to know and demonstrate in biased standardized tests. Questions on

standardized tests can contain content where students have no background knowledge, or the language used in the tests may not mimic everyday language used by students, resulting in testing bias. The term *achievement gap* is subject to be viewed as a gap in *intelligence* (Gay, 2018); however, the experiences and opportunities available to all students in educational settings should be highly considered when observing outcomes of testing. Scores from standardized tests should not be viewed as problems and deficiencies of students, but should be seen as the symptoms of the classroom instruction the students received (Gay, 2018). NAEP does not provide holistic data reports on assessments; racial and economic groups are put together as categories, but within group analysis and factors are left untold. Further, it is worth considering the biases that may be presented in the standardized tests.

Additionally, it is important to consider the education debt in the United States (Ladson-Billings, 2006). Gloria Ladson-Billings coined the term *education debt* (a compilation of historical debt, economic debt, sociopolitical debt, and moral debt) to explain why there is an *achievement gap*. Ladson-Billings (2006) argues the historic and current inequities among racial and economic groups, the funding disparities between schools with majority White populations and schools with majority Black and/or Latinx populations, the exclusion of people of color from civic processes, and institutional racism and lack of morality in education should be addressed to adjust the focus of achievement gap. The statistics presented above regarding the NAEP scores are a representation of the education debt explained by Ladson-Billings (2006).

While there are numerous factors that can be examined to understand the discrepancy in test scores among different racial, cultural, and economic groups (i.e. classroom instruction, education debt, educational systems, test bias, lack of within group analysis), instructional practices of teachers in the classrooms were explored for this study. For many school-aged

students, there is disconnect between what the reader knows, the ideas conveyed through a text, and the reading strategies needed to make comprehension successful. As a result, students need adequate support in the classroom from their teachers to improve their reading performance. Students of underserved backgrounds (i.e. English language learners, students of low socioeconomic status, and students of color) receive little, to no, instruction in higher order skills development (Hammond, 2015). With this acknowledgement, rather than look at students and claim they do not perform as well academically due to their cultural, racial, or socioeconomic background and upbringing creating an *achievement* gap, it is more important to explore the opportunity gap among literacy instruction to provide all students an opportunity to high quality, rigorous education that responds to students' academic needs.

Reading Instruction

Reading instruction is most effective when it is intentionally tailored to meet the learning needs of students, the recipients of learning materials and instruction. Classroom reading instruction should be culturally responsive, explicit, and strategic to support all students' reading comprehension (Duffy et al., 1987; Hammond, 2015; Pilonieta, 2017; Podhajski, Mather, Nathan, & Sammons, 2009). The first, culture, refers to a system of social norms and values, cognitive codes, behavioral morals, worldviews, and beliefs used to give order and meaning to one's life and the lives of others (Delgado-Gaitan & Trueba, 1991; Gay, 2018). Culture plays a significant role in the approaches individuals take to learn, especially in how individuals read. Both teachers and students alike come into the classroom with their own cultural backgrounds and beliefs, as well as their perceptions of one another. The need for culturally responsive instruction is especially needed for low SES, Black students – the group of students whose overall performance is lowest regarding academic "achievement" in the nation (Bohrnstedt,

Kitmitto, Ogut, Sherman, & Chan, 2015). Disparities in academic instruction for racially, ethnically, and linguistically students is heavily due to teachers' lack of considering and incorporating students' cultural backgrounds, frames of reference, and experiences in the classroom. As leaders in the classroom, teachers' relationships with and attitudes towards their students have a heavy impact on students' academic performances (Gay, 2018).

Secondly, explicit instruction provided by teachers allows students the opportunity to shift from being dependent learners to independent learners. Without explicit, strategic instruction, students are merely prompted to regurgitate facts, information, and procedures (Hammond, 2015). However, when teachers make their internal voice as a proficient reader audible to students, students begin to internalize similar processing, transitioning them into strategic, autonomous readers and learners.

The third component of quality reading instruction is strategic. Though there are several instructional strategies to aid students' reading comprehension (e.g. differentiated instruction [Frey, Fisher, & Everlove, 2009], implementation of technology [Biancarosa & Griffiths, 2012] inquiry-based learning [Moreillon, 2014], cooperative learning [Shaaban, 2006], etc.), students' development of metacognition serves as the foundation for the effectiveness of many instructional strategies, as it helps students become independent, strategic readers (Harvey & Goudvis, 2017). Before students are able to successfully participate and learn from these activities, they must be presented the inner, cognitive processing of a proficient reader implementing and participating in the reading strategies and activities. When students are aware of and engage with their inner conversation, their comprehension improves (Harvey & Goudvis, 2017). Students' knowledge of efficient reading behaviors can be expanded and modified when taught (Dole et al., 1991; Paris & Winograd, 1990); therefore, teachers should demonstrate

beyond the aesthetic outcomes of reading, and model more of the cognitive, strategic activities and thinking that should take place (Duffy, 1988).

Individuals who possess knowledge of their cognitive processing, various reading strategies, and an awareness of when strategies should be put to use, can be said to have sufficient development of one's metacognition. The simple definition of metacognition is thinking about one's thinking (Flavell, 1979). In relation to students using metacognition to enhance and support their reading comprehension, metacognition is the knowledge and control one has over their thinking during a reading task (Cross & Paris, 1988). When teachers demonstrate to students how and when to use monitoring strategies for reading, students receive the necessary tools to self-regulate their comprehension and develop into independent, proficient readers (Pressley, 1986).

Currently, there is limited literature on how metacognitive-training for teachers of predominantly Black, low SES elementary schools may have an influence on students' reading performance (see Chapter 2 for more details of the search methods conducted for this study). Despite the history of low academic achievement among Black students (NCES, 2017), few studies can be found on the attempts to identify effective ways to use metacognition to improve the reading performances of low SES, Black students in elementary school (Pilonieta, 2017). In one such study, Pilonieta (2017) trained first- and second-grade teachers how to implement explicit reading instruction. The student participants in this study were 96% Black and 90% received free or reduced lunch (an indicator of low SES). From the pre-assessment to the post-assessment, Pilonieta found that after 36 30-minute lessons on reading strategies, the students, overall, made significant gains in their knowledge and use of reading strategies. Therefore, to begin seeing a reduction of academic disparities among race and socioeconomic statuses, there is

a need for more research on instructional strategies for Black students of low SES elementary schools, a population often underrepresented in research on reading interventions.

Purpose of Study

This study sought to explore the instructional strategies used by teachers at a low SES, elementary school with a population of predominantly Black students. Additionally, this study sought to examine if teachers' pedagogical practice of instructional strategies would correlate with students' reading performance, and if so, how they would correlate.

There is plenty of research on teachers' competencies of metacognition and research on metacognitive training for pre-service teachers (Luttenegger, 2012; Ozturk, 2017), teachers in foreign countries (Carioli & Peru, 2016; Iwai, 2016; Soodla et al., 2016; Zee & de Bree, 2017), and studies where Black students are not the majority (Curwen et al., 2010; Pratt & Martin, 2017); however, there is limited literature that examines metacognitive training for in-service teachers at low SES, predominantly Black elementary schools. To see a decrease in the educational inequities among race and socioeconomic status, there is a need for more research on the implementation of reading interventions using research-based instructional strategies with Black students from low SES communities, who are often underrepresented. Therefore, the purpose of this study was to examine the impact of think-aloud workshops centered on metacognition on third-grade, in-service teachers' reading instruction at a low SES school with a population of predominantly Black students; and consequently, the impact of the teachers' involvement with the metacognitive training on the students' reading performances.

Research Questions

The study was guided by the following research questions:

1. Will there be significant differences in students' STAR Reading scores after their teachers' participation in think-aloud workshops?

   Hypothesis: Students who receive metacognitive-centered instruction through the use of think-aloud instructional strategies from their teachers will yield significant growth on their STAR Reading test.

2. What is the effect of teacher metacognitive training and the implementation of instructional strategies using think-alouds?

   A. What impact will the development of teacher understanding in metacognition and self-regulation have on their pedagogical teaching practices?

   B. What impact does strategic teacher training in metacognitive self-regulation strategies have on teachers' reading instruction?

   C. Does teacher training in metacognitive self-regulation strategies lead to improved, metacognitive-focused reading instruction?

3. How are teachers' perceptions of students' changes in reading supported by students' STAR scores?

There were three, third-grade classrooms that were observed and examined for this study. Further details on the participants for this study are explained in Chapter 3. Research question one was answered by testing for significant differences in students' progress monitoring assessment in reading. The focus for research question two was the teachers and how their instructional practices were influenced by the workshops. Three sub-questions were used to answer research question two. Sub-question 2A, the most broad of the three sub-questions, sought to examine changes in the teachers' pedagogy from the beginning of the study to the conclusion of the study. The aim of sub-question 2B was to observe how the think-aloud

workshops would influence the teachers' reading instruction. Sub-question 2C, the most narrowly scoped sub-question of the three, sought to see if teachers' reading instruction would incorporate more metacognitive think-alouds from the beginning of the study to the end. Finally, the aim of research question three was to understand how teachers perceived changes in the students' reading behaviors. Though the progress monitoring assessment reported the quantitative changes in students' reading, teachers' perspectives of students' reading growth and behaviors provided a more comprehensive report.

In summary, the aim of the three research questions was to provide the researcher and readers an understanding of how the participating teachers of this study gathered the content of the think-aloud workshops and applied it in their classrooms. The foci of the questions were both the students and the teachers, which provided an inclusive approach and understanding of how information from think-aloud workshops both was acquired and how the information had an impact on teachers' pedagogy and students' reading.

Theoretical Framework

This research was framed around four theories: metacognition, cognition, self-regulation, and culturally responsive teaching. According to Baker and Brown (1984), metacognition is the knowledge a student has over his or her thinking and learning tasks; furthermore, they believe metacognition refers to two separate phenomena: knowledge about cognition and regulation of cognition. Baker and Brown (1984) based these phenomena on the work of Flavell's (1978) description of metacognition as knowledge taking the form of its goal or knowledge that regulates cognitive attempts. A portion of the theoretical framework of this study is based on Baker and Brown's (1984) phenomena, whereas metacognition serves as a base for how readers tune in with their thinking to acquire information while reading (cognition) and the strategies

readers use to monitor and regulate their comprehension (self-regulation). The other theory,

culturally responsive teaching, served as the approach to instruction involving the need

responding to and valuing the cultural differences of students.

Metacognition Theory

      According to Flavell (1979), metacognition involves the knowledge and experiences of

one's cognitive occurrences. Cognition is the mental processes and thinking conducted; it is

merely the act of knowing and acquiring knowledge (Curwen et al., 2010), while metacognition

is reflecting on and having an awareness about one's cognitive processes. In brief, Forrest-

Pressley and Waller (1984) stated, "metacognitive processes refer to the control or executive

processes that direct our cognitive process and lead to efficient use of cognitive strategies" (p. 2).

Merely knowing what strategies to use while reading (cognition) is not enough to produce

proficient readers; students must know *how* and *when* to use the strategies as well

(metacognition) (Pressley, 1986). There is an abundance of knowledge students can acquire

concerning the strategies likely to be effective in achieving various reading goals (Flavell, 1979).

Due to the complex demands of reading, it is imperative for reading instruction to be explicit and

metacognitively transparent so students can gain a clearer understanding of the strategies used by

proficient readers. Explicit instruction limits room for students' misconceptions on why and how

to use reading strategies (Duffy, 1988). Think-aloud instruction, an instructional method teachers

use to model the mental processes of proficient readers to students, is an example of explicit

reading instruction (Duffy et al., 1986; Ness & Kenny, 2016; Reutzel et al., 2014). When reading

is difficult, struggling readers have the tendency to ignore their reading challenges and continue

to read; therefore, teachers should model their mental processes and strategy use (*how*, *when*, and

why they are using the strategies) while reading using the think-aloud method to show students

the metacognitive process that should take place by proficient readers to ensure comprehension is met.

Cognition Theory

Forrest-Pressley and Waller (1984) stated reading has been traditionally viewed as a cognitive task and defined cognition as "the actual processes and strategies that are used by a reader" (p. 6). Cognitive activity takes place as individuals read, and acquire knowledge from the text read. "Cognition is adaptive, recursive, reflexive, and socioculturally situated. Learning and practice are active social processes occurring within relevant enculturating contexts. The student is presumed to be the active constructor of knowledge" (Slator et al., 2007, p. 114). In contrast to metacognition (which involves the act of controlling and monitoring one's cognitions), cognition refers to a reader being able to use information stored in their memory to comprehend a text (Kendou et al., 2014). During cognitive processing, which may either be quick and effortless, or slow and effortful, students often relate the text information with their background knowledge to construct understanding (van den Broek et al., 2011). For instance, there are specific, basic reading skills that require automaticity (i.e., decoding, word recognition, and syntax); when basic reading skills are meant to fulfill readers' purpose of reading the material, readers can extract the information for understanding (Forrest-Pressley, 1984). The ability to use skills and information to draw from is critical for readers during their cognitive processing, as reading often demands the processing of information which is stored through memory. Moreover, Dole, Brown and Trathen (1991) used a cognitive-based view on how readers construct meaning from text:

> All readers, both novices and experts, use their existing knowledge and a range of cues
> from the text and the situational context in which the reading occurs to build, or
> construct, a model of meaning from the text. According to this view, even novice readers

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can behave like experts when presented with texts and tasks for which they possess

appropriate knowledge. Conversely, even expert readers can be reduced to novices when

presented with obscure or ambiguous texts. Thus, two important characteristics of

readers—the knowledge that students bring to the task and the strategies that they use to

foster and maintain understanding—play important roles in distinguishing the old and

new views of comprehension (p. 241).

Furthermore, the researcher would be remiss to disregard the various and diverse

experiences and opportunities for different students, especially for students of low

socioeconomic status who may have more limited experiences and opportunities than their

economically advantaged counterparts. The cognition of individuals and ability to make

connections varies widely depending on personal experiences. For example, implementation of

the strategy *making connections* (*text to text, text to self, text to real world,* and *text to media*)

would look differently as it is taught to different students. According to Piaget's (1969) cognitive

learning theory, schooling should be adapted to the students. As teachers know more about their

students and their cognitive styles and experiences, they are better able to connect with students

during reading instruction.

Learning styles are the processes students use for cognitive problem-solving, showing

what they know, and demonstrating what they are capable of doing (Gay, 2018). In regards to

students' cognition and learning styles, Guild and Garger (1985) add that essentially,

understanding individuals' learning styles can be achieved by analyzing what people do when

they engage with new ideas, people, situations, and information – all of which involves

cognition. As teachers, it is valuable to not only have an awareness of students' learning, or

cognitive styles for effective teaching, but to be self-aware of cognitive styles, and how to

verbalize one's methods of interacting with new ideas and information to successfully comprehend and acquire new knowledge.

Self-Regulation Theory

Self-regulation strategies are tools used to develop metacognitive awareness (Mason et al., 2013). Pintrich (1995) defines self-regulated learning as "the involvement of the active, goal-oriented, self-control of behavior, motivation, and cognition for academic tasks by an individual student" (p. 5). Though cognitive and metacognitive processing and knowledge are vital in reading comprehension, in isolation, they are not enough to promote achievement; it is necessary for students to be able to self-regulate their cognition and reading efforts (Paris et al., 1983). According to Pintrich (1995), there are three dimensions in which self-regulated learning manages academic learning: through observable *behavior*, *motivation* and *affect*, and *cognition*.

In the present study, the focus will be primarily on the cognitive aspect of self-regulation – adapt teaching to students' learning styles for successful modeling of self-regulation. Brain activity and cognition serves as the core for behavior, motivation and affect. Modeling to students how to monitor and control thinking may influence behavior and motivation. According to Bandura (1986), modeling produces good results in helping students develop intellectual, social, and behavioral competencies. Furthermore, in relation to cognition, self-regulation involves controlling cognitive strategies to support learning, such as the use of in-depth processing strategies resulting in better learning and performance (Pintrich et al., 1993). The deliberate use and regulation of reading strategies increases reading efficiency (Forrest-Pressley & Waller, 1984).

Self-regulated learning must be taught. At young ages, students enter school as dependent learners, and in the early years, it is the responsibility of teachers to help students become

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independent, self-regulated learners (Hammond, 2015). Like any other skill or strategy individuals obtain, self-regulated learning will take time and practice; nonetheless, Pintrich (1995) believes using self-regulation while reading is both a skill capable of being learned and taught. The notion of teachers modeling their thoughts of their strategies for learning and how they think and reason, this instructional practice supports students' development of becoming self-regulated learners (Pintrich, 1995).

The metacognition, cognition, and self-regulation theories go hand-in-hand with one another when completing tasks, particularly reading tasks. Before proficient readers take on a reading task, they engage in self-regulated activities (i.e. planning their approach, monitoring their progress, and evaluating their efforts and final product). As the reader engages and completes the reading task, there is mental processing taking place (cognition) to make meaning of the words read and to make connections with the content using their prior knowledge and memory. While the reader self-regulates their learning and use cognitive strategies, they also consider what they know about themselves, the task at hand, and the strategies they will use for a successful result.

Culturally Responsive Teaching

Culturally relevant education centers on effectively teaching students of diverse backgrounds (Aronson & Laughter, 2016). One of the teachings that fall under culturally relevant education, *cultural responsive teaching*, emphasizes communal orientation and focuses on building and sustaining relationships, cognitive scaffolding, and critical social awareness (Gay, 2018; Hammond, 2015). This differentiated instruction constructs an environment of teaching and learning relevant to the languages, literacies, and cultural practices of students from a variety of differences and inequalities (Paris, 2012).

In Gay's (2018), *culturally responsive teaching*, there are four critical aspects: caring, communication, curriculum, and instruction. Communication and instruction are the two highly stressed components in this study. Effective communication between teachers and students are essential to carry out these core areas. Cultural groups hold particular styles of communication to express their thoughts, ideas and feelings; therefore, teachers' understanding of students' communication styles is vital for effective instruction. According to Gay (2018):

> The absence of shared communicative frames of reference, procedural protocols, rules of etiquette, and discourse systems makes it difficult for culturally diverse students and teachers to genuinely understand one another and for students to fully convey their intellectual abilities. Teachers who do not know or value these realities will not be able to fully access, facilitate, and assess most of what these students know and can do (p. 94).

Moreover, the absence of shared or understood communication styles makes it problematic for teachers to be able to efficiently and successfully demonstrate the metacognitive processing that should occur as proficient readers through think-aloud instruction. A pedagogy in cultural differences serves as a bridge between teachers and students to enhance student learning (Ladson-Billings, 1995a) by emphasizing the cultural attributes students bring into the classroom.

Instruction is the other critical aspect of culturally responsive teaching that was stressed in this research. Gay (2018) considers instruction the most fundamental aspect of culturally responsive teaching; as such, instruction puts the other aspects of culturally responsive teaching into action. Culturally and linguistically diverse students come to schools with already developed methods of actively processing information under the right conditions conducive to learning (Hammond, 2015). If educators are to be effective in culturally responsive teaching, there should

be an understanding on how the students in their classes learn. Though educators should recognize not all students from the same ethnic backgrounds learn the same way, understanding the communication and learning styles of students help to illuminate patterns of cultural behaviors that influence how students learn (Gay, 2018). Additionally, characteristic styles of learning provide educators directions for modifying instructional practices to better meet the academic needs of ethnically, racially and linguistically diverse students (Bennett, 2007; Gay, 2018).

In summary, this research is supported by four major theories in education: metacognition, cognition, self-regulation, and culturally responsive teaching. Cognition refers to the knowledge a reader brings to and acquires from a text. Self-regulation involves regulating one's cognition by using strategies to enhance comprehension. Serving as a base, metacognition is the reader's awareness of their cognition, and thus, the reader's use of self-regulation strategies to support comprehension. When teachers employ culturally responsive practices (care, communication, curriculum and instruction), they are able to effectively model to students how proficient readers metacognitively think while reading in a way that is relevant to students' lives and experiences because they aware of students' preferred learning and communication styles and tailor instruction as such. In relation to this study, metacognitive thinking should be verbalized during culturally responsive instruction by teachers so students are able to hear what it sounds like to be aware of one's cognition and to use self-regulated strategies. With the awareness, knowledge, and application of these theories, readers are likely to improve and enhance their reading comprehension (Baker & Brown, 1984).

Therefore, these theories are crucial for the framework of this study. Figure 1 displays an illustration of how the theories in this theoretical framework connect with each other and

encompass reading instruction. There are three levels: the reading instruction (the core), metacognitive instruction, and culturally responsive teaching. The arrows in the illustration represent the multi-directionality between metacognition, cognition, and self-regulation level, as well as within the aspects of culturally responsive teaching (care, communication, curriculum, and instruction). One component within its level does not hold more weight than another component. Furthermore, all components within the theoretical framework are important and necessary for highly effective metacognitive reading instruction.

Figure 1

Metacognitive Instructional Model for Culturally Responsive Teaching
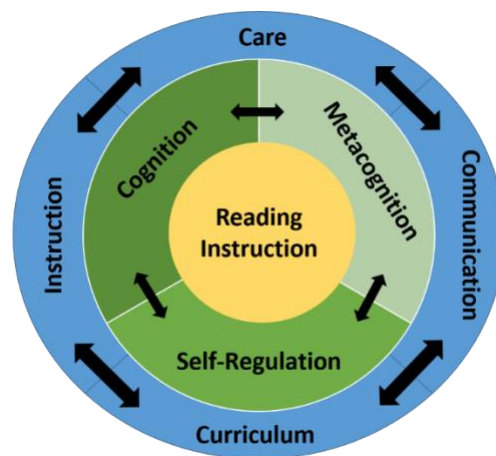
Significance of the Study

The findings of this study contribute to the growing literature of metacognition in reading instruction, especially instruction taught by teachers in predominantly Black elementary schools. Even though Black students from low SES backgrounds perform the weakest among their counterparts in reading, there is limited research on the implementation of reading interventions at low SES, predominantly Black elementary schools (Lindo, 2006; Smith, Black & Hooper, 2017; Turner, 2005). It is exceptionally rare to locate research on the implementation of

metacognitive development training for the in-service teachers within the schools of this population.

The study sought to understand participating teachers' current reading instructional practices as well as the metacognitive competencies of the participating teachers of the particular population of students not commonly studied in the area of metacognition in reading. Additionally, an interest from the study was how the teachers' perceived changes in students' reading behaviors following the teachers' participation in the think-aloud workshops and how their perceptions support the STAR test scores. Furthermore, the findings of this study contribute to the growing literature on metacognition. Thus, it is anticipated the present study could provide guidelines for metacognitive training for teachers in which schools may apply the framework to train teachers in metacognition, as well as implications for quality reading instruction for elementary students, especially elementary students of various cultural, racial, and linguistic backgrounds.

Limitations

There are limitations to consider that may have had an impact on the study. One limitation is the amount of time the study was conducted. The duration of the study was 11 weeks; there may have been varying results if the study was longer. In the previously mentioned studies, durations varied; whereas some studies lasted two weeks, and others lasted for an entire school year. Trustworthiness is another limitation of the study. Practices familiar to qualitative research (i.e. member checking, triangulation, and data immersion) were implemented to strengthen the credibility and trustworthiness of the present study. Triangulation and data immersion were completed; however, though member checking was attempted, there were no responses from participants regarding verification of interpretations of their narrative accounts.

Some threats to the validity of the study beyond the researcher's control were history, maturation and experimental mortality (Campbell & Stanley, 1966). The researcher understood additional learning opportunities may have occurred between the students' pre- and post-reading assessments, as well as between the initial classroom observation and the final observation, outside of the professional development conducted for this study that may have affected results. For example, at the time of the study, the selected school started, for the first time, a new reading program – Sonday System. Sonday System is a program that provides reading intervention for beginning readers through multisensory activities. Finally, regarding maturation, over time there may have been changes among the participants (i.e., mood, state of mind, getting older) contributable to the results.

Delimitations

In this study, the researcher was interested in interacting with teachers working in an elementary school with students of low SES and predominantly Black; therefore, a delimitation is the demographic chosen for this study. The researcher observed educational disparities among this particular population and consequently was more attentive to this demographic for the present study. The location of the study, a rural area in the southeastern region of the United States was chosen not only because of the student population but also due to convenience of proximity.

Assumptions of the Study

It was assumed each of the teacher participants had a sincere interest in the think-aloud workshops and was consistent with using the instructional practices shared through professional development. Also, an assumption was that the teachers shared honest responses in their discussions during the think-aloud workshops and the interviews.

Additionally, the researcher assumed the method of data collection for this study provided an adequate immersion of data (Guest, 2006) to gain a depth of understanding of how teachers' instructional practices (specifically explicit instructional practices) influence students' reading performance.

In the following chapter (chapter two), the researcher presented a review of the related literature. In Chapter three, the researcher explained the methods chosen for this study, as well as how the data sources were analyzed. The researcher presented the findings from the data analysis in chapter four, and made connections between the findings and literature in chapter five.

Chapter 2. Review of Literature

Introduction

Reading comprehension is a skill that involves the use of a variety of reading strategies. Quality reading instruction includes teaching students to take notice of their metacognition and teaching them self-regulation strategies to monitor and evaluate their comprehension during and after reading. Metacognitive, transparent instruction allows students to better understand themselves as readers and learners, allows students to become aware of comprehension breakdowns and how to repair comprehension when breakdowns occur (Dole et al., 1991; Hammond, 2015).

Given the perceived achievement gap in reading in the United States and what it means in mainstream education to reach achievement, one may question if there is a fair balance of high quality reading instruction in the nation. The academic performance of Black students has been on the research agenda since the 1960s (Lindo, 2006; Smith, 2017); however, Black students continue to fall short in academics, particularly in reading, compared to White students, as reported on standardized test (NCES, 2017). Rather than consider the academic disparities as an achievement gap, it is more appropriate to refer to them as educational opportunity gaps.

Though there are academic disparities between Black students and White students, there is a lack of literature on the implementation of reading interventions focused on metacognitive behaviors at low SES elementary schools with high majority populations of Black students. A search of the literature was conducted using a selection of relevant terms (e. g., reading, metacognition, Black, and low socioeconomic status). All searches used the ERIC, Education Research Complete, Academic Search Premier, and PsycINFO databases to expand the search.

The only limit, or parameter, used was 'scholarly (peer-reviewed) journals' to ensure the results were written with rigor. There were no parameters in the year the studies were published. When the search was conducted using only the terms *reading* and *metacognition*, these terms yielded 2,768 results. However, when the terms *low socioeconomic status or low income or poor or poverty* (153 results) and *Black or black Americans or black* (nine results) were added, the number of the results drastically decreased. To narrow the scope of the search even further, with a focus on teacher training and instruction, another search was conducted using the terms *reading*, *metacognition*, and *teacher* and came across 763 results. Again, when the terms *low socioeconomic status or low income or poor or poverty* (25 results), *Black or black Americans or black* (1 result), and *Title 1* (no results) were added, there was a drop in the number of results, yielding limited research on metacognitive training for teachers at Title 1 schools with high populations of Black students.

As a result of the limited literature, the focus of this study is on the implementation of teacher think-aloud instruction to improve the reading performance of low SES, Black students and to examine the pedagogical changes of the participating teachers. Consequently, this literature review is divided into two sections to provide a comprehensive background on the cognitive processes of elementary learners and explain the need for teacher think-aloud reading instruction. The first section describes the cognitive processes of elementary readers and the general cognitive learning styles of Black elementary students. The second section focuses on the characteristics of exemplary classroom instruction and the significance of teachers using explicit reading instruction, specifically using think-alouds, to initiate students' development of metacognition. This literature review will conclude with an explanation for the need to train

teachers on metacognitive self-regulation strategies and how to reveal their mental processes as proficient readers through implementing quality think-aloud instruction.

Cognitive Processes and Styles

The National Reading Panel (NRP) stated, "Readers read a text to understand what is read, to construct memory representations of what is understood, and to put this understanding to use" (2000, p. 39). Students should use their metacognition so they can question and reflect on how they are able to understand the text, and to put their understanding of their metacognitive knowledge to use. This type of purposeful reading is essential for readers to reach success while reading (Pressley & Afflerbach, 1995); reading comprehension is dependent on the execution and integration of cognitive strategies (Kendou et al., 2014). As students learn to use additional cognitive reading strategies, their reading becomes stronger. However, when students lack a repertoire of cognitive reading strategies and resources, reading is difficult, and comprehension is often impeded.

This section of the literature review will provide a background on the cognitive reading processes of elementary students. Additionally, this section will focus on the common cognitive and metacognitive learning styles of Black elementary students. Keeping the background of Black students' learning styles in mind, this section will also share implications for teachers' reading instruction to better align with the cognitive and learning styles of Black students.

Cognitive Processes of Readers

Self-regulation comprehension strategies are needed to develop metacognitive awareness and to comprehend texts successfully. Skilled readers, not necessarily comprehenders, are able to decode easily and read with fluency, as if on automatic pilot, but metacognitively developed readers are triggered when there is a comprehension failure and are able to respond with the

necessary strategies to ensure successful comprehension is met (Brown, 1980). The differences between students with good comprehension and students with poor comprehension are the number of comprehension strategies they are equipped with while reading a text (Jackson, 2016). Furthermore, metacognitively developed readers are intentional and deliberate with the use of these strategies. The following self-regulated activities are deliberate actions that develop comprehension (Brown, 1980, p. 456):

1. Clarifying the purposes of reading; that is, understanding the task demands, both explicit and implicit.

2. Identifying the aspects of a message that is important;

3. Allocating attention so that concentration can be focused on the major content area rather than trivia;

4. Monitoring ongoing activities to determine whether comprehension is occurring

5. Engaging in review and self-interrogation to determine whether goals are being achieved;

6. Taking corrective action when failures in comprehension are detected; and

7. Recovering from disruptions and distraction - and many more deliberately planned activities that render reading an efficient information-gathering activity.

Schraw and Dennison (2004) include categories of regulation of cognition strategies (or self-regulation strategies) in their tool for measuring metacognitive awareness (the Metacognitive Awareness Inventory): planning, information management, comprehension monitoring, debugging, and evaluation. Self-regulation strategies can be planned by readers to make sure the text read is comprehended. When students are deliberate about the strategies they use, they are using self-regulation and enhancing their learning process (Cardelle-Elawar, 1995;

Pintrich, 1995). There are different aspects of self-regulated learning, such as internal techniques where an individual may talk to oneself and external techniques where the environment may be manipulated by the reader (Mason et al., 2013). Readers may be able to read the words in a text, but sometimes it is required for students to also utilize self-regulated techniques (whether internally or externally) such as planning, monitoring, manipulating and evaluating before, during and after reading to avoid comprehension mishaps (Johnston & Winograd, 1985).

According to Pintrich (1995), there are three characteristics to self-regulated learning. First, students must control their behavior, motivation, and cognition. Second, there is a goal the student is attempting to reach that sets the standard by which the student can compare and judge his performance, then make needed adjustments. Third, the individual student must be in control of his actions, hence "self" in the term self-regulation. All in all, Pintrich (1995) suggests self-regulation involves active, goal-directed, self-control or behavior, motivation, and cognition for academic tasks by individual students. Students who demonstrate self-regulation of their reading are more likely to gain higher achievements in reading than students who do not demonstrate self-regulation. Paris, Lipson, and Wixson (1983) stated, "Strategies combine components of both skill and will" (p. 305). In other words, high achievement can be met when students join their ability together with the intentional plans and actions to reach certain academic goals.

Wade (1990) suggested there are some struggling readers who follow the bottom-up approach and some who follow the top-down approach while reading. When students read using the bottom-up method, they focus too much on the words. When decoding a text is laborious, the text becomes incomprehensible. Further, for the students who use the top-down approach, they rely too much on their background knowledge. When their background takes over the author's intended message, the text becomes incomprehensible (Wade, 1990). When a text is

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incomprehensible, students are not able to identify when they are failing to comprehend, and consequently, do not use strategies to support their reading (Paris et al., 1983).

On the other hand, Wade (1990) believed students identified as good readers are interactive readers who construct reading and monitor their comprehension. Even more, Wade (1990) suggested good readers make reasonable inferences, know when additional information is needed to understand a text, and take risks while reading. When students take risks during reading tasks, they make an attempt to construct meaning and form a summary of the text and do not have to read the author's words verbatim to provide the meaning of a text (Wade, 1990).

Seipel et al. (2017) were interested in how the moment-by-moment cognitive processes differ between *good* comprehenders and *poor* comprehenders. They first used standardized tests to see the reading ability of 138 third-, fourth- and fifth-grade students. The other measure used was 15 to 21 sentence long passages. While reading the passages, the students were instructed to share their thoughts after reading each sentence (their moment-by-moment processing), and to also think-aloud while they answered comprehension questions related to the passage. Seipel et al. found that even though overall, both groups of students used a variety of comprehension strategies, when using moment-by-moment processing, the students who were identified as *good* comprehenders were more elaborate in their inferences, and they used higher-level strategies than the students identified as *poor* comprehenders.

The acquisition of self-regulated learning is not innate; however, these strategies can be successively learned and taught (Pintrich, 1995). Through teachers' use of explicit instruction and modeling of self-regulation strategies, students will gain a better understanding of how, when, and why to use these strategies during reading.

Cognitive Processes and Styles of Diverse Learners

The exacerbated disparities of academic performance and literacy competence among White and Black students have (or should have, rather) forced educators to closely examine their approach to teaching students of diverse ethnicities (Ladson-Billings, 1991). For decades, the cognitive learning styles of Blacks have been examined (Hale, 2016; Hilliard, 1992; Hunt, 1993; Ramirez & Price-Williams, 1974; Shade, 1982).

Cognitive style refers to how people think, learn, solve problems, and relate to others (Witkin et al., 1977); it accounts for the depths of how much individuals' cognition, perception, and personality influence the way they process information and solve problems (Gay, 2018; Shade, 1982). There are multiple renditions of cognitive learning styles that have been studied for decades (Hale, 2016): left brain versus right brain (Gazzaniga & Freedman, 1973); analytical versus relational (Cohen, 1969); and field-independent versus field-dependent (Witkin et al., 1977). These styles remain rather stable and will be employed by individuals regardless of the skills being learned (Christison, 2003). Though the theorists who have hypothesized these theories of learning styles have used different terms to describe the cognitive learning styles, generally speaking, they all have similarities. For example, Witkin and his colleagues (1977) concluded two cognitive styles: field-independent and field dependent. They claimed students identified as field-independent learners, similar to Cohen's (1969) analytical cognitive style, are able to make sense out of various tasks and do not have to be directed. Furthermore, field-independent students are able to handle abstract and theoretical concepts. In contrast, students who are field-dependent learners, compared to Cohen's (1969) relational style, prefer social cues under conditions of ambiguity to solve problems and function best in people-oriented settings. Investigations (Rosa, 1995; Shade, 1982) have surmised students who are given higher grades in school are more field-independent and students who receive lower grades in school are identified

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as field-dependent. Typically, schools' ideas of high achievers resemble the field-independent learning styles, with little to no consideration for the students with differing learning styles. Though there are particular cognitive learning styles that appear to match with certain races, it is important to know they are not always the case for all students in the racial group. Stereotyping the cognitive learning styles of specific ethnic and racial groups has been criticized and resisted (Bendall, Galpin, Marrow & Cassidy, 2016). It is true that not everyone belonging to a specific ethnic group learns the same way; however, characteristics of students' learning styles and approaches to learning shed light on students' cultural behaviors which impact their learning process. Cognitive learning styles indicate individuals' preferences for processing and receiving information, but they are not indications of one's ability to learn academic material (Gay, 2018; Shade, 1982). Additionally, it is important for educators to be reminded that students' learning styles are not fixed, but they are flexible, fluid, and multidimensional. Students may learn best in one subject area or learning situation, but their learning style may vary for a different subject and learning situation.

In relation to the mainstream schooling processes, Shade (1982) asserts students are taught and tested on material content that is thought to be appropriate for students to know. The students then are placed into groups depending on their intellectual ability, reading levels, perceived motivation, race, and social class. Furthermore, Shade observed students are most successful in reading comprehension if their information processing approach resembles the following:

1. An attention style that focuses on the task itself, rather than on the people in the situation.

2. An abstraction ability that separates ideas and concepts into parts and reweaves them into a unified whole.

3. A perceptual style that leads to the abstraction of both obvious and non-obvious attributes that seemingly link things, ideas, or principles.

4. A perceptual style that facilitates the extraction of important information embedded in distracting influences.

5. A long attention span with prolonged concentrating ability.

6. An attending preference for verbal cues rather than nonverbal cues.

7. A reflective rather than an impulsive response style in problem-solving.

8. A highly differentiated or analytical thinking style that leads to abstract and logical reasoning.

Often times, the dominant language, literacy, and cultural practices demanded by schools fall in line with White, middle class-norms and positioned the languages and cultural practices outside of those norms as unworthy and unwelcomed in schools and society in the United States (Paris, 2012). Schools were developed in the United States for White students using Eurocentric norms and curriculum, and the aforementioned learning characteristics are familiar in the mainstream, Eurocentric classrooms. Shade suggests students with similar cognitive styles (typically of White students) often succeed in school and believes this teaching style is typically used in predominantly Black schools. However, it does not resemble the cognitive style of Black students (which entails a more relational thinking style, concrete concepts, and nonverbal cues). In general, Black students do not receive classroom instruction aligned with the best ways they learn; their preferred learning approaches.

In another study seeking the differences in cognitive style among three ethnic groups, Ramirez and Price-Williams (1974) administered a test to determine 180 students' cognitive style from three different backgrounds. There were 60 Mexican American students, 60 Black students, and 60 White students. Half of the students from each ethnic group were low SES, and the other half were middle SES, the SES was determined by the fathers' occupation. The results of the test showed the Mexican American and Black students were field-dependent, while the White students were field-independent. There were no significant differences among students from different SES backgrounds.

Dunn et al., (1990) suggested with the rapid increase of diversity in schools, teachers should be aware of the cognitive styles of students. Similar to Ramirez's study (1974), Dunn et al., (1990) conducted a study exploring the differences in cognitive styles among four ethnic groups: Black, Chinese American, Greek American and Mexican American. There were 25 students from each ethnic group and each grade level (fourth-, fifth-, and sixth-grades) who participated in the study. All students were administered two tests to identify the students' learning preferences. The results showed that all of the students tested were identified as field-dependent learners; with the Greek American students having the highest mean scores and the Black students having the lowest mean scores. Factors such as classroom lighting, student motivation, classroom visuals, group work instruction, and teacher relationship had high influences on Black students' learning. Overall, Dunn et al., implied subcultures within the United States have various learning styles that teachers should consider when setting up classroom environments (e.g., lighting, seating arrangements, routines, and procedures, etc.).

Furthermore, supporting the characteristics of learning for field-independent and field-dependent students, Mestre (2009) also analyzed learning styles within the context of digital

media and technology. She found that students closely aligned to field-dependency are less adaptable to hyper-mediated learning interactions and perform better in face-to-face interactions within social contexts. On the other hand, students who are field-independent tend to be less interested in social dimensions on learning. Results from this study further support the acknowledgement that students who hold field-dependent characteristics in school settings tend to prefer positive relationships and communication in their learning environments.

As a result of the previous research on cognitive styles across cultures, it is important to look at the classroom instruction students receive. Teachers should seek to understand the cultures of their students, and orchestrate instruction that matches the styles of students' learning and communication. It is not enough for teachers to become familiar with and show appreciation of the surface level aspects of students' culture (i.e. music, food, and clothing), but to gain understanding and appreciation for the deep level of cultural aspects (i.e. how students process information, what triggers fight or flight response, and how students make sense of the world) (Hammond, 2015). Teaching is most effective when factors such as personal experiences, community settings, cultural backgrounds and ethnic identities of both students and teachers are implemented (Gay, 2018).

According to Ladson-Billings (1992), there is limited research that discusses how teachers culturally frame their approach to literacy instruction. However, when teachers genuinely consider the cultural backgrounds of their students, they use the experiences and perspectives of their students to teach academic skills, knowledge and strategies (Gay & Kirkland, 2003). This type of teaching is often referred to as cultural responsive teaching. Hammond defined cultural responsive teaching as:

An educator's ability to recognize students' cultural displays of learning and meaning

making and respond positively and constructively with teaching moves that use cultural

knowledge as scaffold to connect what the student knows to new concepts and content in

order to promote effective information processing. All the while, the educator

understands the importance of being in relationship and having a social-emotional

connection to the student in order to create a safe place for learning (p. 15).

Culturally responsive teaching is a way of revealing higher learning capabilities of

ethnically diverse students by cultivating their academic abilities (Gay, 2010). Furthermore, Gay

and Kirkland (2003) believe teachers need to develop deeper consciousness and knowledge

about what they teach, as well as how they teach and to whom. Developing consciousness and

knowledge about students supports positive relationships with students and enhances the ability

to not only implement think-aloud instruction (any instruction for that matter), but to also engage

in conducive, metacognitive and self-regulatory discourse with students. Awareness of student

discourse can help teachers guide their instruction in understanding students' metacognitive

processes while reading. Understanding how students communicate, teachers can most

effectively employ this knowledge into their metacognitively transparent reading instruction.

Communication is consequential in how one receives and demonstrates knowledge, and more

importantly, in how one teaches information for the acquisition of new knowledge for students.

For example, researchers Hall, Reder, and Cole (1979) and Howard (1998) found that using

communication styles familiar to African Americans (such as conversational and active

participatory discourse and dialect) and incorporating reading materials about African Americans

with students in pre-school and in elementary and middle grades, improved their literacy skills

and academic efficacy.

Again, cognitive learning styles, and communication styles, will not necessarily be the same for each racial and ethnic group; therefore, think-aloud instruction will not look the same in all classrooms. Think-aloud instruction should be tailored to meet the cognitive learning and discourse styles of the students. Gay (2010) explained the variations in the discourse styles of ethnically diverse students. As previously mentioned, one common communication style, often (but not always) found in Black, Latino American, and Native American cultures, is *participatory-interactive.* Participants in this communication style often do not wait to be granted permission to speak, but they demonstrate assertiveness and strength of impulse to be involved (Gay, 2018). As such, students who demonstrate and prefer this communication style typically prefer a more interactive and communal learning environment. When a teacher both welcomes and models this style of discourse during think-aloud instruction, teachers' modeled self-regulation learning will be more easily transferred to students' independent use.

Unfortunately, there are educational institutions and individual teachers who hold cultural deficit ideologies; and there are systems in place in schools to maintain cultural deficit approaches. Paris (2012) regards *deficit approaches* as "viewing the languages, literacies, and cultural ways of being of many students and communities of color as deficiencies to be overcome in learning the demanded and legitimized dominant language, literacy, and cultural ways of school" (p. 93). Culturally responsive teaching opposes the idea and perspective of *cultural deficit,* or *deficit syndrome*, where "educators attribute school failure to what students of color don't have and can't do" (Gay, 2018, p. 31). Through deficit approaches, students' cognitive approaches and experiences are not acknowledged nor explored to provide carefully orchestrated classroom instruction. Students do not struggle in school because of their racial, cultural or language backgrounds, but because they are not offered sufficient opportunities in

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schools to develop cognitive skills and self-regulated habits of mind within their cognitive

approaches and styles to advance their participation in academic tasks (Boykin & Noguera, 2011;

Hammond, 2015; Jackson, 2011). This results in an opportunity gap between students in the

dominant groups and the students in the less dominant group, which is a significant factor in the

"achievement gap" in the United States. Withholding the inclusion of students' cultural practices

and learning patterns is unfavorable to students' academic achievement.

In opposition to the cultural deficit paradigm, educators employ culturally responsive

teaching by using students' cultural experiences and perspectives to empower and effectively

teach students of culturally, racially and linguistically diverse backgrounds (Gay, 2018). When

teachers employ pedagogical practices tailored to the cultural differences of students, they

deviate from teaching to the dominate language, literacies and cultural practices, and

acknowledge the differences and build upon the differences of their students. The cultural

difference theory is a solution to cultural deficit teaching and it reveals the assets and resilience

of families, communities and cultures of students of diverse backgrounds (Gay, 2018; Gorski,

2018; Wang & Gordon; 1994). There are variations of cultural difference pedagogy constructed

by multiple other scholars. Gloria Ladson-Billings assembled *culturally relevant pedagogy*, a

pedagogy of opposition committed to student empowerment through the teachings of reality,

history, and students' lived experiences and perspectives (Ladson-Billings, 1995b. The criteria of

culturally relevant pedagogy are students' experience in academic success, students develop and

maintain cultural competence, and students develop critical consciousness through challenging

the status quo of social order (Ladson-Billings, 1995a).

Paris (2012) proposes another variation of cultural difference theory, *culturally*

sustaining pedagogy, an approach and practice of teaching where often marginalized and diverse

students' languages, literacies and cultural practices are not only taken into consideration through adaptations of instruction, but they are valued and emphasized. It requires teachers to perpetuate and foster students' competence of their culture and language in their communities as well as other cultures represented by students in the classroom (Machado, 2017; Paris, 2012). Teachers employing culturally sustaining pedagogy do more than accept students' cultures, but they highlight the cultures by infusing them into classroom instruction.

Hammond (2015) proposes the Ready for Rigor Framework to assist teachers who struggle to operationalize culturally responsive pedagogical practices: awareness (understand students' culture), learning partnerships (build strong, positive partnerships with students), information processing (engage students in high leverage instructional activities to build higher order thinking skills), and community building (create and build a safe and positive learning environment). Collectively, each of these core areas support students' social and cognitive skills, and allows them to take ownership in their learning process.

In summary, issues in learning are not the fault of students, but the fault of the educational systems and educator who should support students. There are too many educational systems that do not consider the learning and communication styles of their culturally, racially, and linguistically diverse students. As a result, students are expected to adapt to a learning environment that is not conducive to their learning, and the learning environment may not be comfortable to the students. To effectively reach students academically, it is vital for teachers to seek understanding of students' community, cultural backgrounds, communication styles and worldviews. This knowledge and consideration should serve as the base for teacher and student relationships. Once the strong, informed base and understanding is established, teachers can

implement effective, culturally relevant and responsive instructional strategies, such as think-alouds, into class instruction.

Instructional Practices

Each student in the classroom brings in varying learning patterns and styles. They have preferred ways of learning and being taught. The instructional practices teachers employ in the classroom have a significant influence on how students will learn. As teachers of reading, instruction should be explicit and strategic. Direct, explicit instruction leaves little room for misconceptions and questions (Duffy, 1988). The most effective reading instruction is embedded in a repertoire of reading strategies (e.g. monitoring comprehension, activating and connecting to background knowledge, asking questions, inferring and visualizing meaning, determining importance, and summarizing and synthesizing) (Harvey & Goudvis, 2017). As teachers focus on explicit, strategic reading instruction, they help students develop procedural and conditional metacognitive knowledge (Dole et al., 1996). Through this type of instruction, students improve in self-regulation as they see how, when and why to use various reading strategies to construct meaning from text. There is growing research on the implementation of strategic reading instruction using different instructional practices such as reciprocal teaching (Palinscar & Brown, 1984), gradual release of responsibility (Pearson & Gallager, 1983), close reading (Fisher & Frey, 2012), and think-aloud instruction (Cross & Paris, 1988; Duffy, 1988; Ness, 2014; Ness, 2016; Pressley & Afflerbach, 1995).

Overall, as teachers, the goal should not just be to teach reading, but to teach readers (Harvey & Goudvis, 2017). Reading instruction should teach students as individuals using careful, well-thought-out techniques. In this section of the literature review, the researcher explores studies where teachers' classroom reading instruction was observed. In these

observations, there was limited explicit instruction seen. Additionally, the researcher examines think-aloud instruction, and the influence think-aloud training has on students and teachers.

Teachers' Reading Instruction

As mentioned above, in general, Black students respond well and learn better under explicit instruction and language, when instruction provides structure for the students, and when there is collaborative discourse involved (Gay, 2010). However, despite the general learning styles of Black students, the typical instructional style of teachers in America is more rigid and closely aligned with analytical and field-independent learners, or instruction that more closely matches the learning style of White students (Cohen, 1969; Hammond, 2015; Hilliard, 1992; Ramirez, 1974; Shade, 1982); which, according to Hunt (1993), could cause schools to become "hostile" environments for Black students who do not prefer the rigid teaching style. Often, students with opposing cognitive styles of their teachers and learning environment are unlikely to be academically rewarded in good grades and recognitions (Cohen, 1969). "If educators continue to be ignorant of the cultural orientations, values, and performance styles of ethnically different students, they will persist in imposing cultural hegemony, personal denigration, educational inequity, and academic underachievement upon them" (Gay, 2018, p. 33).

Nevertheless, learning styles of students should not be generalized solely based on their ethnic or SES background. Due to the variability in students' learning styles, it is important for educators to understand there is no package or program for high-quality reading instruction; high-quality education must be carefully orchestrated by classroom teachers (Turner, 2005). More specifically, reading strategy instruction is important for the comprehension performance of elementary students. Reading strategies are best taught through direct instruction and flexibility to cater to students' learning needs (Jackson, 2016). Thanks to research and school-

wide professional development, there has been an increase in the number of time teachers carefully orchestrate and spend teaching reading strategies to their students (Ness, 2016).

Stichter et al. (2009) spent 175 hours observing the reading instruction from four elementary schools, spending approximately five hours in each of the 35 classrooms. Two schools were Title 1 schools, and the other two were non-Title 1 schools. In Title 1 schools, at least half of the enrolled students were from families with low incomes. Fifteen teachers from the Title 1 schools participated in the study and 20 teachers from the non-Title 1 schools participated. The teachers taught in grade levels between Kindergarten to fifth-grade. On average, in all of the schools, Stichter et al. (2009) observed around 40% of instructional time included whole group instruction, 32% independent work, and eight percent small group work, peer work, and transitioning. In addition, Stichter et al. (2009) found the Title 1 schools had significantly more off task behavior and more transitions in the classroom than the non-Title 1 schools. This demonstrates students in lower socioeconomic schools are potentially not receiving as much productive instructional time as their more affluent counterparts. This could be due to a number of factors (e.g. missing aspects of culturally responsive teaching such as teacher lack of good rapport with students, students' disinterest in or inability to relate to curriculum, etc.). It is necessary teachers provide a sufficient amount of explicit, high quality instruction.

Ness (2011) and a secondary researcher spent a total of 3,000 minutes observing language arts instruction at two elementary schools. One elementary school had a predominantly White population, and the other was predominantly Black. The researchers observed 20 first-through fifth-grade teachers' language arts instruction. Ness (2011) observed 25% of language arts instruction included explicit reading comprehension instruction (i.e., vocabulary instruction, comprehension monitoring, text structure, visual representation, multiple strategy instructions,

etc.). Ness found that most of the reading comprehension instruction occurred in the fourth-grade classrooms, and the third-grade classrooms received the least amount of reading comprehension instruction. In comparison to Durkin's study (1978), where it was found that only about one percent of reading and social studies lessons included comprehension strategy instruction, Ness noted there had been an increase in strategy instruction over the years. Durkin (1978) observed a significant use of basal readers, workbooks and worksheets for instruction, whereas Ness (2011) witnessed more teachers using picture books and chapter books for reading instruction. Ness further concluded that even though it is encouraging to see an increase in strategy instruction among elementary teachers, the quality of strategy instruction is still in question.

Through her multiple observations in academic settings, Cohen (Cohen, 1965; Cohen, 1967; Cohen, Fraenkel, & Brewer, 1968; Cohen, 1969) noticed three common demands from standardized assessments and teachers in schools: "breadth and depth of general information, analytic abstraction, and field articulation (the ability to extract salient information from an embedding context, as in reading comprehension or in the extraction of an arithmetic problem from a word context)" (1969, p. 829). Cohen further stated the lessons and demonstrations of these cognitive skills were often obscured.

Duke et al. (2018) examined several studies and chose three teachers to highlight and describe the reading instructional practices used to help their students succeed. The studies chosen provided clear guidelines for other educators to also use in the classroom. After exploring the instructional practices used by the teachers they identified as exemplary, Duke et al. (2018) compiled a list of the practices they read from the studies. The list includes practices such as coaching students, using explicit instruction, teaching purposeful lessons, promoting self-regulation, fostering success and making good use of class time.

One of the studies examined by Duke et al. (2018), was Turner's (2005) case study. Turner conducted and published a case study of a White teacher who was a teacher at a racially diverse school in the southeastern region United States. The school had a population where 40% of the students received free or reduced lunch, 25% were Black, and the lowest academic performing group was the Black students. Despite the overall academic performance of the Black students in the school, the focal teacher of the case study implemented careful and intentional reading instruction in her class. As a result of the teacher's instruction, all of the Black students in her class completed the academic year either on or above grade level in reading. Turner (2005) explained one of the major pedagogical strategies the teacher demonstrated was transparency in the strategies and skills of good readers. The teacher in the case study conducted whole-group mini-lessons teaching students strategies, then modeled how to use the strategies using several texts. Additionally, the teacher held one-on-one conferences with the students to provide individualized instruction to help strengthen all students' specific strategy use and reading needs.

As previously mentioned in the first section of this literature review, typically, Black students who are field-dependent learners benefit best from social cues and interactions in school settings and prefer interpersonal instruction (Witkin et al., 1977). Explicit language and social cues are especially helpful for students when they are faced with classroom instruction that is not clear and requires clarity for better understanding. Hines et al. (1985) found that when teachers teach with clarity by providing relevant and sufficient examples, asking students questions to ensure they understand, teaching at the students' pace, and making lesson expectations clear, students are more likely to reach higher levels of achievements.

Furthermore, it is beneficial for students to converse and collaborate with their peers to strengthen their abilities to use various reading strategies. Learning opportunities such as these

are supported through Vygotsky's (1978; 1997) sociocultural theory. Implications for reading instruction through the lens of the sociocultural theory is encouraging students to learn through communication (with teachers and peers). As such, students would be able to negotiate their preferred use of different strategies to enhance their reading comprehension. In this practice, educators create a *third space* for students, which merges both their primary discourse (discourse used at home or other informal settings) and secondary discourse (discourse endorsed in school and other formal institutions) to further enhance their development and understanding of reading skills and strategies (Bhaba, 1994; Gutiérrez, Baque-dano-Lopez, & Tejeda, 1999; Moje et al., 2004; Scott & Palincsar, 2013; Soja, 1996). Within this space of discourse intersection, educators are able to take notice of students' prior knowledge and experiences, and use them to draw connections to academic content and strategies in an explicit manner.

Think-Aloud Instruction

Explicit instruction is an instruction that is clear and does not leave much room for students to misinterpret (Reutzel et al., 2014). An instructional strategy that, when done correctly, provides clearness in strategy use is modeling or think-alouds.

When teachers model strategy uses to students, they demonstrate to novice readers how to do something (i.e., how to use strategies and to think about one's thoughts while reading) (Duffy et al., 1988). A think-aloud is a metacognitive instructional practice where teachers verbalize their thoughts out loud, demonstrating how a proficient reader reads (Block & Israel, 2004; Ness & Kenny, 2016). Think-alouds allow readers to stop periodically, reflect on their thinking while reading, and to relate metacognitive processes orally (Block & Israel, 2004). Additionally, using think-aloud instruction supports the initiation of students' metacognitive development (Ozturk, 2017). Modeling to students how expert readers think, teachers should not

only demonstrate how expert readers think while reading but should also highlight the mental processing that takes place to help the reader reach an understanding (Fisher et al., 2011b).

When teachers are adequately trained on metacognition instruction and teaching self-regulation strategies, students benefit with increased awareness and higher achievement (Cardelle-Elawar, 1995; Fisher et al., 2011a; Pilonieta, 2017; Pratt & Martin, 2017). Cross and Paris (1988) tested third and fifth grade students' reading comprehension in the fall of the school's academic year (pre-test) and the spring (post-test) using the comprehension sub-test of the Gates-MacGinitie Reading Test (MacGinitie, 1978). The Reading Awareness Interview (Paris & Jacobs, 1984) was employed to assess students' reading awareness. In between the pre- and post-tests, Cross and Paris (1988) provided explicit instruction on how to use reading strategies. The post-tests documented increased congruence between students' awareness and reading comprehension. Cross and Paris (1988) suggested children integrate their understanding of reading strategies with their reading performance throughout third through fifth grades, and congruence between metacognition and performance may also increase among younger and older students on strategies more appropriate for their reading levels (p. 140).

In a similar study (Fisher et al., 2011a), in-service teachers at an underperforming middle school were trained on how to teach comprehension strategies via think-aloud instruction. Students in both the control and treatment groups were administered the fourth edition of the Gates-MacGinitie reading assessment. The pre-test indicated that students in both groups were reading at a fourth grade reading level. Teachers in the treatment group received eight weeks of professional development training on implementing think-aloud instruction. After eight weeks, students in both groups were given the post-test, and the students in the treatment group made significant growth, while the control group did not. The treatment group increased to a fifth

grade reading level and the control group remained at a fourth grade reading level. Fisher et al (2011a) suggested benefits in teachers' use of explicit, think-aloud instruction.

Furthermore, in the studies conducted by Cardelle-Elawar (1995) Fisher, et al. (2011a), and Pilonieta (2017), the majority of the students were either Black or Latinx, and the majority of the students in all of the studies were low SES. In Cardelle-Elawar's (1995) study, 87% of the students were of Hispanic origin and low SES. In Fisher's et al. (2011a) study, 80% of the students qualified for free lunch and 65% speak another language or nonstandard English at home. Pilonieta's (2017) study consisted of an urban population with 96% Black students (there was no indicator of SES noted).

There are several research articles with a focus on students' use of think-alouds for researchers and educators to gain understanding of how elementary students think while reading (Baumann et al., 1992; Baumann et al., 1993; Laing & Kamhi, 2002; Seipel et al., 2017; Wade, 1990); however, for students to effectively use metacognitive self-regulation strategies independently, they should transparently be taught the type of mental processes of a proficient reader that should occur.

Turner (2005) observed the success of teacher explicit instruction and language on Black students' reading performance. As a result of some conclusions made on Black students' preference for social and interpersonal cognitive styles (Hilliard, 1992; Rosa, 1995; Shade, 1982), think-aloud instruction is a good way to communicate to Black students how to use reading strategies. Teachers' positive engagement with students, as well as clear communication and transparency during reading instruction, provides a good transition for students' independence in using self-regulation strategies.

In a quasi-experimental study conducted by Jackson (2016), it was revealed there are benefits to think-aloud instruction on students' reading comprehension of science content. The participants in this study were first-grade students in the northwestern region of Georgia. The school population was majority low SES (90.4% of the students received free or reduced lunch), and 57.0% of the students were Black. The teacher of the treatment group taught science using think-alouds for 15 minutes a day, five days a week for five weeks. The teacher of the control group did not use think-aloud instruction to teach science. At the conclusion of the study, controlling for pre-assessment scores, the researcher examined the pre- and post-assessment scores of the students, and saw the students who received think-aloud instruction performed significantly higher on the post-assessment than the students who did not receive think-aloud instruction. Additionally, Jackson (2016) monitored the students' use of think-alouds and saw that after each week of instruction, the students' growth in using the think-aloud strategy grew as well.

Something to keep in mind when using think-aloud instruction is simply explaining the procedural steps in using reading strategies is not sufficient for students to develop metacognitive thinking. Duffy et al. (1988) explained there are no finite sets of steps to use any one strategy while reading. Individually, proficient readers use unique combinations of strategic reading; therefore, the quality of teachers' reading instruction is enhanced when they demonstrate flexibility in the mental processes proficient readers often undergo and the strategies they use (Duffy et al., 1988). Transparently teaching students how to utilize different reading strategies through think-aloud instruction comprehensively, offers students the opportunity to hear the processes of planning, monitoring, regulating and evaluating cognitive strategies (Ozturk, 2017).

Veenman et al. (2006) suggested three principles in metacognitive teaching: 1) embed metacognition in the content matter; 2) inform students of the usefulness of the metacognitive activities, and 3) prolong students' metacognitive training to enhance and maintain students' use of metacognitive activities. Furthermore, Veenman et al. (2006) believed these principles in metacognition instruction could be incorporated in reading instruction using the WWW&H rule: teaching students What to do, When, Why and How. Teaching students to be metacognitive requires instruction in cognitive strategies, as well as instruction on when and why strategies are applied (Wilson, 2011). Wilson (2011) believed proper think-aloud instruction begins with defining the strategy, followed by the teacher modeling mental processes while reading, then providing an example of using the strategy. Further, Wilson (2011) suggests the next step is to engage in a debriefing with students following instruction to encourage discourse with students to assess their understanding of strategies, why and when to use the strategies.

Summary

All in all, there is value in gaining an understanding of students' cognitive processes while reading, especially for students who appear to struggle in reading. Once teachers gain knowledge of how students think while reading, instruction should be tailored to fit the needs of the students. With think-aloud instruction, teachers can take what they know about their readers, and demonstrate from a proficient reader's perspective how to be metacognitive while reading and how to use self-regulation strategies to support one's metacognition and comprehension. This type of instruction is not quite mainstream yet; therefore, teachers should receive training on how to best implement metacognitive reading instruction through think-alouds.

The previous research and literature in this chapter demonstrate the need for teacher training in metacognitive instruction. When teachers implement think-aloud instruction, they

encourage and teach students to be aware of their reading (Duffy et al., 1986). The research for this study look specifically at metacognition and metacognitive instruction for reading. Although there is research on different instructional strategies and intervention for teaching reading, they are not included in the scope of this research at this time. The intended foci of this literature are metacognitive instruction and tailoring metacognitive instruction to meet the learning needs of culturally and racially diverse students in reading. It is the belief that as students become more metacognitively aware, they are able to monitor their comprehension better and know to use strategies to regulate their reading. These actions are highly likely to result in higher reading achievement, especially when taught through a desired, culturally responsive teaching style.

Chapter 3. Methods

Introduction

The purpose of this study was to examine the effects of teacher metacognitive think-aloud workshops on teachers' reading instruction and the reading achievement of Black students in a Title 1 elementary school. Given the consistent reported academic disparities between Black and White students, in addition to examining the barriers within the education system, it is also important to explore teachers' instructional practices in the classroom. The methods chosen for this study allowed the researcher to explore in-service elementary teachers' reading instruction and the impact of the teachers' instruction on their students' reading achievement.

Research Questions

1. Will there be significant differences in students' STAR Reading scores after their teachers' participation in a think-aloud workshops?

   Hypothesis: Students who receive metacognitive-centered instruction through the use of think-aloud instructional strategies from their teachers will yield significant growth on their STAR Reading test.

2. What is the effect of teacher metacognitive training and the implementation of instructional strategies using think-alouds?

   A. What impact will the development of teacher understanding in metacognition and self-regulation have on their pedagogical teaching practices?

   B. What impact does strategic teacher training in metacognitive self-regulation strategies have on teachers' reading instruction?

C. Does teacher training in metacognitive self-regulation strategies lead to improved, metacognitive-focused reading instruction?

3. How are teachers' perceptions of students' changes in reading supported by students' STAR scores?

Design and Methods

Research design can be defined as "the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions" (Yin, 2002, p. 20). The researcher used both quantitative and qualitative data sources to gain a breadth (quantitative data) and depth (qualitative data) of knowledge and understanding (Patton, 2002) of teachers' processes and experiences using think-aloud instruction for the advancement of reading achievement for Black students of low SES. As a result, the researcher believed a mixed methods approach [QUAL + quan] was the most suitable for the methods design of this study. According to Creswell (2015), mixed methods research is:

An approach to research in the social, behavior, and health sciences in which the investigator gathers both quantitative (close-ended) and qualitative (open-ended) data, integrates the two, and then draws interpretations based on the combined strengths of both sets of data to understand research problems (p. 2).

Furthermore, Creswell (2015) believed a core assumption of mixed methods research is when statistical trends (quantitative data) and personal stories and experiences (qualitative data) are combined, the understanding of a research problem is strengthened versus when only one type of data is used. This study is predominantly qualitative methods with the inclusion of quantitative data sources to support the qualitative findings. An instrumental case study design was used to report the qualitative portion of the study, and paired samples *t*-tests and a mixed

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ANOVA were conducted to measure and analyze the quantitative data of the study. The qualitative and quantitative results will be combined to interpret research question three.

Instrumental Case Study

A case study approach was chosen to report of the findings of the qualitative data sources. Defined by Creswell, Hanson, Plano & Morales (2007), "case studies focus on an issue with the case selected to provide insight into the issue" (p. 245). There was interest in individual cases and their unique, individual experiences with the metacognitive think-aloud workshops. Relying on multiple data sources, case study research builds contextual understanding of the case and the issue (Yin, 2002). Using Stake's (1995) variations of case study research, intrinsic, multiple-case, and instrumental, an instrumental case study was used for this study. In instrumental case studies, the focus is on an issue or concern, then a bounded case is selected to illustrate the issue or concern (Stake, 1995). In instrumental case studies, the issue, or problem is dominant and the research should begin and end with the issue. Bounded cases have working parts, are purposive, and has a "self" (Stake, 1995). Not only is the case for this study chosen for specific reasons, but within the case (in-service elementary teachers of a Title 1 school with predominantly Black student population), the teachers are considered the working parts, making this case unique. Furthermore, the results from case studies and the bounded cases are exclusive to that particular study, meaning findings are matchless even if a study's methods are duplicated.

For the present study, there was a concern and the aim was to work with a particular population with personal experiences related to the concern. After receiving the intervention, the goal was to advance understanding of the concern as it relates to the specific case, which in this case are the three teachers in the study. In Chapter 4, the findings of this instrumental case study were presented collectively to showcase the participating teachers' combined experiences with

the think-aloud workshops. The findings were not reported by each participant, but they were reported in the order of how the research questions are listed and the application of the participants' narrative accounts and classroom observations to answer the research questions.

Study Context

The selected elementary school for this study, Reading Hills Elementary School (pseudonym) is located in a rural district in the southeast region of the United States. Reading Hills Elementary School is in a relatively small district with a population of about 1,800 students (with close to 1,700 Black students) (ALSDE, 2019). Reading Hills Elementary School has a total student population of 390 Pre-K through third grade students, about 380 in which are Black (ALSDE, 2019). There is one Pre-K class, four kindergarten classes, and five classes for first-, second-, and third-grade with about 17-21 students in each class. There is one Latinx student in one of the selected classrooms for this study, and the rest of the students are Black; 75.53% of the students at Reading Hills Elementary School receive free or reduced lunch.

According to the Alabama State Department of Education (ALSDE), the school district and school selected for this study has had a history of low achievement on the state reading assessment, but has witnessed steady growth each year over the last three years. Each year, the state announces the education report card, which is data on state, district and school levels that reports the overall academic standings of students (ALSDE, 2019). During the school year this study was conducted, 90.52% of Reading Hills Elementary School's students demonstrated 90.52% on the state reading assessment (ALSDE, 2019). The school's overall report card grade went from an F in 2017, to a D in 2018, to a C in 2019. Furthermore, Reading Hills Elementary School's reading scores have increased from 13.28% proficiency in 2017, to 29.47% proficiency in 2019 as reported for the ACT Aspire assessment (ALSDE, 2019). Reading Hills Elementary

School has three academic coaches who conduct regular grade-level meetings with all teachers to analyze students' progress monitoring assessments and to provide in-school professional development for teachers. It is evident the efforts and dedication of the administrators, teachers and support staff are paying off, as Reading Hills's academic progress in reading is steadily rising.

Participant Selection

The aim of this study was to examine the experiences of metacognitive think-aloud training from the perspective of third grade, elementary, in-service teachers at a Title 1 elementary school with a predominantly Black population. Third grade was chosen because this is the typical grade level where comprehension skills become more challenging for students and third-grade marks the grade level where students begin taking high stakes standardized tests (Ness, 2016). Even though the data presented in Chapter 1 reports the scores of fourth-grade students, third-grade is an important grade level to examine. Since NAEP looks at fourth graders' reading scores, before they get to fourth-grade, students in third-grade should be explicitly taught how, when, and why to use various reading strategies. It is with hope that by the time they are tested in fourth-grade, they will hold the metacognitive thinking and self-regulation strategies needed to perform well on reading assessments.

The term *sampling* refers to the decisions made regarding where to conduct research and whom to include in the research (Maxwell, 2013). Though the selected school and teachers were partially selected due to their close geographical proximity to the researcher, participant selection for this study was not *convenience sampling,* a sampling method where participants and location are selected due to availability and easily readiness (Etikan, Musa, & Alkassim, 2015). On the contrary, selection for this study was purposeful. *Purposeful sampling*, or *purposive sampling*

(Palys, 2008), is a technique widely used in qualitative research for the identification and selection of cases or participants that are knowledgeable about a phenomenon of interest (Creswell & Plano Clark, 2011; Maxwell, 2013; Patton, 2002). In *purposeful sampling*, location, participants, and activities are specifically chosen to address research questions and research goals, and this cannot be addressed as well with other selections (Maxwell, 2013). Reading Hills Elementary was in close proximity to the researcher at the time of data collection, and the teachers were willing and available to participate; however due to the interests in working with in-service, elementary teachers of Black students, Reading Hills was selected.

<div align="center">**Quantitative Data**</div>

Quantitative data was collected from the students in the classes of the participating teachers. The quantitative data was collected for this study to support the teachers' claims of changes they noticed in their students' reading behaviors (which is addressed in research question three).

Data Collection

Student Demographics. Three third-grade teachers participated in the study: Craig, Elisa, and Tracy (pseudonyms). In Craig's class, there were 21 students at the time of the study. All of the students identify as Black/African American. There were 10 males and 11 females, and two students were on an RTI (Response to Intervention), meaning they received additional academic support. In Elisa's class, there were also 21 students. Twenty of the students identified as Black/African American and one student identified as Latinx. There were 11 males and ten females, and none of her students were on an IEP (Individualized Education Plan). In Tracy's class, there were 23 students, all who identified as Black/African American. There were 11 girls

and 12 boys. Four students in Tracy's class were on an IEP, meaning they received special

education services, and these students did not take the STAR Reading test

        STAR Reading Test. The quantitative data source was the STAR (Standardized Test for

the Assessment of Reading) test. To collect quantitative data, the students took the STAR test, a

progress monitoring assessment employed by the selected school (and school district). The

STAR Reading test, a computerized adaptive test (CAT) by Renaissance Learning, is a progress

monitoring tool that provides teachers a snapshot of students' reading comprehension skills.

STAR tests are computer adaptive, which means questions are adjusted according to students'

answers (Renaissance Learning, 2016). According to The Research Foundation for Star

Assessments™ by Renaissance Learning (2013), "Renaissance Learning constructs multiple-

choice items to represent a balanced range of cognitive complexity…and [employs] standards for

bias, fairness, and sensitivity" (p. 35). Furthermore, "STAR Reading was designed to be a

standards-based assessment, meaning its item bank measures skills identified by exhaustive

analysis of national and state standards in reading, from grades K–12" (Renaissance Learning,

2015, p. 55). The teachers administered the STAR Reading test at two separate time points – at

the beginning of the study and again at the conclusion of the study. Each student had a unique

log in to enter Renaissance Learning to take the STAR test. Students took the test independently

on the computers.

Data Analysis

        The first research question was: *Will there be significant differences in Black, third grade*

students' STAR Reading scores after their teachers' participation in think-aloud workshops?

Based on previous, related studies and the learning science behind this instructional strategy, it

was hypothesized there would be a significant difference in students' first and second progress

monitoring scores in reading. Quantitative data (the STAR Reading test) was used to measure students' reading achievement and to answer this research question.

Scaled scores (SS) were calculated for data analysis. For STAR, SS range from 0 – 1400. The SS are "useful for comparing student performance over time and across grades. A scaled score is calculated based on the difficulty of questions and the number of correct responses" (Renaissance Learning, 2018, p. 2). Once the students took the tests, version 26 of Statistical Package for Social Sciences, also referred as SPSS (a software used to perform statistical calculations) was used to conduct a mixed ANOVA tests and paired samples t-tests to examine if the students' reading performances significantly changed from the beginning to towards the end of the study. An alpha significance level of .05 was used for both the mixed ANOVA and a significance level of .0167 was used for the paired samples t-test.

Mixed ANOVA. Mixed ANOVA tests are used for studies in which independent units, or subjects, are "crossed with" at least one of the independent variables and are "nested under" at least one of the independent variables (Murrar & Brauer, 2018). In the case for this study, a mixed ANOVA was conducted for multiple reasons: to examine the interaction between the STAR scores and time (beginning and end), to test for variance of scores, and to test for homogeneity.

Paired Samples t-Test. The statistical test, paired samples t-test, was used to "compare two sample means where there is a one-to-one correspondence (or pairing) between the samples. It is appropriate for an interval-scale variable when the distribution (of within-pair differences) is approximately normal" (McCrum-Gardner, 2008, p. 40). A paired samples t-test was used for this study to calculate and analyze the quantitative data – the students' STAR (Standardized Test for the Assessment of Reading) scores. The statistical test compared students' first set of scores

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with their second set of scores. The quantitative data was analyzed and examined for statistical differences between both sets of scores from each class.

Qualitative Data

Qualitative data was collected to gain understanding of how the teachers received the content provided in the think-aloud workshops. All of the qualitative data was collected from the participating teachers via multiple data sources. Research utilizing a case study approach builds on a rich understanding of cases' experiences within a phenomenon, relying on multiple data sources (Yin, 2002). Yin (2002) suggests six types of data sources for case studies: documents, archival records, interviews, direct observations, participant observations, and physical artifacts. Data sources used for this study were semi-structured interviews, classroom observations, the Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 1994), a mid-training evaluation, and the STAR Reading test.

Data Collection

Teacher Demographics. Craig is a Black male teacher who had been teaching for 18 years. The year the study was completed was Craig's first school year teaching third grade at Reading Hills Elementary School. He received two Bachelor degrees, one in Elementary Education and the other in Early Childhood Education. Tracy is a Black female teacher who had been teaching for 16 years. Her highest level of education was a Master's degree in Elementary Education. Tracy taught third-grade at Reading Hills for five years. Lastly, Elisa is a Black female teacher as well. At the time of the pre-interview, she was entering her 18th year of teaching and working towards a Master's degree in school counseling. Elisa taught third-grade at Reading Hills for her entire teaching career.

Interviews. Interviews often play a vital role in qualitative research. Researchers cannot physically see everything in their study (Patton, 2002). A way to explore a participant's understandings and thoughts of the instructional strategies was to speak with and listen to each participant. One-on-one, semi-structured interviews were used to gain knowledge of the participants' feelings, understandings, and experiences with the think-aloud workshops and implementing the teacher led think-aloud instruction in their classrooms. Semi-structured interviews were conducted at the beginning of the study and at the conclusion of the study. The first interviews contained questions regarding the teachers' ideas of think-aloud instruction, how they implemented think-alouds, their strengths and areas needing improvement teaching reading, and their expectations of the workshops. In addition to the aforementioned questions, during the second interviews, participants were asked to share their personal thoughts of the think-aloud workshops, their ideas of teacher transparency in the classroom, and their perceptions of how the think-aloud instruction influenced their students' reading behaviors and performances.

Each participant was asked open-ended, guiding questions from the interview protocol to allow for open, extended responses (see Appendix A for the interview questions). The first interviews averaged around 15 minutes in length, and the second interviews averaged around 23 minutes. All interviews were recorded using a digital recorder, participants were notified the interview was going to be recorded and were told the recording could be ceased if they wished. Once the interviews were transcribed, the transcriptions were sent to the participants via email for confirmation of accuracy.

Classroom observations. Within the duration of the workshops, which lasted for 11 weeks, each teacher was observed teaching a reading lesson four times. The *complete observer* method was used where the researcher observed teachers' instruction without participating

(Creswell, 1994). While observing classroom instruction, the researcher quietly entered the classrooms and sat in a spot that would avoid distractions. Aside from interacting with the teachers during the sessions for the workshops and the observational debriefs, the researcher did not interact with the students, nor did she take part in classroom teaching.

Each classroom observation lasted between 15 to 20 minutes long. During the observations, the researcher took field notes and looked for teachers' use of explicit, metacognitive instruction and so see if the teachers implemented the instructional strategies discussed during the think-aloud workshops. Originally, there were plans to use an observational checklist during the teachers' observations; however, after the first observation, it was decided taking field notes would be most effective in capturing what was witnessed during teachers' instruction. See Appendix B for the original observational checklist. Following the observations, the teachers met one-on-one with the researcher for debriefs. During the observational debriefs, teachers were asked how they felt the lessons went, the teachers were praised for what they did well, then the observational debriefs proceeded with the researcher sharing the field notes taken and offering constructive feedback.

Field Notes. Field notes are the notes, or memos, taken while making observations for qualitative research (Maxwell, 2013). Writing field notes helps researchers remember what they observe during data collection and can be used as a data source. During each of the observations, field notes were taken and used to share feedback during debriefs with the teachers. Field notes were also taken at the end of the workshops to jot down overall reflections of the research events that took place. An excerpt from the field journal may be found in Appendix C.

Metacognitive Awareness Inventory (MAI). The Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 1994) was used to measure the teachers' metacognitive awareness

(see Appendix D). The MAI was sent to the teachers online through Qualtrics, a security

encrypted, online platform suitable for creating surveys/questionnaires, collecting data, and

analyzing the data. The MAI is a 52-item self-reporting tool developed by Schraw and Dennison

(1994). There are 52 statements regarding metacognitive thinking and strategies, and indicators

for respondents to select true or false. Each of the 52 statements falls within either the knowledge

about cognition or regulation of cognition section. Some of the items relate to an individual's

knowledge about cognition (categories are declarative, procedural, and conditional knowledge)

and some relate regulation of cognition, or self-regulation (planning, information management

strategies, monitoring, debugging strategies, and evaluation of learning). See Appendix D for all

of the MAI items and true and false statements and Appendix E for the teachers' responses on

the MAI.

Schraw and Dennison (1994) reported excellent reliability between the knowledge of

cognition scale ($\alpha = .88$) and regulation of cognition scale ($\alpha = .91$) of the MAI (Baker & Cerro,

2000; Pintrich, Wolters & Baxter, 2000). In terms of external validity, Schraw and Dennison

(1994) reported a positive relationship between the knowledge of cognition and pre-test

judgement and a positive relationship between MAI and test performance.

Mid-Training Survey. The mid-training survey was also sent to the teachers via Qualtrics

during the sixth week of the 11-week intervention (see Appendix F). Teachers were asked six

open-ended questions, created by the researcher, to gauge teachers' thoughts and opinions of the

think-aloud workshops, and for the teachers to share their experience implementing the think-

aloud instructional strategies.

Intervention. For this study, the researcher facilitated intensive workshops for 11 weeks

that were centered on metacognitive teaching using think-aloud instructional strategies for third

grade teachers from predominantly Black, low SES schools. The training lasted for ten weeks and the second set of interviews took place on the final week, week 11. Throughout the study, the researcher facilitated interactive and reflective think-aloud workshops. Some crucial features for effective workshops of metacognition for teachers were used, as recommended by Desimone (2009), Hawley and Valli (2007), Van den Bergh, Ros, Beijaard (2014) and Webster-Wright's (2009). The components included were:

- *Content focus* aims to improve and deepen teachers' content knowledge in metacognition and teaching for metacognition through theory and best research. It focuses on what students need to develop and clarifies potential teaching pitfalls besides students' learning difficulties.

- *Active learning* pertains to providing teachers with opportunities to observe experts enacting new knowledge, giving them experiential learning and teaching opportunities and providing feedback for their instructional suggestions and practices.

- *Coherence* initiates the analysis of institutional language education standards and existing teacher knowledge and competencies, beliefs, predispositions and concerns. It helps with the adjustment of the content to the extent that teacher learning can enrich participants' extant knowledge, competencies, beliefs and practices in consideration of the needs.

- *Collective participation* pertains to the participation and cooperation of the teachers from the same school and department. (Ozturk, 2017).

With the inclusion of the recommended professional development elements listed above, intensive training took place once a week, after school, for five weeks, approximately an hour for

each session. At the beginning of the intensive five weeks, background information regarding think-aloud instruction was shared with the teachers to hone in on the content focus of the workshops, explaining the terms *think-aloud instruction*, *metacognition*, *self-regulation*, *cognition,* and *discourse*. Following the first session, teachers were asked to complete the MAI (Metacognitive Awareness Inventory) for homework (some time before the next session). When the researcher and teachers met for the next session, the teachers were given an opportunity to discuss and analyze their MAI results. The teachers were encouraged to consider how their metacognitive awareness and self-regulation may play a role in their classroom instruction. In subsequent sessions, the researcher and teachers read and unpacked practitioner articles focused on metacognitive think-aloud instruction (Duffy, 1988; Ness, 2014) to continue to gain background knowledge of mental processing and think-aloud instruction. Teachers were also presented a difficult, nonsense passage (Beers, 2003) to place the teachers into a state of disequilibrium. Being in that position allowed the teachers to gain awareness of and to practice verbalizing the self-regulated strategies they used to construct meaning from text. Reading and making sense of the nonsense passage was an active learning, collaborative effort between all three teachers.

In addition to the readings, the researcher introduced one method of planning for think-aloud instruction using the method taught by Ness (2014). The young adult literature novel, *Saving Shiloh* (Naylor, 1991) was used, where the researcher marked pages with "stopping points" for think-alouds prior to the day's session. Stopping points are areas in a text where a teacher would pause to verbalize his or her thoughts processes as they construct meaning. To make connections with and apply the Ness (2014) article, the researcher showed the teachers how she would use the planning method if she were to use the novel. Then the teachers were

provided another young adult literature, *Bud, Not Buddy* (Curtis, 1991) and gave the teachers an opportunity to mark stopping points and to jot brief narratives of what they would say if they were to implement a think-aloud for the novel.

After the intensive five weeks of unpacking research articles, gaining background knowledge, analyzing metacognitive competencies, participating in active learning, the researcher created self-recorded videos modeling think-alouds during read alouds for the teachers to see examples of teacher-led metacognitive think-alouds. In the videos, following the read alouds, the researcher took time to explain the think-aloud methods used and the comprehension strategies modeled.

During the final four weeks of the workshops, more frequent observations were made. Field notes were written during the observations and were used to guide the discussions during debriefs with the teachers on the reading instruction observed. Using the field notes taken during the observation, during the post-observational debriefs, suggestions were shared with the teachers on how metacognitive think-alouds may have been used.

Table 1

Overview of the Metacognitive Think-Aloud Workshops

Weeks	Workshops' Activities
Weeks 1-5	- First interviews - Metacognitive Awareness Inventory (MAI) (Schraw & Dennison, 2004) - Gain background knowledge of think-aloud instruction and the terms: metacognition, cognition, and self-regulation (Duffy, 1988; Ness, 2014) - Nonsense reading passage (Beers, 2003) - Practice preparing for think-aloud instruction using implementing Ness (2016) plans for preparation and the children's novels *Saving Shiloh* (Curtis, 1991) and *Bud, Not Buddy* (Naylor, 1991)

Weeks 6-7	• Teachers watch self-recorded videos of modeled think-alouds during a read aloud using *Wonder* (Palacio, 2012) and *Ms. Bixby's Last Day* (Anderson, 2016)
Weeks 8-10	• Weekly observations and debriefs with the researcher
Week 11	• Final interviews with teachers • Teachers receive URL link for the final MAI

Data Analysis

The second research question was: *What is the effect of teacher metacognitive training on the implementation of instructional strategies using think alouds?* Qualitative data was used to explore this research question, as well as the sub-questions: 2A) *What impact will the development of teacher understanding in metacognition and self-regulation have on teachers' pedagogical teaching practices?*; 2B) *What impact does strategic teacher training in metacognitive self-regulation strategies have on teachers' reading instruction*; and 2C) *Does teacher training in metacognitive self-regulation strategies lead to improved, metacognitive-focused reading instruction?*.

For this study, the central aim was to examine the teachers' metacognitive competencies, thoughts, and reflections in using think-aloud instruction and how it may influence their pedagogical teaching practices. The goal was also to gain understanding of the teachers' perceptions of the influence think-aloud instruction had on their students. To explore the second research question, the teachers were administered the mid-training surveys and two MAIs via Qualtrics. Two interviews were conducted, one at the beginning and one at conclusion of the study, a total of four classroom observations were made, and debriefs were held with each of the teachers following the observations. It was with hope that the data sources collected would strengthen understanding of teachers' pedagogical beliefs, as well as the nuances of implementing this specific teaching practice after each of the classroom observations. During the 11th week, the final, debriefing interviews were held with each teacher individually. The

questions were asked orally either in person or via phone. Interviewing the teachers verbally allowed for more expansion in the teachers' responses.

The mid-training survey and MAI responses were exported from Qualtrics to an Excel file, field notes were typed from the classroom observations using Microsoft Word, and all interviews were audio-recorded and transcribed using Microsoft Word. All files were uploaded and saved into Box, a password protected, security encrypted program for securing digital data. A table was created in Excel of all of the teachers' first and second MAI results. The MAI statements were listed in the top row of the table, and each statement was labeled according to its category (i.e. declarative knowledge, debugging strategies, evaluation, etc.). Any of the teachers' changes from the first MAI to the second MAI were indicated on the Excel file.

The typed field notes from observations were shared with teachers during the debriefings. Once the transcripts from the interviews were typed and saved, the researcher carefully read through the transcriptions for accuracy. Member checking was used by sending the transcriptions to the teachers individually via email to gain trustworthiness by allowing the participants to evaluate the researcher's reports of their experiences. Member checking, also referred to as *respondent validation*, is a way of strengthening credibility of qualitative research (Merriam, 2009; Tracy, 2008). Though an invitation was extended for the teachers to make comments on the transcriptions and to verify the accuracy, the teachers did not respond.

To analyze the data, initially, the interview transcriptions, the typed observation notes, and the responses from the mid-training survey were printed. Printed data did not contain identifiers (such as names), and they were kept in a locked filing cabinet in the researcher's home office. As the researcher read through the transcripts, notes and survey responses, she looked for meaningful units (words, phrases and sentences) that were related to the research

questions, which is a coding process called *structural coding* (Saldana, 2015). According to Sipe and Ghiso (2004), the coding process is a "judgement call", and to inform the judgements made, the researcher used the *structural coding* cycle. Structural coding is a question-based coding that acts as a labelling and index device, allowing researchers to easily access data likely to be relevant to a particular analysis from a larger data set. Structural coding is used as a categorization technique for further qualitative data analysis (Saldana, 2015). What constituted as the units being meaningful was if they could somehow provide answers for the research questions. In qualitative data analysis, meaningful units render useful and meaningful content (Lincoln & Guba, 1985).

Data immersion, a process when qualitative researchers immerse, or "drown" in data, was completed through the coding cycle (Langley, 1999; Suddaby, 2006). Data immersion is a qualitative method to obtain a comprehensive understanding by continuing to sample until no new substantive information is acquired (Miles & Huberman, 1994). Through the structural coding cycle, a codebook was established (see Appendix G) with the names of the codes, the codes' abbreviations, and descriptions of the codes. Codes were determined based on the research questions – how teachers changed and how student changes were perceived by the teachers. For example, the researcher looked through the qualitative data to see how pedagogical practices were impacted or how students' reading behaviors were impacted. As previously mentioned, as the researcher read through the data sources, she considered how the participants' responses and observations could be coded to answer the research questions. Some units have more than one code attached to them.

There were two sections of the codebook: research question two (changes in teachers' instruction) and research question three (students' reading behaviors and attitudes towards

reading). Codes regarding changes in teachers or in the students were placed into the respective sections; units whose codes did not relate to the research question were placed in the "other" section of the codebook. Once the codes were placed in sections, there were themes emerged within each section. Themes were derived from the research questions. For teacher changes, the themes were changes in pedagogical practices, reading instruction and metacognitive-focused instruction. The themes from this section of the codebook derived from the sub-questions for research question two.

Once the first draft of the codebook was created, the researcher continued to read through the data sources while *focus coding*, or consolidating the meanings of the codes (Saldana, 2016). *Focus coding* is the process of developing categories from prior coding (Saldana, 2016), in this case, *focus coding* followed the *structural coding*. Through this process, new codes were added, some codes were removed, and some code descriptions were revised. While reading through the raw data and coding data on multiple occasions, the researcher took part in memoing (Charmaz, 2006), jotting down her thoughts and decision making as she revised the codebook. There are five versions, or drafts, of the codebook from the initial coding to the last. The researcher became immersed in the three participants' data sources from reading all qualitative materials multiple times. According to Strauss and Corbin (1998), data saturation, similar to how immersion is defined by Suddaby (2006), occurs when "no new information seems to emerge during coding, that is, when no new properties, dimensions, conditions, actions/interactions, or consequences are seen in the data (p. 136).

Once the data was saturated, the transcripts were uploaded to version 8 of ATLAS.ti (a computer software program used for analyzing qualitative data) and recoded. The handwritten codes were transferred to the software program. ATLAS.ti allowed the researcher to digitally

organize and categorize the data according to the teacher and the derived codes. See Appendix H

for a display of how many times each teacher's narrative account or observation was coded as a

change in their instruction or how they perceived changes in their students' reading

performances. An Excel spreadsheet was exported from ATLAS.ti. In the Excel sheet, there were

three sheets created, one for each teacher. In each Excel sheet, the codes were listed on the x-

axis, the top row. The teachers' direct quotes were copied and pasted from ATLAS.ti to the

Excel sheet for quick access. The spreadsheet allowed the researcher to easily open a teacher's

sheet in Excel, identify a code from the top of the sheet, and scroll down to look at the narrative

statements relating to the code.

Mixed Methods

The third research question was: *How does teachers' perceptions of students' changes in*

reading support students' STAR scores? A mixture of qualitative and quantitative data were used

to address this research question. Specifically, an *embedded* mixed methods design was used (see

Figure 2). "The embedded design is a mixed methods design in which one data set provides

supportive, secondary role in a study based primarily on the other data type" (Creswell & Plano

Clark, 2007 p. 67).

Figure 2

The Embedded Mixed Methods Design
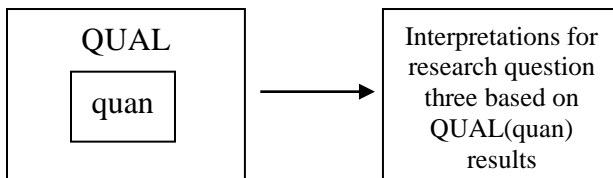
Note. Figure adapted from J.W. Creswell and V. L. Plano Clark, 2007, *Designing and*

Conducting Mixed Methods Research.

Data Collection

Qualitative data was primarily used to address the research questions, but quantitative data was included to supplement the qualitative data. There were no additional data collected to answer research question three. The qualitative data used were the interviews and the mid-training surveys. The quantitative data used were the students STAR Reading tests.

Data Analysis

Structural coding was used to analyze the qualitative findings for research question two; however, *initial coding* was implemented for research question three. The first cycle began by labeling participants narrative accounts with tentative codes (Saldana, 2016). The following coding cycles were more focused, consolidating provisional codes into categories. Changes in students' behaviors and attitudes towards reading were sought after during the coding cycles. The themes *strategies* and *skills* emerged due to the types of changes in the students reported by the teachers. For example, the following is a quote taken from the mid-training survey: *Some students are using think-aloud strategies with each other when working as peer help.* This was coded in the "students' reading behaviors and attitudes towards reading" section within the "strategies" theme. There are no sub-questions for research question three; therefore, the themes for research question three were developed from immersing in the data. Through data immersion, the researcher realized the teachers' responses regarding students' reading behaviors were either strategic behaviors or skillful behaviors.

A paired samples *t*-test was conducted to analyze the quantitative data. The quantitative data shares students' achievement on the STAR test from a numerical perspective, and provides support for the qualitative data that was collected and analyzed.

Quantitative and qualitative data were used to explain the impact, if any, of teachers' intentional use of think-alouds on the students in their respective classes. The same quantitative data sources were used to explore the first research question to examine the quantitative aspect of this research question. The mid-training surveys, teacher debriefs from classroom observations and the second interviews were also used to learn of any changes the teachers may have observed from their students from the beginning of the study to the conclusion of the study. The researcher used the standard triangulation design where qualitative and quantitative data were collected separately. After collecting data, the researcher merged the qualitative and quantitative together to form an interpretation and have a clearer understanding of the third research question (Creswell & Plano Clark, 2007).

Trustworthiness

Credibility refers to the trustworthiness and plausibility of research findings, and the need of credibility is noted by several qualitative researchers (Lincoln & Guba, 1985; Merriam, 1995; Tracy, 2010). Quality qualitative research is research that is dependable (Lincoln & Guba, 1985). When actions are taken to ensure rigor and credibility in a study, readers are more likely to trust and make decisions aligned with the study's reports. Measures were taken to ensure and strengthen the credibility of this study by utilizing triangulation, member checking, following ethical procedures, and sharing researcher positionality and reflexivity.

Through *triangulation*, more than one data source, theoretical lenses, and data item are used in a study and converge for a final result (Denzin, 1978). As previously stated, case studies are developed through the use of multiple data sources, such as interviews, documents, observations, etc. Triangulation was accomplished in this data analysis and in the case study report through the use of multiple methods of data collection, data sources, and theories.

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Triangulation allows researchers and readers to gain a broader and more confident understanding of the issues investigated (Maxwell, 2005). Rather than rely on a single form of data, "across data" triangulation was used for the following qualitative data sources: teacher interviews, classroom observations and debriefs, and the mid-evaluation survey, as well as the quantitative data (students' STAR Reading scores). According to Creswell and Miller (2000), data triangulation is a valid qualitative method because it allows researchers to rely on multiple data sources versus one. Though triangulation may not result in complete accuracy, "multiple types of data, researcher viewpoints, theoretical frames, and methods of analysis allow different facets of problems to be explored, increases scope, deepens understanding and encourages consistent (re) interpretation" (Tracy, 2010, p. 843). Triangulation was used as a method to heighten readers' understanding of metacognitive training and its influence, if any, on teachers' pedagogical teaching practices and their respective students' reading performance.

Member Checking

Another method, *member checking*, was used to ensure credibility. To disclose the findings from the data, the specific teaching practices observed and direct quotes from the teachers were provided to support the themes as the themes were described. Member checking was then used to allow the participating teachers to confirm the accuracy of the narrative accounts (Creswell & Miller, 2000). Member checking is a frequently used approach, in which the investigator takes summaries of the findings back to participants in the study and asks them whether the results are an accurate reflection of their experiences (Creswell & Plano Clark, 2007). Member checking is a strategy qualitative researchers use to confirm the validity of statements by the participants who made the statements. It moves the process of validation from the researcher to the participants (Creswell & Miller, 2000). Participation in member-checking

was chosen because of the awareness of the possibility of misinterpreting the teachers' interview responses and the desire to ensure the validity and credibility of all data.

Researcher Positionality and Reflexivity

The researcher identifies as a Black woman and a former K-6 educator. She has a background in teaching upper elementary students, specifically Black students of low socioeconomic status. According to Hammond (2015), the researcher has a deep level of knowledge of the general social, behavioral and learning patterns of this specific student population (i.e. preferences for group learning and working collectively to build knowledge, triggers for students' flight or fight responses in learning, and supported the construct of students' schema for acquiring new knowledge), as well as the common challenges and questions in regards to reading comprehension strategies (e.g. implicit language and limited background knowledge). Through her teaching experiences, however, the researcher was not consistent with demonstrating how reading tasks could be approached from the perspectives of the students' preferred methods of learning and cognitive styles. The deficiency of fluidity in the researcher's instruction often left her to inquire why the teaching strategies she used failed to propel students' reading achievement. Though the researcher did observe some successes and growth in the classroom, she left elementary education with questions and the desire to better understand the most effective, research-based instructional strategies to reach students in underserved groups in education.

Due to her background and position in this study, the researcher took part in *reflexivity*, as she collected, analyzed and reported the data. Patton (2002) describes *reflexivity* as a method that:

Reminds the qualitative inquirer to observe [herself] so as to be attentive to and conscious

of the cultural, political, social, linguistic, and ideological origins of [her] own

perspective and voices of those she or he observes and talk to during fieldwork…The

observer, therefore, during fieldwork, must observe self as well as others, and interactions

of self with others (p. 299).

The researcher kept a notebook and participated in analytical memoing throughout the

study after workshop sessions, classroom observations, and during the coding process.

According to Charmaz (2006), memo-writing helps researchers form their next logical steps,

develop their ideas into narrative forms, and helps to clarify and direct subsequent coding

decisions. The following is a memo written after the first workshop session:

Initial thoughts: It went well! Training started a little late as the teachers got the students

situated for dismissal. I felt a little rushed, and like I did not explain terms as clearly as I

could have. Teachers asked great clarification questions and seemed very intrigued by the

information I shared. All three teachers were in attendance. Earlier today teachers had a

PLC [professional learning community] meeting with the academic coaches. I am aware

today has been a long day for the teachers, with minimal downtime.

The memo statement was written as a way to reflect on the first day of the think-aloud

workshops and to make plans for the next workshop the following week. Knowing the terms may

have not have been coherently explained, plans were made to review the terms with improved

clarity.

As a Black woman, the researcher felt connections both with the students and the

teachers. As once a Black child, she can relate with other Black children who were perceived as

"misbehaving" because of the rigid environments that did not allow for students to communicate

and work collaboratively. Additionally, the researcher lacked motivation to read growing up when she was unable to find connections with the text to her own life. It was not until college when she learned and applied reading strategies to enhance her reading comprehension. The researcher also connected with the teachers of this study, whereas all of the teachers are Black and the researcher also used to teach third-grade at a school of predominantly Black students in a low socioeconomic status community. The researcher's connections and experiences play a significant role in the idea for this study, as well as how the study was designed. There was interest in more than just the numbers, but to gain mutual understandings and more in-depth knowledge on the teachers' personal experiences and dispositions of the metacognitive think-aloud workshops.

Changes in design of intervention. When this study was originally designed, the plan was to go to the school each week afterschool to conduct the workshops. At the end of the session for week 5, the teachers notified the researcher that starting the following week, teachers were mandated to stay after school to implement Sonday System (the district-wide reading intervention program) Monday through Friday every week. After discussions with the researcher's major professor, Dr. Cardullo, and methodologist, Dr. Marshall, the workshops moved from group sessions, to individual training and discussions through observations and debriefs. While waiting for IRB approval for additional observations and debriefs, the researcher self-recorded and sent videos of herself modeling think-alouds during read alouds to the teachers. At first there was discouragement and state of uncertainty because of the unforeseen changes, but the new methods were deemed more beneficial to closely understand each individual teacher's experiences with the workshops and implementation of think-aloud instruction.

Ethics

This study was completed and upheld with sound ethical practices with adherence to the ethical standards provided by the university's Institutional Review Board (IRB). Over a year prior to collecting data, the superintendent of the school district was contacted to explain the study and to request permission to work with teachers in the district. Once the request was approved, an email was sent to the school principals as an introduction to the research and the study. During the summer before the study began, the principals were contacted via email as a follow-up to the initial, introduction email. At the time of the follow up only one principal out of the original three who agreed was still interested in having the study completed at their school. The principal was sent a site authorization form via email, in which the principal signed, scanned and sent back via email. Before the school year began, the researcher met with the third grade teachers at Reading Hills Elementary School to explain the study and to distribute the informed consent forms (see Appendix I).

<div align="center">

Pilot Study

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How the data was selected, gathered, and analyzed was highly influenced by the pilot study conducted prior to the present study. The purpose of conducting a pilot study was to help the researcher refine decisions regarding the research methods and design for the present study.

The participants in the pilot study were ten undergraduate, pre-service teachers in a university teaching program taking a language arts methods course during the summer prior to data collection for the dissertation study. At the beginning of the course, the pre-service teachers took the MAI. Following the administration of the MAIs, workshops were conducted during the language arts methods course to introduce the concept of teaching self-regulation strategies in literacy through the use of metacognitive, think-aloud instruction with the pre-service teachers.

The rigorous workshops took place for five days, for approximately 30 minutes each day. Activities during the workshops included a brief explanation of the think-aloud concepts and terms, simulation activities for the pre-service teachers to experience disequilibrium while reading, and observing and critiquing think-aloud instruction modeled by the researcher.

Once the workshops concluded, the pre-service teachers participated in the pre-interviews. In the interviews, the pre-service teachers were asked questions regarding their experiences with the think-aloud workshops and their thoughts on the effectiveness of providing metacognitive, think-aloud instruction. Following the course and the interview, the pre-service teachers alternated serving as the classroom teachers for the summer STEM camp. The STEM camp is a three-week camp for third through fifth-grade students to engage in hands-on activities related to science, technology, engineering and math, while also integrating reading and writing activities. The week following the interviews, the pre-service teachers began to teach STEM and literacy-related lessons in the classrooms for the elementary students. The pre-service teachers were observed during their lessons to see the effects the think-aloud workshops had on the undergraduate pre-service teachers' interactions and lessons with children during their summer teaching experiences. When the summer STEM camp concluded, the pre-service teachers took the MAI again to gauge the influence the workshops and observational debriefs had on their metacognitive competencies and use of self-regulated strategies as learners. Additionally, post-interviews were conducted to gain understanding of the pre-service teachers' overall experiences and changes in their pedagogical practices following the workshops, observations and debriefs.

A paired-samples *t*-test was conducted to test for significant differences in the pre-service teachers' pre and post MAI scores. The statistical test indicated from the pre-MAI (M = 38.30, SD = 4.45) to the post-MAI (M = 44.70, SD = 4.50), $t(9) = -3.12$, $p = .012$, the pre-service

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teachers made significant growth on their metacognitive awareness and use of self-regulated strategies. Further, the aim was to examine how the think-aloud workshops and the observational debriefs would influence the pre-service teachers' instruction. After analyzing transcriptions from the interviews, findings of implementation of think-alouds by the pre-service teachers, changes in their metacognitive awareness, and an impact of the pre-service teachers' pedagogical practices were concluded.

The pilot study provided the researcher experience using the training practices that were used for the participating teachers for the dissertation study. Additionally, this pilot study provided clarity on the aspects of the methods to adjust, if needed. From the pilot study, the decision was made to conduct the first interviews before the training began, rather than after the training, and established interview questions that would elicit more elaborate responses from participants. Furthermore, since the pre-service teachers understood think-aloud instruction better once the instructional practice was modeled to them, the choice was made to model think-aloud instruction towards the middle of the workshops versus waiting towards the end.

Summary

The research methods for this study were chosen to provide a breadth and depth understanding of teachers' intentional use of metacognitive instruction using think-alouds, and how this instruction may influence students' reading behaviors. While the statistical tests one-way ANOVA and paired-samples t-test were conducted to explore students' reading achievement, a case study was used as a process of inquiry and method of reporting teachers' personal experiences, pedagogical changes, and perceptions of how the think-aloud workshops may or may not have had an influence on students' readings achievement. The next chapter reports the findings as a result of the research design and data analysis.

Chapter 4. Findings

Introduction

The purpose of this study was to examine the unique influences metacognitive think-aloud workshops would have on teachers' metacognitive competencies, their pedagogical practices, and consequently,i on students' reading achievement and reading behaviors. A mixed methods design presented as an instrumental case study (presented collectively versus by participant) was used to answer the following research questions:

1. Was there be significant differences in students' STAR Reading scores after their teachers' participation in think-aloud workshops?

   Hypothesis: Students who receive metacognitive-centered instruction through the use of think-aloud instructional strategies from their teachers yielded significant growth on their STAR Reading test.

2. What was the effect of teacher metacognitive training and the implementation of instructional strategies using think-alouds?

   a) What impact did the development of teacher understanding in metacognition and self-regulation have on their pedagogical teaching practices?

   b) What impact did strategic teacher training in metacognitive self-regulation strategies have on teachers' reading instruction?

   c) Did teacher training in metacognitive self-regulation strategies lead to improved, metacognitive-focused reading instruction?

3. How are teachers' perceptions of students' changes in reading supported by students' STAR scores?

Three third grade teachers, Craig, Tracy and Elisa (pseudonyms), participated in the 11weeks of metacognitive think-aloud workshops. The teachers were interviewed at two time points (the beginning and end of the study), they were observed four times during reading instruction, the teachers took the MAI twice to gauge their metacognitive and self-regulation behaviors towards the beginning and end of the study (see Appendix E for the teachers' MAI responses), and the teachers took a mid-training survey. Additionally, the teachers administered the STAR Reading test to their students as part of the schoolwide progress monitoring assessment for reading. Once the two STAR tests were taken during the course of the workshops, a mixed ANOVA analyses was conducted to test for significant differences between the three classes. A paired samples *t*-tests was also conducted to measure for significant differences from the first test to the second test for each class.

Each of the data sources was analyzed to answer the research questions. Findings are reported in a collectively to answer each of the research questions. Following the findings for each research question, a summary was composed, reporting the overall findings from all teachers.

Participants

The study's participants were three in-service, third-grade teachers at Reading Hills Elementary School (pseudonym) and the influences think-aloud workshops had on their teaching and on their students. Prior to the first think-aloud workshop, the researcher attended a grade-level meeting. At the meeting, it was announced that in the recent years, the third grade team made higher growth than the other grade levels in the school. The third grade teachers at Reading Hills Elementary School demonstrated strengths and commitment to ensuring the academic success of their students which additionally had an influence on the findings in this study. Each

teacher expressed interest and enthusiasm regarding their participation in the study. There were five third-grade teachers at Reading Hills Elementary School; however, due to scheduling conflicts, only three of the teachers were able to commit to participating in the think-aloud workshops. Craig, Tracy, and Elisa all shared their individual experiences with implementing metacognitive think-aloud instruction, and each of them shared varying results. Though each of the teachers witnessed positive effects on their students, the types of differences varied depending on how they implemented the explicit instruction and based on where their students were in their reading strengths and current reading abilities.

Findings from the data analysis will follow a collective case study format (Creswell, 1994), in which findings from the individual cases will be presented collectively to answer each research question. Teachers' narrative accounts are not mentioned in any particular order. All narrative accounts are presented depending on their ability to support the research questions and the themes emerged from the data.

Research Question 1

Were there significant differences in students' STAR Reading scores after their teachers' participation in think-aloud workshops?

Hypothesis: Students who receive metacognitive-centered instruction through the use of think-aloud instructional strategies from their teachers yielded significant growth on their STAR Reading test.

Null hypothesis: Students who receive metacognitive-centered instruction through the use of think-aloud instructional strategies from their teachers did not yield significant growth on their STAR Reading test.

Quantitative data were used to answer the first research question. The first research question sought to understand if significant differences, or growth, existed in students' STAR test scores following the teachers' involvement in the workshops on metacognition and think-aloud instruction. To answer this this question, a mixed ANOVA test was conducted using version 26 of SPSS at the $p < .05$ alpha significance level. A mixed analysis of variance (ANOVA) is an appropriate test to conduct to test for differences between each classes' STAR test, calculate effect sizes, and to test for differences between the first and second set of STAR test scores. Means and standard deviations for the STAR Test scores were presented in the descriptive statistics and seen in Table 2.

Table 2

Mixed ANOVA Descriptive Statistics

	Teacher	Mean	SD	N
STAR Test 1	Craig	232.857	132.996	21
	Tracy	185.842	132.548	19
	Elisa	287.095	171.047	21
	Total	236.885	150.440	61
STAR Test 2	Craig	283.190	124.363	21
	Tracy	203.790	119.444	19
	Elisa	362.000	166.678	21
	Total	285.590	151.197	61

Assumptions of homogeneity of variances and sphericity were checked and found to be within acceptable limits. A Levene's test of equality of error variances, based on mean, indicated that the assumptions of homogeneity of variances were met, whereas $p = 0.804$ for the first STAR test and $p = 0.793$ for the second STAR test. The Mauchly's Test of Sphericity also

indicated the assumption of Sphericity was met, $W = 1.00$, $x_2(0) = .000$. Results indicated no significant deviations of normality. Due to non-significance, it is assumed there was similarity in the dispersion of scores for both tests.

Test of Within- and Between-Subject Effects

There were main effects for Time, Teacher, and Time by Teacher interaction. Over time, there was significant growth in students' reading performance as indicated from the first STAR test to the second STAR test ($F(2, 58) = 34.856$, $p < .001$, $\eta_p^2 = .375$) (see Table 3). Overall scores significantly increased among all three teachers' classes, and due to the very large effect size, the significant increase is likely due to the teachers. Next, the interaction between time and teachers was examined, and the results indicated significant interaction ($F(2, 58) = 4.078$, $p = .022$, $\eta_p^2 = 0.123$). The significant time and teacher interaction shows growth trajectory within the scores achieved in each class significantly varied. Figure 3 presents a plot illustrating estimated marginal means, the mean responses for each factor over time (Grace-Martin, 2013), between each teacher.

In terms of between-subject effects, the mixed ANOVA test showed there was a significant main effect of teachers on the STAR scores ($F(2,58) = 4.314$, $p = .018$, $\eta_p^2 = .129$ (see Table 3). The main effects concludes there were differences in scores for students assigned to different teachers. In summation, the 12.9% variance represented a medium to large effect size.

Table 3

Tests of Between- and Within-Subjects Effects

Source	SS	df	Mean Square	F	p	Partial Eta Squared
			Between-Subjects Effects			
Intercept	8173831.316	1	8173831.316	209.627	.000	.783
Teacher	336427.015	2	168213.508	4.314	.018	.129
Between	2261546.591	58	38992.183			
			Within-Subjects Effects			
Time	69324.820	1	69324.820	34.856	.000	.375
Time x Teacher	16222.632	2	8111.316	4.078	.022	.123
Within	115356.712	58	1988.909			

A post-hoc test was examined to determine where the significance occurred between the scored achieved in each class. The Tukey b post-hoc test revealed differences in sample means. Means for homogeneous groups in subsets for the Tukey b post-hoc are presented in Table 4. The Tukey b post hoc contrasts indicated significant differences between the scores achieved in Tracy and Elisa's classes. The scores achieved in Craig's class was not significant different from Tracy's nor Elisa's classes.

Table 4

Tukey b

Teacher	N	Subset 1	Subset 2
Tracy	19	194.8158	
Craig	21	258.0238	258.0238
Elisa	21		324.5476

Figure 3

Estimated Marginal Means
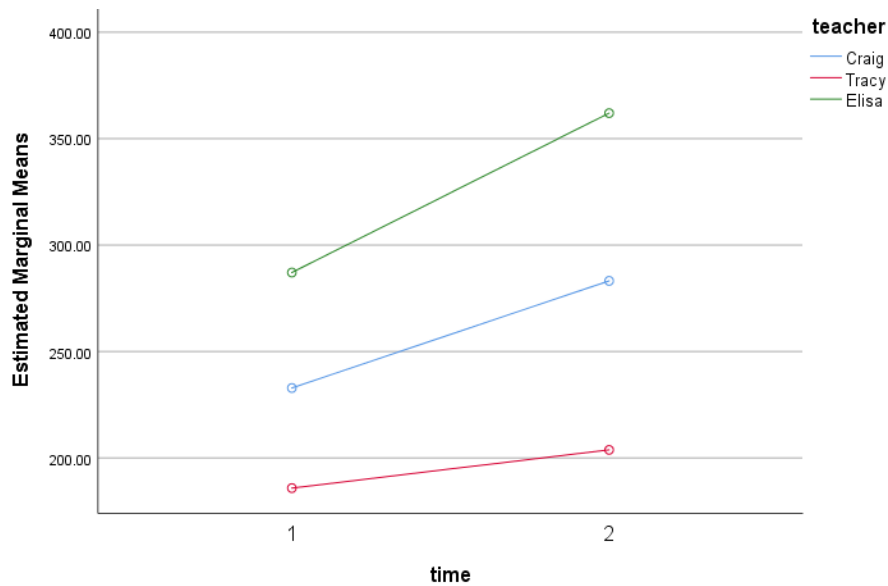
Summary

In summary, even though there were significant differences between the difference

classes, overall, there was significant increase in the students' STAR test scores. Due to the

significant growth in the students' test scores, the null hypothesis was rejected. In the following

sections, findings will reveal how each teacher utilized the content and feedback received from

the think-aloud workshops and debriefs, as well as patterns between teachers' narrative accounts and their respective classes' STAR test scores.

Research Question 2

What was the effect of teacher metacognitive training and the implementation of instructional strategies using think-alouds?

Sub-questions were used to answer research question two. Additionally, research question two was addressed by collecting and analyzing the data from the teachers' interviews, the mid-training survey, the classroom observations, MAIs, and field notes. Findings for this research question were presented collectively, where data sources from and/or pertaining to the teachers were used to address each sub-question. The narrative accounts and notes from observations were not listed in any particular order, but were presented, as needed, to support each sub-question, or theme.

Themes

The themes for research question two were derived from the sub-questions of research question two. The qualitative data materials were examined closely; and if the narrative accounts related to changes in the teachers' instructional strategies, the units were coded according to the following sub-questions:

a) What impact did the development of teacher understanding in metacognition and self-regulation have on their pedagogical teaching practices?

b) What impact did strategic teacher training in metacognitive self-regulation strategies have on teachers' reading instruction?

c) Did teacher training in metacognitive self-regulation strategies lead to improved, metacognitive-focused reading instruction?

The themes that emerged are *changes in pedagogical teaching practices, changes in reading instruction,* and *metacognitive-focused reading instruction.* In addition to the themes, there were two to three sub-codes within each theme. The sub-codes were created first, then the sub-codes were grouped by the sub-questions.

Changes in Pedagogical Teaching Practices

One of the areas of influence was in the teachers' pedagogical practices. Within this theme, responses were coded as *positive attitudes* (meaning positive attitudes towards the think-aloud instructional strategy) and *pedagogical changes* (changes in how the teachers provide instruction). Each of the participating teachers described having positive attitudes towards the think-aloud workshops and the methods shared from the workshops. Following the first day of think-aloud workshops, the researcher wrote the following in the field journal: *It went well! […] Teachers asked great clarification questions and seemed very intrigued by the information I shared.*

Additionally, the teachers completed a mid-training survey midway through the duration of the 11-week trainings. One question on the survey ask, "What are your thoughts on the content from the workshops so far?" Elisa replied, "I have enjoyed the think aloud strategy. It has given me a strategy title that reinforces skills I've taught and used." Tracy responded to the survey saying, "The workshop was very informative." Finally, Craig replied, "I think the content from the workshop was really great. I loved that the content could be applied immediately. I also found that the content was useful not only in the classroom but at home and other areas where teaching takes place too (church, etc.)."

More findings of positive attitudes derived from field notes and interviews. Right before Tracy taught a reading lesson, she exclaimed to the researcher that after watching the think-aloud

videos self-recorded by the researcher, she was "ready to implement!" the think-alouds. Craig also demonstrated positive feelings towards the workshops by stating in an interview, "I would say [the workshops] have actually gone beyond what I expected, just in regards to how the kids really gravitated towards [the think-alouds]." In the second interview, Elisa was asked to share her thoughts again on the workshop; her reply was, "I think I learned a lot from it. So in the beginning, I know for me I was like, 'Oh, what are we going to be doing?' You know, 'is this going to be something I can do?' But then as you guided us through it, and you showed us, and you brought the articles, and we implemented things, and you gave us those passages, then I saw that it was very meaningful and that as adults, we forget that we had to go through this phase of reading."

Another aim of the study was to observe if the teachers would make changes to how they already taught. Prior to the study, when asked about think-aloud instruction, the teachers referred to this practice as a strategy for students to use (such as *think-pair-share* or *turn and talk*). By the second interviews, teachers referred to the strategy as an instructional practice being teacher-led. Furthermore, the word *now* assisted with indicating changes in teachers' pedagogical practices. As the word *now* is indicative to a practice that was not necessarily implemented before (or prior to the workshops). For example, Craig stated:

> "I would definitely say that [using think-alouds] is more intent *now*. [They are] more purposeful in regards to just the strategic teaching and implementing that goes along with it, and making sure that it is there, it is planned, and even, that I am able to have it when it needs to come up."

Craig's use of *now* shows that at the time of the second interview, his use of think-alouds were intent; whereas prior to the workshops, they were not as intent. In addition to implementing

this instructional strategy at school for his classroom students, Craig also shared he implemented the instructional strategy at home for his children when helping them with their homework. Craig implementing the strategy at home for his children is a demonstration of transference between the school setting with students and the home setting with his children.

Throughout the workshops, Elisa became aware of teacher-led think-alouds and recognized that strategies become automatic to her as a proficient reader, but not as easily for students. Elisa was asked what strategies she uses as a reader, has she taught students the same strategies, and if so, what does instruction look like. She replied:

"I have to *now* think about a child who cannot read and how would I make them see or understand. I guess I could do the exact same thing [explicitly teach the same strategies she uses as she reads leisurely]. I try to get them to understand, if it's something you don't understand, notate it so you'll know to come back to that, or try to use your background knowledge to help you understand what you're reading, or try to relate the characteristics…that is a weird question that you ask, because you never think of it as an adult when you know you can read."

Again, Elisa's use of the word *now,* signifies changes in how she approaches her reading instruction. In addition, the narrative statement above aligned with Elisa's MAIs. Her MAIs indicated she made gains in her declarative knowledge, which is knowledge of one's skills, intellectual resources, and abilities as a reader (Schraw & Dennison, 1994). Elisa made the most dramatic growth in declarative knowledge out of all three teachers. Out of the eight declarative knowledge statements on the MAI, Elisa indicated she improved in four of the statements. For example, on the first MAI, Elisa marked false for "I have control over how well I learn" but she marked true for the same statement the second time she took the MAI. At first, it was difficult for

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Elisa to share the strategies she used as a reader, but she is a proficient reader, and comprehension is often automatic for her. During this conversation, Elisa realized the importance of explicit strategy instruction and as beginning readers, students are still getting accustomed to developing their declarative knowledge and using strategies to support their reading comprehension.

Changes in Reading Instruction

Another purpose for this study was to identify what ways teachers' reading instruction may have been impacted after participating in the think-aloud workshops. There were two codes derived relating to reading instruction: *consistency* (teachers stated they plan to be more consistent with using think-aloud instruction) and *more strategies* (teachers' use of more strategies during instruction). At one of the observational debriefs, Craig shared that in the basal readers used in his class, the textbook provided a think-aloud prompt and he typically asked the students the prompt. However, since the training, Craig became more intentional about using his own think-aloud prompts and including various skills and strategies: "I think before I might have used [think-alouds] here and there. Now since I'm working with the think-alouds and the different strategies, just really been applying them more and using them more, and it's been really good." He went on to say, "Whereas before it was not as much. It wasn't as often. So now [I am] planning and really making sure that I key in on different think-aloud methods as different skills are approached." Craig demonstrated consistency by sharing how he is more intent about using think-aloud instruction, and he shows how he began to use more strategies during instruction by sharing he models additional skills and strategies, not just the prompts provided in the textbook.

Tracy used the word *consistent* often during the observation debriefs and the second interview. Tracy shared how she tried to be more consistent with using think alouds and using more strategies, "I use more strategies now to make connections to their prior knowledge. I try to be more consistent now because I see it works." From the observations, it was noticed that a common reading strategy Tracy used was making connections. To improve students' comprehension, she often encouraged them to try to connect characters, settings and events to familiar people, places, and situations to them. During one of the observation debriefs, Tracy reflected, saying, "I tried to give [the students] examples so they can relate to it with the real world, to make connections."

Furthermore, Tracy used several instructional approaches to provide opportunities for students to make connections with the text (i.e. giving examples, using visuals, demonstrated text-to-text and text-to-self connections). Tracy also used imaginative learning strategies (encouraging students to imagine themselves in the text) to enhance students' comprehension. Overall, a method Tracy often used to scaffold students' reading comprehension, was to prompt the students to make connections with characters, settings and events of the texts used in her class. She saw value in instructing students to put themselves in the text to better understand what was read.

Finally, while there were no strong findings to demonstrate Elisa's plan to be more consistent with implementing think-aloud instruction, her MAI signifies growth in her questioning, specifically in evaluating her learning. On the first MAI, Elisa selected false for "I ask myself if I learned as much as I could have once I finish a task." Her ability to regulate her cognitive actions were shown more than once. For one, during the interview, Elisa often took her time to answer questions and verbalized her think as she responded to questions. For example,

when she was asked about the strategies she used as a reader, she pondered on her response and what it would look like to teach students the same strategies. Additionally, on the mid-training survey, Elisa shared an example of how she demonstrated questioning with her students:

"The students and I were reading [a story] and I showed an example on how to read a phrase, *the pudding tasted like a night on the sea*. I showed the students how I would question what it meant. What is a night on the sea like? How could it relate to lemon pudding? Maybe, the top the pudding had cream arranged like waves. Maybe the pudding was smooth like a calm sea."

In the example, Elisa shared how she would question a phrase where the author used figurative language, a simile. As proficient readers, it takes questioning to construct meaning from implicit text. Elisa demonstrated how to teaching the strategy of questioning through think-aloud instruction.

Metacognitive-Focused Instruction

Lastly, there was an aim to examine for more metacognitive-focused instruction. While reading through the data that was related to this theme, three codes were developed: *planning* (to understand how teachers planned for metacognitive-focused, think-aloud instruction), *modeling strategies* (to see how teachers modeled various strategies), and *implementation* (how the teachers implemented metacognitive-focused think-aloud instruction).

There were mixed findings regarding teachers' planning for think-aloud instruction. Elisa admits to initially using the think-aloud instruction "on the fly" versus planning for them. She then continued by saying:

"I got into a routine of knowing my stories because most of the stories that we're teaching, we've taught them, so you kind of know what skill you need to focus on and

you just become comfortable teaching that skill. Whereas with [the think-aloud] strategy, you have to figure out how to highlight the strategy with the skill versus just teaching the skill. So that's the downside to it, is knowing the story already and figuring you already know the best way to teach it, but then having to fall back and be like, 'Oh, they didn't…that didn't go well, so maybe I should redo this.' So that's the downside of it. But just in talking to you right then, instead of teaching it on the fly, maybe stop and in your preparation saying maybe right here, I could do the think-aloud strategy."

Elisa reflected on previous years when she taught various skills for the same stories in the basal program and admitted since she had a routine with using the same stories to teach the same skills, she did not always reflect on the strategies she used to teach the skills, and how the strategies were taught. This narrative account also recognized the importance of getting to know the students in your class and planning instruction according to the knowledge and skills of the students.

Both Tracy and Craig also shared they did a mixture of both – planned for think-aloud instruction and implemented the instructional strategy "on the fly." Tracy said, "Since you've been working with me with the workshops, I've started to implement the things…reading some of the things that you said from the observation and implementing within the lesson plans…once I am consistent with it, it'll be better." During the debriefings, Tracy was encouraged to take a step back while teaching and to try to approach various reading tasks as if she was a student, someone who is not proficient in using reading strategies. Tracy was also reminded to reflect on the frustration she felt as she and her colleagues tried to make sense of the "Blonke" passage (Beers, 2003), and to remember the discourse between themselves as they attempted to comprehend the nonsense passage. Providing these references seemed to help Tracy think of how

to verbalize her metacognition during instruction. In her narrative account, Tracy shared once she becomes more consistent with being transparent during reading instruction, she would be better at planning the metacognitive think-alouds.

When asked about planning for think-aloud instruction, Craig said, "It depends on what the skill is. And then sometimes you can kind of see a need for it, just in maybe a whole group setting… If I've done a formative assessment and I may not see that everybody's getting it, then I may use the strategy." To summarize Craig's narrative account, he stated it depends if and how he would plan for think-alouds. He mentions if during classroom instruction he notices students are having a difficult time understanding a concept, then he would implement an impromptu think-aloud to provide clarification for the students. On the other hand, if Craig noticed students struggling in an area after they have taken a formative assessment, then he would plan for think-alouds for a following lesson to address the particular area of difficulty.

In addition to how the teachers planned for think-aloud instruction, there was interested to see if the teachers implemented the instructional strategy and what the implementation looked like in the classroom. Elisa said she used think-alouds when she read a passage with her class. She said, "I think that went well because the modeling is what they have to have, [the students] have to see it. You can't just tell them, they actually have to see you read something, you read it and then actually self-talk, 'well what does this mean or how's this person feeling?' And then I think that made it more meaningful to them…they could grasp it." Elisa referred to the think-alouds as "self-talk", when teachers verbalize how they process information while reading. She demonstrated her understanding of how powerful it is to model thinking processes while using reading strategies to students versus just telling students how to use reading strategies.

From the first observation to the last, there was notice of Tracy becoming more explicit in her classroom instruction, and the researcher made a note and statement during the one-on-one debrief saying, "Progression towards explicitness from beginning to this point. Suggestion: take self out of teacher role, and put self in a student/learner position. Be transparent on how you make sense of the text. Think about the "Blonke" passage (Beers, 2003)." In relation to implementing the think-aloud instructional strategy, Tracy stated, "I use more think-aloud strategies now to make connections to [students'] prior knowledge. I try to be more consistent now because I see it works."

Craig also shared his experience with implementing think-alouds in his classroom, "I have implemented some of the strategies as far as letting [the students] see exactly how your thought process should be and modeling it. Then also letting them explain their thought process as well." Furthermore, Craig also used the think-aloud strategy instruction across the curriculum, "I've tried it with science and in particularly with math, and with math, it has really been helping."

Finally, it was intended to understand how the teachers modeled their own use of self-regulated strategies and comprehension strategies in general. The MAIs indicated Tracy's use of the following strategies increased: planning, comprehension monitoring, information management and evaluation. Tracy had this to say about modeling strategies for her students:

"In this process, I think I became more transparent with having to model and show [students] the process. Transparency for me with the think aloud strategy was actually modeling it, letting the children see these are the steps that you go through and it's okay to think and take time and talk with yourself and go back and reread it again and process

it. So I think the transparency was letting them know for me the process of it, modeling it for them."

Her narrative statement above aligned with her increased use of information management strategies as indicated on her MAI. Specifically, Tracy's MAI stated she began to "focus on overall meaning rather than specifics" and "draw pictures or diagrams to help [her] understand while learning." During one of her observations, the researcher witnessed Tracy drawing an illustration to help the students remember authors' purposes for writing by drawing the P.I.E. diagram (persuade, inform, and entertain).

Craig's MAIs indicated that he made changes in his use of evaluation and information management strategies. In addition to Craig's shared experiences with using think-aloud instruction to teach strategies, Craig was observed modeling strategies, including evaluation strategies, through metacognitive think-aloud instruction during classroom observations. The following are field notes taken during the observations and were shared with Craig during the debriefings:

- Metacognitive thinking was observed during the observation. Teacher made several text-to-self connections, connecting himself with the sentences and in his explanation of interrogative sentences. The connections were made in a way the students could relate.

- Teacher modeled determining meaning of the word 'boxed.'
  "b…b…ox…box...ed…boxed. I know what a box is… So boxed must mean…"
  Students said: "Putting something in a box."

- As teacher was going over decoding unfamiliar words, he often switched from speaking from an inner, mental discourse perspective to speaking to the class as normal (talking to students in more of a conversational manner).

In the latter two bulleted notes above, Craig demonstrated information management by modeling breaking down, or chunking, words for successful decoding and reading comprehension. He also modeled evaluation as he switched his mode of discourse. Whenever he switched back to speaking to the students in a conversational manner, he reflected on and evaluated the inner discourse that was modeled to the students. Rather than move forward after the verbalized mental discourse, he summed up the strategies he modeled to provide explanations for the students.

Overall, the teachers shared and demonstrated changes in their instructional practices. In regards to their pedagogical practices, the teachers' ideas of think-alouds shifted from what students do to share their thoughts, to now also meaning a teacher-led instructional strategy for teachers to verbalize their metacognition. Additionally, in respect to the teachers' reading instruction, there was evidence of increased consistency using metacognitive think-alouds and an increase in the number of strategies taught through think-alouds. Lastly, the teachers shared the circumstance in which they either planned or wished to plan for think-aloud instruction, and they shared how they implemented more metacognitive-focused think-aloud instruction.

Research Question 3

How are teachers' perceptions of students' changes in reading supported by students' STAR scores?

Similar to research question two, narrative accounts were used from the teachers' interviews, the mid-training survey, and observations to support answers for research question

three. Findings for this research question were presented in a collectively, where narrative accounts and observations from each of the teachers were used to address the research question. The narrative accounts and notes from observations were not listed in any particular order, but were presented, as needed, to support each theme. Research question three was the mixed methods question; thus, the teachers' narrative accounts of the students (qualitative data) and the STAR Reading scores (quantitative data) were merged to see if there was a connection between the data sources. An embedded mixed methods design was implemented, whereas the quantitative data collection occurred with the primarily qualitative procedure.

Themes

For research question three, there was interest in learning what changes the teachers noticed in the students' reading behaviors and achievements. As the researcher read through the typed narrative accounts and responses from the teachers, the teachers' perceptions of the influence the think-aloud instruction had on the students' reading performances were coded. The following codes derived from the coding process: *student confidence, student fluency, student implementation* (of think-alouds), *student awareness* (of their thinking), *student vocabulary, student word attack, and general influence on students*. Units were coded as *general influence on students* if there were not enough occurrences for a new code. When these codes and the teachers' responses were examined, there was a distinction between strategies and skills; therefore, the two themes that derived from the codes were *strategies* and *skills*.

Strategies

Strategies are actions individuals take to solve a problem or complete a task. Tracy observed improvements in her students as they implemented think-alouds of their own. "I've noticed growth in [the students'] reading performance and students are trying to implement the

metacognitive, think-alouds. I think if I continue this strategy with students, they will eventually grasp the concept. I credit some of these changes to the instructional practices I have learned in the workshops." Craig also saw his students use the strategy, saying "Some students are using think-alouds with each other when working as peer help or in a group project setting."

In relation to students' awareness of their own thoughts, Craig added that during the think-alouds, some students "shared their thinking processes." He stated, "Some of them are more comfortable in sharing their thinking process with just doing more think-alouds. And for some of them, definitely a light has come on in regards to knowing that there may not be only one way of thinking this way or hey, this is a new way to try it."

Skill

There were not as many reported changes in students' skills as there were for students' strategies. Skills are defined as reading behaviors that are automatic in this study. Elisa believed the think-aloud instructional strategies, "strengthened her students' reading comprehension" as she often prompted her students to make personal connections with the content of text. Craig reported that students made improvements with their ability to "recognize letters and letter sounds" in his class. Additionally, Craig reported overall improved reading fluency within his students from implementing the metacognitive, think-aloud instruction during reading lessons on word attack skills.

STAR Test

Research question three was the mixed methods question; therefore, both the qualitative and quantitative data were used to answer the question. The quantitative data for research question three derived from the STAR Reading tests. Paired samples *t*-tests were conducted to observe for significant changes within each teacher's class (see Table 5). Since three tests were

ran (one for each teacher), Bonferroni correction was used to avoid Type I error. The original significance level for the mixed ANOVA was $p < .05$; the new significance level is $p < .0167$. Using the new significance level, the reports indicated students in Craig's class made significant growth from the first test (M = 232.857, SD = 132.996) to the second test (M = 283.191, SD = 124.363), t(20) = -4.701, p < .001. Elisa's students also made significant growth from the first test (M = 287.095, SD = 171.047) to the second test (M = 362.000, SD = 166.679), t(20) = -4.860, p < .001. A paired-sample t-test indicated that Tracy's students did not make significant gains from the first test's scores (M = 185.842, SD = 132.548) to the second test (M = 203.790, SD = 119.444), t(18) = -1.153, p = .264. A Cohen's D calculation indicates (d = .536) a medium to large effect size.

Table 5

Paired-Samples t-Tests

Variable	First Test		Second Test		n	t	p
	M	SD	M	SD			
Craig	232.857	132.996	283.191	124.363	21	-4.701	.001
Elisa	287.095	171.047	362.000	166.679	21	-4.860	.001
Tracy	186.842	132.548	203.790	119.444	19	-1.153	.264

Mixed Methods Interpretation

The STAR Reading test was a progress monitoring assessment used to assess students' reading comprehension at Reading Hills Elementary School. As reported in the section "Research Question 1", collectively, all classes demonstrated significant growth on the STAR Reading test; however, of the three classes, Tracy's class did not demonstrate significant growth.

Table 6 presents the number of times each teacher's narrative account was coded as *strategies* or *skills.* As shown, there were a total of 58 statements made by the teachers regarding students' improvements in reading-related skills and strategy usage. Out of the 58 perceptions and observations made, Craig made 35 statements, Elisa made 15 statements, and Tracy only made 8. Tracy made the least amount of statements regarding improvements in students' reading performance; and consequently, her class did not make significant growth on the STAR Reading test. Furthermore, in the second interview, Tracy shared, "I've notice growth in the reading performance and students are trying to implement the metacognitive, think-alouds. I think if I continue this strategy with students they will eventually grasp the concept...." This statement is an indication that Tracy knew her students had not completely grasped the concept of metacognitive, think-alouds, but if she continued implementation, there would be more reading growth. Additionally, Tracy demonstrated some apprehension with implementing the instructional approaches throughout the study. Further details will be discussed in Chapter 5.

In contrast, Craig and Elisa shared their comfort for implementing the think-aloud instruction, and Craig shared his plans for remaining consistent with implementing the instruction. Additionally, Craig and Elisa had more iterations of how they perceived improvements with their students; they were able to witness and talk about the changes in how their students processed information. Figure 4 shows themes emerged from the teachers regarding changes in their teaching and changes observed from their students.

Table 6

Skills and Strategies Narrative Accounts by Teacher

	Craig	Elisa	Tracy	Totals
RQ3-Student Skills	14	8	4	26
RQ3-Student Strategies	21	7	4	32
Totals	35	15	8	58

Figure 4

Themes Emerged from Teachers

Craig	Elisa	Tracy
Positive Attitudes	Positive Attitudes	Positive Attitudes
Pedagogical Changes	Pedagogical Changes	Consistency
Consistency	More Strategies	More Strategies
More Strategies	Planning	Planning
Planning	Implementation	Implementation
Implementation	Modeling Strategies	Modeling Strategies
Modeling Strategies	Strategies	
Strategies	Skills	
Skills		

Note. All themes were emerged from Craig. All themes, except *consistency*, was emerged from Elisa. Themes not emerged from Tracy were *pedagogical practices, strategies,* and *skills.*

Summary

The research questions for this study guided the decision making for collecting and reporting the findings. There were informed changes of the teachers and their teaching practices, as well as reported changes in the students' reading behaviors. In the next chapter, findings are further interpreted, accounting for unforeseen changes in the methods and a reading intervention program newly implemented at the school. In addition, connections were made between the

findings of this study and the theoretical framework and results from previous studies and literature.

Chapter 5. Conclusion

Introduction

This study and the content taught during the think-aloud workshops for teachers were based on four theoretical framework: metacognition, cognition, self-regulation, and culturally responsive teaching. Metacognition consists of the awareness of oneself as a learner, their cognitive strengths, weaknesses, and the factors in their learning performance (Brown, 1978; Flavell, 1979; Smith, 2017). Cognition is the acquisition and approach to new knowledge through strategies and mental processing (Forrest-Pressley & Waller, 1984). Self-regulation is "the involvement of the active, goal-oriented, self-control of behavior, motivation, and cognition for academic tasks by an individual student" (Pintrich, 1995, p. 5). Culturally relevant pedagogy recognizes and values students' cultural references, and incorporates the references into various aspects of learning (Ladson-Billings, 1995a).

In combination, the first three theories shaped how the teachers were trained to utilize think-aloud instruction and considerations for teachers to make as they taught students through think-aloud instruction. The fourth theory, culturally responsive teaching, is the observed pedagogy the teachers brought into their teaching. Black students are often marginalized and deprived of receiving equitable academic instruction through educational systems (Hammond, 2015; Paris, 2012), as such, the teachers in this study demonstrated an appreciation for students' cognitive patterns and incorporated those patterns into reading instruction. Culturally responsive teaching was not taught to the teachers through the workshops, but it played a role in how the teachers delivered the think-aloud instruction as some aspects (specifically communication and instruction) of culturally responsive teaching were observed in the teachers' lessons (Gay, 2018). Culturally responsive teaching became a practice and theory of interest that emerged through the

research and data analysis processes, and became an important practice to examine for this study. For this reason, culturally responsive teaching was added as a fourth theory to shape the theoretical framework of this study.

Using this theoretical framework, the aim of this study was to gain understanding from three in-service, third grade teachers and to document and observe the nuances with implementing metacognitive think-aloud instruction after participation in the think-aloud workshops. Overall, the teachers expressed a positive disposition toward the methods and content of the workshops, and reported affirmative influences on the students' reading in their respective classes. In this chapter, there is further discussion and interpretations of the findings for each research question, drawing connections between the findings and previous research, and relating the findings to the theoretical framework. This chapter will conclude with implications for practices and plans for future research.

STAR Reading Test Scores

Quantitative data from the STAR Reading test was collected and analyzed to answer the first research question. Reading Hills Elementary School used the STAR Reading test to progress monitor students' reading skills (i.e. main idea and details, compare and contrast, sequencing, and cause and effect, etc.). Collectively, all classes made significant gains on the STAR Reading test. In individual classes, the students in Craig and Elisa's classes demonstrated significant gains on the STAR test, and though Tracy's class made gains, the growth was not significant. Craig's and Tracy's students took the STAR test in September and November; whereas Elisa's class took the STAR test in September and January. Length of time between when the first test was taken to the second test could have an impact on her class' reported scores. Students who had more time

between tests could be at an advantage because they would have had more classroom reading instruction before the second test than the other classes.

Relationship of Findings to Previous Research

Overall, the students demonstrated significant growth on the STAR Reading test. These findings are support by previous literature with similar purposes. Though different assessments were used, other scholars have reach similar findings as well. (Cross & Paris, 1988; Fisher et al., 2011a; Paris & Jacobs, 1984). In the studies conducted by Cross and Paris (1988) and Fisher et al. (2011a), the researchers facilitated metacognitive instruction for elementary and middle school teachers. Once the study ended, students' reading comprehension was tested, and the students made significant gains. Additionally, in a study conducted by Wing (2017), elementary school teachers were trained how to implement metacognitive instruction via reciprocal teaching. Once the training for teachers was concluded and the students were retested, it was found that the students made significant gains on the STAR Reading test. Though reciprocal teaching was not implemented in the workshops for the present study, Craig shared he noticed his students implementing the think-aloud strategy with one another during peer help and small group work. The success of students' use of actively processing in Craig's class is supported by previous studies.

Relationship of Findings to Theoretical Framework

Increased reading comprehension as a result of direct, metacognitive-focused instruction relates back to the theoretical framework of this research: metacognition, cognition, self-regulation and culturally responsive teaching. Comprehension is an active process that requires cognitive and metacognitive behaviors, and individuals approach reading tasks with various cognitive resources (Baker and Brown, 1984). As previously mentioned in Chapter 3, the STAR

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Reading test is a computerized adaptive test (CAT), meaning questions are based on students'

answers to previous questions. For example, if a student got a question wrong, the next question

was slightly easier; if a student got a question correct, the next question was slightly more

challenging than the previous question. When the teachers' reading instruction was observed, the

teachers implemented culturally relevant education by demonstrating how to approach reading

tasks using students' preexisting cognitive behaviors and experiences. A significant part of

culturally relevant education is connecting to students' lives which has the potential to empower

students (Aronson & Laughter, 2016). Relating the active processing to the observations made

for the present study, Elisa shared that in the beginning of the study, her students did not take the

time to process what they read. However, during the second interview with Elisa, she mentioned

that she began to see her students think more critically and made attempts to use their

metacognition. She said they may not have always gotten it right, but she at least witnessed

students trying process the text.

Additionally, the teachers in this study built on the students' cognition and cultural

knowledge through direct strategy instruction, supporting the construct of students' schema

background knowledge. During the observations, all teachers incorporated communal learning

where students were given opportunities to have small group discussions. This type of student-

centered instruction is one important aspect of Culturally Responsive Teaching, as students are

able to have productive, academic-related conversations, sharing how they processing

information from text with both their peers and teacher (Gay, 2018). Consequently, between the

times the students took the first and second test, there was an increased combination of students

adding to their cognitive resources and strengthening their metacognition – their ability to reflect

on their cognitive resources and processes. On the second test, students passed a level of

difficulty they were unable to pass on the pre-test; they were able to solve problems they initially were not able to solve. Relating to self-regulation and regulating one's cognition, it appears students improved their ability to monitor their comprehension and use strategies when faced with difficulty.

In summary, the theoretical framework of this research supported the findings from research question one. After receiving an extended amount of metacognitive instruction, it is likely students' reading comprehension will improve. Though one out of the three classes did not accomplish significant growth, there was growth. Further discussion of the findings for research question two will provide further interpretations on potentially why the one class did not yield significant growth.

Changes in Teachers' Instructional Practices

An aim for the present study was to examine changes in the teachers' pedagogical teaching practices, changes in their reading instruction, and to observe if their instruction would become more metacognitive-focused following the think-aloud workshops. Overall, the teachers expressed positive dispositions towards the think-aloud methods and began to use more transparent approaches when teaching students reading comprehension strategies.

There was interest in how the teachers' pedagogical practices were influenced after the think-aloud workshops. Two sub-themes emerged from coding: pedagogical practices and positive attitudes. Overall, the teachers' ideas of think-alouds shifted from the beginning of the study to the end. Initially, when asked what teacher transparency meant to them, the teachers' responses related to classroom management and expectations. However, when asked again about teacher transparency during the second interviews, teachers related the concept to providing instruction where the teacher verbalizes their thought processes. Additionally, all of the teachers

expressed positive attitudes towards participation in the think-aloud workshops and the content they learned from the workshops, and credited students' metacognitive behaviors to the workshops. Teacher attitudes refers to teachers' dispositions, values, and beliefs; when teachers hold positive attitudes, it is often demonstrated not only in the classroom, but also in relationships with students' families, colleagues, and the community (Hallam, 2009). Appreciation and positive beliefs in students' communities is an aspect of cultural responsive teaching (Gay, 2018).

Changes in Reading Instruction

One purpose of the study was to observe how teachers' reading instruction was impacted after the think-aloud workshops. Two sub-themes emerged from coding: consistency and more strategies. Each of the teachers shared they were more consistent and desired to increase their consistency with implementing think-alouds during reading instruction. Shifts in beliefs, or dispositions, can be observed through consideration of teachers' professed beliefs (spoken words), intended beliefs (planning actions), and enacted beliefs (actions in practice) (Pratt & Martin, 2017). Additionally, from the interviews and observations, it was recognized that the teachers used more strategies as they implemented think-aloud instruction (e.g. rereading, making connections and chunking to decode). Pilonieta (2017) found in her research that once students were explicitly taught how to use a variety of reading comprehension strategies, their own knowledge and use of comprehension strategies grew. As teachers demonstrate the use of multiple strategies, it adds to students' repertoire of strategies.

Metacognitive-Focused Instruction

As a result of the think-aloud workshops, the teachers' instruction became more metacognitively focused through implementation, planning and modeling. Understanding

themselves as learners and the required complex processes of understanding text for children served as a key component for implementing more metacognitive-focused instruction. As the workshops progressed, the teachers implemented the instructional practices shared with them during the workshops. Craig shared that he planned think-aloud instruction based on assessments, Elisa used think-alouds as she saw fit, and Tracy used note from the observation debriefs to develop her lesson plans. Additionally, the teachers used various methods of modeling different reading strategies.

Relationship of Findings to Previous Research

When the workshops began, the teachers prompting students to share their thoughts with peers was observed, but teachers modeling, as proficient readers, how to actively process text was not observed. Previous, similar studies yielded similar results in how teachers' pedagogical practices shifted. Fisher et al. (2011) trained middle schools teachers how to implement think-alouds in reading. During the first observations, the teachers did not model their thinking; instead, they asked comprehension questions. However, as the professional development progressed, the teachers in the study began to view reading as an active process. When the active processes of reading is modeled to students, this approach could result in students taking ownership in their comprehension growth and independence (Fisher et al., 2011). Elisa was asked what strategies she used as a reader. As Elisa reflected on the active strategies she used as an avid reader, she began to share how as an adult, she never thought about what she does to read, she just reads. She then began to think how she could teach students who struggle to read to use similar strategies. It is uncommon and challenging for teachers to verbalize their metacognition during reading instruction (Curwen et al., 2010). As proficient readers, often

times, teachers do not know how to see text through the perspectives of their students and find it difficult to predict where the comprehension breakdown may be for students (Ness, 2016).

Each of the teachers in the present study put their own style into their think-aloud instruction and used this explicit instruction for teaching different strategies. Elisa often used the term *self-talk* to describe how she and her students used think-alouds. Mason et al (2013) stated there are internal techniques, such as talking to oneself, that can be used to self-regulate learning. Tracy used many examples and implemented *imaginative learning* when she implemented think-alouds. This approach is similar to the recommendation made by Block and Israel (2004), where they suggest that teachers encourage students to put themselves in the book as characters when implementing think-aloud instruction. Craig was observed using think-alouds many times when teaching students word attack skills – he was the only teacher to report changes in students' fluency and letter recognition – and how to self-monitor oral reading. Craig's inclusion of word attack skills was often excluded in research on metacognitive, literacy instruction (Joseph & Eveleigh, 2011; Pratt & Martin, 2017).

Within each of their methods of implementing think-aloud instruction, the teachers invited students to chime in on their teacher-led think-alouds and allowed students to share their thinking with peers. Black children tend to thrive in classrooms that are cooperative and community-oriented (Ladson-Billings, 1994; Sanacore, 2004). In her case study, Turner (2005) reports how an exemplary teacher who taught a class of predominantly Black, third grade students aimed to build a strong sense of community in her classroom. Tending to the social and literacy needs of the students, the teacher allowed students to share, read, and learn together (Turner, 2005). Similar environments were observed within Craig, Tracy and Elisa's classrooms

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as they valued students' funds of knowledge and allowed students to share those funds of knowledge with their teacher and peers.

In addition to observing more consistency with the teachers' implementation of think-aloud instruction, each of the teachers also stated they wanted to become more consistent with implementing and planning this transparent instructional strategy. Craig and Elisa shared they felt comfortable with continuing to implement think-aloud instruction; however, Tracy stated in the second interview she did not feel as comfortable. Tracy shared she wished the think-aloud workshops lasted longer, and that the researcher modeled the instructional strategy in the classroom with her students. According to Ness (2016), effective think-aloud instruction does not occur by chance but rather require diligent planning and practice. If Tracy did not feel comfortable with implementing and planning for think-aloud instruction, this potentially explains why her students did not achieve significant growth on the STAR Reading test.

Overall, the findings related to the teachers' pedagogical changes were congruent to similar, previous research (Fisher et al., 2011; Joseph & Eveleigh, 2011; Ness, 2016; Pratt & Martin, 2017; Turner, 2005). According to the findings in this study and previous research, teachers' instructional strategies are likely to become more direct and metacognitive in nature after receiving training on metacognitive think-aloud instruction. Furthermore, teachers must feel comfortable with the instructional strategy in order to successfully train students to use their metacognition.

Relationship of Findings to Theoretical Framework

Culturally responsive teaching was used as the method of delivery for teacher modeling and allowing the students to model metacognition, cognitive practices and self-regulated learning. In consideration of their students' communication patterns (producing and receiving)

and their students' desire to connect with them and their peers, the teachers in this study demonstrated the communication aspect of culturally responsive teaching through their delivery of think-aloud instruction. "The form of exchange between child and adult and the conditions in which it occurs will affect not only what is said, but how involved the child will become" (Boggs, 1985, p. 301). As teachers of Black students, classroom activities such as these promote cooperation, collaboration, and community which are prominent and rich techniques for the academic achievement of marginalized groups (Gay, 2018). There were numerous instances where participatory-interaction instruction was used (Gay, 2018), where all teachers allowed communal participation during their reading instruction for classroom discussions and devising responses to the teachers' questions. This type of instruction provided students the opportunity to collaborate with one another, and the teacher, and to build a sense of community within their classroom.

In summary, the theoretical framework in this study supported the observed and stated changes in the teachers' instructional practices. The teachers' ideas of think-aloud instruction shifted and the teachers added additional strategies to their reading instruction. Furthermore, the teachers incorporated the communication aspect of culturally responsive teaching to support students' acquisition of metacognitive behaviors.

Teachers' Perceptions of Changes in Students

The third research question sought to understand how the teachers perceived changes in students' reading behaviors. Research question three is: How are teachers' perceptions of students' changes in reading supported by students' STAR scores? Two themes emerged from the coding process: strategies and skills. Overall, the teachers shared observations of students'

increased awareness of their thinking, implementation of the think-alouds during whole group and small group settings, and improved reading comprehension.

Strategies and Skills

Strategies are the steps students took to reach comprehension. Overall, Craig and Elisa shared observations of students rereading text more often to build understanding, increases in making connections, and implementation of think-alouds to construct meaning. Students' implementation of the think-alouds occurred during both whole group and small group activities.

Skills are the reading behaviors that became automatic for the students. Teachers shared they noticed improvements in students' reading comprehension. Additionally, Craig stated he saw improvements with his students' word attack skills and overall reading fluency. The perceived changes in students' behaviors as reported by their teachers aligned with the STAR Reading test. The STAR Reading test assesses students' reading skills, such as main idea and details, comparing and contrast, sequencing, and cause and effect. Though the teachers did not specifically identify these specific reading skills, it can be inferred the students made improvements in these reading skills as well because of the growth on the STAR Reading test.

Relationship of Findings to Previous Research

Modeling is what a teacher does to show novice readers how to actively think while reading (Duffy et al., 1988). As novice readers, children are limited in their metacognitive knowledge and their regulation of cognition, but they can be taught how to increase their knowledge in both areas (Flavell, 1979). Cross and Paris (1984) observed an increase in students' awareness following their teachers' participation in professional development on explicit, metacognitive instruction. Vygotsky's (1978) research concentrated on prompting students to make connections through social and interactive modeling and mimicking for the

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ultimate goal of having students make metacognitive connections. Through imitation, students would be able to self-regulate, think metacognitively, and make meaning of text while reading on their own (Vygotsky, 1978). The more students observe the metacognitive behaviors of proficient readers and practice through social interactions, the increased chances the students will be able to perform the same behaviors independently. Costa (2001) found that social and interactive modeling is utilized by students in order for them to develop their own thinking and their own reading behaviors. Modeling must be interspersed with opportunities for student expression (Duffy et al., 1988), and through students' expression, the teachers in this study were able to observe students' implementation of think-alouds. Jackson (2016) observed increased engagement among first-grade students whose teachers implemented think-aloud instruction during science when reading science related literature. Additionally, Jackson stated the rate of students utilizing think-alouds increased throughout the daily, five-week study.

Furthermore, there have been findings of students' improved comprehension following consistent, metacognitive instruction from teachers. Metacognition is a key aspect in students' learning and academic achievement (Smith et al., 2017; Winne & Nesbit, 2010). Pilonieta (2017) reported increase knowledge and usage of comprehension strategies used by Black, urban first- and second-grade students, as well as improved reading comprehension. Additionally, think-aloud instruction can support students' fluency and reading accuracy. Kragler, Martin and Shreier (2015) demonstrated how first through third-grade students could use multiple strategies at a time, attending to both meaning and accuracy of the printed text, and accordingly, provide evidence of cognitive flexibility for readers. Pratt and Martin (2017) experienced similar results, where first-grade students demonstrated improvements in their abilities to self-monitor and self-

correct their oral reading after receiving explicit reading instruction from their teachers who were trained on think-aloud instruction.

In summary, despite the limited existing research on the implementation of think-aloud instruction for Black students, findings were congruent to previous, similar research involving students of different racial, cultural and economic backgrounds (Jackson, 2016; Kragler, Martin & Shreier, 2015; Pilonieta, 2017; Pratt & Martin, 2017). Opportunities to observe the thought processes of proficient readers and to share their mental processing with peers resulted in students' enhanced metacognitive awareness, implementation of think-alouds, and improved reading comprehension.

Relationship of Findings to Theoretical Framework

The theoretical framework in this study supported the findings related to the changes in students' reading behaviors. Metacognition and self-regulation are skills that should be taught to novice readers, and they are best learned through modeling (Duffy et al., 1988; Pintrich, 1995). When teachers ask students to think-aloud, they reinforce metacognitive processing and reading behaviors for future applications (Block & Israel, 2004; Pratt & Martin, 2017). Metacognition is knowledge of cognition. There are three types of metacognitive knowledge: *declarative* (factual information on self and the task at hand), *procedural* (knowing the steps to complete a task), and *conditional* (knowing how and when to use particular strategies) (Flavell, 1979). Attainment of metacognitive knowledge notifies learners their distinct preferred cognitive approaches to learning as well as specific self-regulated strategies to control their learning. Craig shared that since he modeled making mistakes while reading and using strategies to overcome the obstacles allowed the students to feel more comfortable making mistakes as well. Additionally, Elisa made gains in her declarative knowledge as indicated on the MAI, and she also shared revelation as

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she realized it was initially difficult for her to identify the metacognitive and self-regulated

behaviors she used as a reader. Once she was able to identify them, she realized those are the

strategies she should teach her students who struggle in reading as well. The realizations and

metacognitive growth of the teachers consequently further develops students' overall

metacognitive knowledge.

As previously mentioned, when the teachers incorporated the communication aspect of

culturally responsive teaching, students were provided opportunities to express and hone in on

their metacognitive knowledge through interactive think-alouds with their teacher and peers.

Blacks exhibit preferences for collaboration and "group-ness" when learning because of their

values towards social interactions (Gay, 2018). As agents of their learning in a comfortable

learning environment, the teachers reported that students displayed increased confidence in how

they processed information, understanding there are various strategies to use and that learning is

indeed a process.

In summary, the findings in Chapter 4 presented how teachers perceived the changes in

students' reading behaviors after the teachers' implementation of think-aloud instruction. Within

all of the classes, students demonstrated changes in both their reading strategies and reading

skills. The previous, related research and the theoretical framework of this research supported

these findings.

Implications for Practice

The findings from this study yielded implications for education systems. As previously

mentioned in this dissertation, there is limited research on the implementation of teacher-led

think-aloud instruction for Black students at Title 1 schools. When verbalized by their teachers,

students are able to pick up on methods of mentally processing texts through metacognitive

awareness and self-regulation. Even further, when teachers understand the nuances of their students' culture, language, learning styles, and communication styles and take those nuances into consideration (through culturally responsive teaching) they can mimic the same cognitive approaches as their students through their think-aloud instruction. In culturally relevant education, the goal is for students to be able to see themselves in the curriculum; another aspect of culturally responsive teaching. Therefore, the imitation of students' cognitive approaches through think-aloud instruction allows students to see themselves in their teachers' instruction and to begin to learn and mimic the same self-regulated behaviors and mental discourses presented as they approach text and solve problems as they read independently. The think-aloud instructional practice is most successful with the four critical aspects of culturally responsive teaching: care, communication, curriculum and instruction.

Furthermore, there are implications for conducting think-aloud workshops to not only teach the concepts of metacognitive teaching to teachers (if they are unknown), but to also help teachers increase their self-efficacy to provide such an explicit, transparent, and challenging instructional strategy. Teachers often forgot what it feels like to struggle while reading because the text they provide students is easy for them. Teachers' comprehension is automated, and they often do not have to think about the strategies they use (Ness, 2015). The challenging, nonsense passage "Blonke" (Beers, 2003) was used as a reminder for the teachers in this study, and additionally, it was often brought up during the observational debriefs by the researcher to help the teachers reflect back on how it felt struggling to comprehend. Professional development trainings and workshops have varying impacts on teachers' self-efficacy (Wissink, 2019). Factors such as the content of the workshops and the delivery of the workshops can play a role in teachers' perceived and actual competency post-workshops.

Overall, it is important for teachers to incorporate aspects of students' culture into reading instruction. Drawing from students' culture allows for the enhancement of students' academic growth and achievement. Furthermore, professional development workshops for in-service teachers are important to support teachers' implementation of think-alouds in the classroom. Whether or not teachers are aware of the explicit instructional practice, or require additional scaffolding to improve their craft of think-aloud instruction, support through professional development is needed to assist teachers in helping their students become independent, metacognitive thinkers while reading.

Future Research

Several ideas for future research emerged while planning, executing and reflecting back on this study. First, not only is there limited research on the implementation of think-aloud instruction for predominantly Black students of low socioeconomic statuses, but there is also limited research on the immersion of think-aloud instruction and culturally responsive teaching. The researcher plans to conduct and publish research and practitioner literature on how teachers can use of think-aloud instruction through culturally responsive teaching.

Another possible direction this work could take is to study effects of a longitudinal study. Tracy shared she would have liked the workshops to last longer, and for her and the researcher to co-teach while modeling mental discourses for students. In addition to studying in-service teachers' instruction, a longitudinal study with undergraduate, pre-service teachers could be conducted; where the researcher would introduce the concept during a methods course, and follow the students' use of the strategy from student teaching to their first year of in-service teaching.

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Another approach to expand this research is through a quasi-experimental study. The main differences from this present study would be to have a control group, a treatment group, and a larger sample size. The groups would either be the same grade level or a mixture of upper grade levels. A quasi-experimental study would provide the researcher and readers side-by-side comparisons of students' metacognitive awareness and reading comprehension in both treatment and control groups – whereas the treatment group would receive an extensive amount of metacognitive-focused think-aloud instruction from their teachers.

Finally, an additional direction this research could take to is seek more understanding of this instructional practice through Black students' perspectives. In addition to collecting qualitative data (i.e. interviews and observations) from teachers, this proposed study would seek to collect qualitative data (i.e. verbal assessments and interviews) and quantitative data (i.e. metacognitive and reading assessments) from the students.

All in all, there are several routes that can be taken to expand the research of think-aloud instruction. Within the ideas presented above, there would be an inclusion of culturally responsive teaching in the workshops for teachers where teachers would be encouraged to deconstruct their biases. Also, teachers would strengthen their understandings of their students' community, cultural background and experiences, and forms of communication. Finally, teachers would be provided various culturally responsive resources (i.e. children's literature with more ethnically diverse protagonists)

Overall, the hope is that the proposed ideas for further research may be used as guides for in-service and pre-service teachers on how to be more transparent in reading instruction through the cognitive behaviors of students. Further, there is a demand for school administrators, in-service teachers, and other stakeholders to tear down the curriculums in place that do not offer

equitable, valuable, and relatable education for ethnically diverse students, and to execute the use of metacognitive-focused, culturally responsive instructional practices.

Conclusion

In conclusion, the findings from this study warrant further research on think-aloud instruction with the immersion of culturally responsive teaching. There is volume when teachers are able to coherently verbalize their mental discourses and thought processing while constructing meaning from a text all while teaching to students as a whole – understanding and incorporating the students' communication styles, cultural frames of references, and cognitive processing. Tracy, Elisa and Craig provided valuable insight on the use of these instructional practices, and it is with hope they continue to use the practices and share them with fellow teacher colleagues. Further research will extend on various aspects of this study, and will make significant contributions to the educational research community.

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APPENDIX A

INTERVIEW PROTOCOL

Interview Questions

What the researcher will say to each teacher before the interview: *Thank you so much for your participation in this interview and study. I would like to ask a few demographic questions and reflective questions about your instructional ideas and practices. The interview should last for about 30-40 minutes. If at any time you need to take a break, or if you would like me to turn off the recorder, please let me know. Before getting started, do you have any questions for me? As a reminder, your identity will **not** be disclosed in this study. Let's get started.*

First Interview

1. In terms of strategy instruction, what does teacher transparency mean to you?

2. What do you know about think-aloud instruction?

3. Have you used teacher-led think-aloud instruction before? If so, how was that experience? Do you still use it?

4. What questions do you have about think-aloud instruction?

5. What are some self-regulation and reading comprehension strategies you use as a learner?

6. What do you hope to gain from this professional development?

7. What are your areas of strength when teaching literacy? What are your areas of improvement?

8. How long have you been teaching?

9. What is your race?

10. What is your highest level of education?

11. What is your age?

12. Where do you see yourself career-wise 5 years from now? 10 years from now?

13. Is there anything else you would like to share?

Second

1. What are your thoughts about think-aloud instruction?

2. Share your think-aloud process. What worked well? What did not work well?

3. What are some self-regulation and reading comprehension strategies you use as a learner?

4. What were your main challenges? What were your successes?

5. What changes do you plan to make in regards to think-aloud instruction?

6. How prepared do you feel to continue using think-aloud instruction in the future?

7. What changes, if any, have you noticed from your students' reading comprehension and strategy use?

8. At the pre-interview, you stated you hope to gain XYZ from the professional development. Was that accomplished?

9. What was your biggest takeaway from this professional development?

10. Is there anything else you would like to share?

APPENDIX B

OBSERVATION PROTOCOL CHECKLIST

Date: _____ Time: _____
Pre-service Teacher: _____
Lesson topic: _____ Literature used: _____

Appendix C: Classroom Observation Protocol Checklist

Researcher will make a tally mark for each time she observes a teacher using a cue phrase to model metacognitive processing.

Self-Regulation Strategies	Number of Times Prompting of Strategy Use was Observed	Cue Phrases	Other Examples heard
Predicting		I predict… In the next part, I think… I think this…	
Questioning		Why did/didn't… What did… How did/come… Where was… Should there…	
Visualizing		I see… I picture… I can see/visualize…	
Clarifying		I got confused when… I'm not sure of… I'm not sure why… I didn't expect…	
Monitoring		How well do I understand… Do I know… I am going to reread…	
Reflecting		Next time, I think I'll… Maybe next time I should… I realized that… I wonder if…	
Making Connections • Person to text • Text to text • Text to world			

Other			

Total times strategy prompting was used: ☐

Notes: _____
_____
_____
_____
_____
_____

APPENDIX C

PAGE FROM FIELD JOURNAL

September 25, 2019

It went well! Training started a little late as teachers got the students situated for dismissal. I felt a little rushed, and like I did not explain terms as clearly as I could have.

Teachers asked great clarification questions and seemed very intrigued by the information I shared. All three teachers were in attendance. Earlier today, teachers had a PLC meeting with the academic coaches. I am aware that today has been a long day for the teachers with minimal downtime.

APPENDIX D

METACOGNITIVE AWARENESS INVENTORY (MAI)

Metacognitive Awareness Inventory (MAI)

Think of yourself as a **learner**. Read each statement carefully. Consider if the statement is true or false as it generally applies to you when you are in the role of a learner (student, attending classes, university etc.) Check (✓) True or False as appropriate. When finished all statements, apply your responses to the Scoring Guide.

		True	False
1.	I ask myself periodically if I am meeting my goals.		
2.	I consider several alternatives to a problem before I answer.		
3.	I try to use strategies that have worked in the past.		
4.	I pace myself while learning in order to have enough time.		
5.	I understand my intellectual strengths and weaknesses.		
6.	I think about what I really need to learn before I begin a task		
7.	I know how well I did once I finish a test.		
8.	I set specific goals before I begin a task.		
9.	I slow down when I encounter important information.		
10.	I know what kind of information is most important to learn.		
11.	I ask myself if I have considered all options when solving a problem.		
12.	I am good at organizing information.		
13.	I consciously focus my attention on important information.		
14.	I have a specific purpose for each strategy I use.		
15.	I learn best when I know something about the topic.		
16.	I know what the teacher expects me to learn.		
17.	I am good at remembering information.		
18.	I use different learning strategies depending on the situation.		
19.	I ask myself if there was an easier way to do things after I finish a task.		
20.	I have control over how well I learn.		
21.	I periodically review to help me understand important relationships.		
22.	I ask myself questions about the material before I begin.		
23.	I think of several ways to solve a problem and choose the best one.		
24.	I summarize what I've learned after I finish.		

	True	False
25. I ask others for help when I don't understand something.		
26. I can motivate myself to learn when I need to		
27. I am aware of what strategies I use when I study.		
28. I find myself analyzing the usefulness of strategies while I study.		
29. I use my intellectual strengths to compensate for my weaknesses.		
30. I focus on the meaning and significance of new information.		
31. I create my own examples to make information more meaningful.		
32. I am a good judge of how well I understand something.		
33. I find myself using helpful learning strategies automatically.		
34. I find myself pausing regularly to check my comprehension.		
35. I know when each strategy I use will be most effective.		
36. I ask myself how well I accomplish my goals once I'm finished.		
37. I draw pictures or diagrams to help me understand while learning.		
38. I ask myself if I have considered all options after I solve a problem.		
39. I try to translate new information into my own words.		
40. I change strategies when I fail to understand.		
41. I use the organizational structure of the text to help me learn.		
42. I read instructions carefully before I begin a task.		
43. I ask myself if what I'm reading is related to what I already know.		
44. I reevaluate my assumptions when I get confused.		
45. I organize my time to best accomplish my goals.		
46. I learn more when I am interested in the topic.		
47. I try to break studying down into smaller steps.		
48. I focus on overall meaning rather than specifics.		
49. I ask myself questions about how well I am doing while I am learning something new.		
50. I ask myself if I learned as much as I could have once I finish a task.		
51. I stop and go back over new information that is not clear.		
52. I stop and reread when I get confused.		

This survey and scoring guide are attributed to Schraw, G. & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19*, 460-475.

Metacognitive Awareness Inventory (MAI) Scoring Guide

Directions
For each **True**, give yourself **1 point** in the Score column.
For each **False**, give yourself **0 points** in the Score column.
Total the score of each category and place in box. **Read** the descriptions relating to each section.

KNOWLEDGE ABOUT COGNITION

DECLARATIVE KNOWLEDGE
- The factual knowledge the learner needs before being able to process or use critical thinking related to the topic
- Knowing *about, what, or that*
- Knowledge of one's skills, intellectual resources, and abilities as a learner
- Students can obtain knowledge through presentations, demonstrations, discussions

PROCEDURAL KNOWLEDGE
- The application of knowledge for the purposes of completing a procedure or process
- Knowledge about *how* to implement learning procedures (e.g., strategies)
- Requires students know the process as well as when to apply process in various situations
- Students can obtain knowledge through discovery, cooperative learning, and problem solving

CONDITIONAL KNOWLEDGE
- The determination under what circumstances specific processes or skills should transfer
- Knowledge about *when* and *why* to use learning procedures
- Application of declarative and procedural knowledge with certain conditions presented
- Students can obtain knowledge through simulation

DECLARATIVE KNOWLEDGE	SCORE
5. I understand my intellectual strengths and weaknesses.	
10. I know what kind of information is most important to learn.	
12. I am good at organizing information.	
16. I know what the teacher expects me to learn.	
17. I am good at remembering information.	
20. I have control over how well I learn.	
32. I am a good judge of how well I understand something.	
46. I learn more when I am interested in the topic.	
TOTAL	8

PROCEDURAL KNOWLEDGE	SCORE
3. I try to use strategies that have worked in the past.	
14. I have a specific purpose for each strategy I use.	
27. I am aware of what strategies I use when I study.	
33. I find myself using helpful learning strategies automatically.	
TOTAL	4

CONDITIONAL KNOWLEDGE	SCORE
15. I learn best when I know something about the topic.	
18. I use different learning strategies depending on the situation.	
26. I can motivate myself to learn when I need to.	
29. I use my intellectual strengths to compensate for my weaknesses.	
35. I know when each strategy I use will be most effective.	
TOTAL	5

This survey and scoring guide are attributed to Schraw, G. & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19*, 460-475.

REGULATION OF COGNITION

PLANNING	PLANNING	SCORE
• Planning, goal setting, and allocating resources *prior* to learning	4. I pace myself while learning in order to have enough time.	
	6. I think about what I really need to learn before I begin a task.	
INFORMATION MANAGEMENT STRATEGIES	8. I set specific goals before I begin a task.	
• Skills and strategy sequences used to process information more efficiently (e.g., organizing, elaborating, summarizing, selective focusing)	22. I ask myself questions about the material before I begin.	
	23. I think of several ways to solve a problem and choose the best one.	
COMPREHENSION MONITORING	42. I read instructions carefully before I begin a task.	
• Assessment of one's learning or strategy use	45. I organize my time to best accomplish my goals.	
DEBUGGING STRATEGIES		
• Strategies to correct comprehension and performance errors		
EVALUATION		
• Analysis of performance and strategy effectiveness after a learning episode	**TOTAL**	7

INFORMATION MANAGEMENT STRATEGIES	SCORE	COMPREHENSION MONITORING	SCORE
9. I slow down when I encounter important information.		1. I ask myself periodically if I am meeting my goals.	
13. I consciously focus my attention on important information.		2. I consider several alternatives to a problem before I answer.	
30. I focus on the meaning and significance of new information.		11. I ask myself if I have considered all options when solving a problem.	
31. I create my own examples to make information more meaningful.		21. I periodically review to help me understand important relationships.	
37. I draw pictures or diagrams to help me understand while learning.		28. I find myself analyzing the usefulness of strategies while I study.	
39. I try to translate new information into my own words.		34. I find myself pausing regularly to check my comprehension.	
41. I use the organizational structure of the text to help me learn		49. I ask myself questions about how well I am doing while learning something new.	
43. I ask myself if what I'm reading is related to what I already know.			
47. I try to break studying down into smaller steps.			
48. I focus on overall meaning rather than specifics.			
TOTAL	10	**TOTAL**	7

DEBUGGING STRATEGIES	SCORE	EVALUATION	SCORE
25. I ask others for help when I don't understand something.		7. I know how well I did once I finish a test.	
40. I change strategies when I fail to understand.		19. I ask myself if there was an easier way to do things after I finish a task.	
44. I re-evaluate my assumptions when I get confused.		24. I summarize what I've learned after I finish.	
51. I stop and go back over new information that is not clear.		36. I ask myself how well I accomplish my goals once I'm finished.	
52. I stop and reread when I get confused.		38. I ask myself if I have considered all options after I solve a problem.	
		50. I ask myself if I learned as much as I could have once I finish a task.	
TOTAL	5	**TOTAL**	6

METACOGNITIVE AWARENESS INVENTORY (MAI) RESULTS

What is your first and last name?	I ask myself periodically if I am meeting my goals.	I consider several alternatives to a problem before I...	I try to use strategies that have worked in the past.	I pace myself while learning in order to have...	I understand my intellectual strengths and...	I think about what I really need to learn before I...	I know how well I did once I finish a test.	I set specific goals before I begin a task.	I slow down when I encounter important information.	I know what kind of information is most important.	I ask myself if I have considered all options when solving a...	I am good at organizing information.
Craig (1st)	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE
Craig (2nd)	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE
Elisa (1st)	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	FALSE	TRUE	TRUE
Elisa (2nd)	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE
										CHANGE		CHANGE
Tracy (1st)	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
Tracy (2nd)	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
				CHANGE	CHANGE						CHANGE	

I consciously focus my attention on important	I have a specific purpose for each strategy I use.	I learn best when I know something about the topic.	I know what the teacher expects me to learn.	I am good at remember information.	I use different learning strategies depending on the	I ask myself if there was an easier way to do things after I finish a	I have control over how well I learn.	I periodically review to help me understand important.	I ask myself questions about the material before I begin.	I think of several ways to solve a problem and choose	I summarize what I've learned after I finish.	I ask others for help when I don't understand something.
TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
				CHANGE								
FALSE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
CHANGE				CHANGE			CHANGE					
TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
	CHANGE								CHANGE			

I can motivate myself to learn when I need to.	I am aware of what strategies I use when I study.	I find myself analyzing the usefulness of	I use my intellectual strengths to compensate for my	I focus on the meaning and significance of new	I create my own examples to make information more	I am a good judge of how well I understand something.	I find myself using helpful learning strategies	I find myself pausing regularly to check my comprehension effective.	I know when each strategy I used will be most effective.	I ask myself how well I accomplish my goals once I'm finished.	I draw pictures or diagrams to help me understand while	I ask myself if I have considered all options after I solve a problem.
TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
										CHANGE	CHANGE	
FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	FALSE	TRUE	TRUE	TRUE
TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
CHANGE					CHANGE		CHANGE		CHANGE			
TRUE	TRUE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE	FALSE	FALSE
TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
			CHANGE					CHANGE	CHANGE		CHANGE	CHANGE

Statement									
I try to translate new information into my own words.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I change strategies when I fail to understand.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I use the organizational structure of the text to help me.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I read instructions carefully before I begin a task.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I ask myself if what I'm reading is related to what I already.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I reevaluate my assumptions when I get confused.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I organize my time to best accomplish my goals.	FALSE	FALSE		FALSE	TRUE	CHANGE	TRUE	TRUE	
I learn more when I am interested in the topic.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I try to break studying down into smaller steps.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I focus on overall meaning rather than specifics.	FALSE	TRUE	CHANGE	TRUE	FALSE	CHANGE	FALSE	TRUE	CHANGE
I ask myself questions about how well I am doing while I am.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	
I ask myself if I learned as much as I could have once I finish a.	FALSE	TRUE	CHANGE	FALSE	TRUE	CHANGE	FALSE	TRUE	CHANGE
I stop and go back over new information that is not clear.	TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	

I stop and reread when I get confused.

TRUE	TRUE		TRUE	TRUE		TRUE	TRUE	

APPENDIX F

MID-TRAINING SURVEY

Mid-Training Survey

1. What are your thoughts on the content from the workshops so far?

2. Before the workshops, have you made your metacognition transparent through think-aloud instruction during reading lessons? Explain.

3. Since the workshops began, have you incorporated metacognitive, think-aloud instruction?

    a. If so, how comfortable do you feel with incorporating inner, mental discourse and think-aloud instruction during reading lessons?

    b. If not, why not?

4. What changes have you noticed in your students since the workshops began? (Changes may include students' reading performance, responses, academic discourse, and behavior during reading instruction.)

    a. Do you credit the changes to the instructional practices you have learned in the workshops? If not, what do you think has caused the changes?

APPENDIX G

CODEBOOK

Code Abbreviation	Code Name	Code Description	Sub-question
R#2: (A) Pedagogical practices, (B) Reading instruction, and (C)Metacognitive-focused instruction			
Pedag	Pedagogical Practices	Changes in teachers' overall pedagogical practices	A
RI_Consistent	Reading Instruction_Consistency	Teacher shares they are more consistent with think-alouds	B
RI_MoreStrat	Reading Instruction_More Strategies	Teacher shares they use more strategies than before	B
PositAtt	Positive Attitude	Teacher has positive attitude towards think-alouds	A
Implem	Implementation	Teacher implements metacognitive think-aloud instruction and/or the application	C
Plan	Plan	Teacher includes think-alouds in lesson plans; plans ahead to use think-alouds	C
FutureUse	Future Use	Teachers shares plans to continue using think alouds	End of case
ModelStrat	Model Strategies	Teachers model strategies they use as learners or share the strategies they modeled	C
Teacher_Comf	Teacher Comfort	Teacher reported feeling comfortable with using think alouds.	End of case
R#3: Reading behaviors and attitudes towards reading			
Student_Conf	Student_Confidence	Teacher shared changes in students' confidence level	
Student_Fluen	Student_Fluency	Teacher shared changes in students' reading fluency	Skills
Student_Comp	Student_Comprehension	Teacher shared changes in students' reading comprehension	Skills
Student_Implem	Student_Implementation	Teacher reported students' use of think-alouds	Strategies
Student_Aware	Student_Awareness/Metacog	Teacher reported students' use of awareness/metacognition	Strategies
Student_Vocab	Student_Vocabulary	Teacher reported students' improvement in vocabulary	Skills
Student_WordAtt	Student_WordAttack	Teacher reported students' improved attempted decoding unfamiliar words	Strategies
Students	Students	Teacher reports on the influence think-alouds had on students in general	
Other codes			
Challenges	Challenges	Challenges teacher faces with think-alouds	
Successes	Successes	Successes from implementing think-alouds	
TeachTrans_Before	Teacher Transcparency_Before	How teachers define "teacher transparency" before workshop	

TeachTrans_After	Teacher Transparency_After	How teachers define "teacher transparency" after workshop	
TeachTrans_Prev	Teacher Transparency_Previous Knowledge	Teacher relates understanding of teacher transparency to prior knowledge and experience	
TakeAway	Take-Away	Teacher reported take-aways	

APPENDIX H

ATLAS.TI CODE ANALYZATION

	Craig 📄2 😊44	Elisa 📄2 😊29	Tracy 📄2 😊24	Totals
◇ RQ2-Metacog-Focused Instr ◇3 😊48	18	13	15	46
◇ RQ2-Pedagogical Prac ◇2 😊31	12	13	6	31
◇ RQ2-Reading Instruction ◇2 😊9	3		5	8
◇ RQ3-Student Skills ◇4 😊30	14	8	4	26
◇ RQ3-Student Strategies ◇4 😊37	21	7	4	32
Totals	68	41	34	143

APPENDIX I

INFORMED CONSENT FORM

NOTE: DO NOT SIGN THIS DOCUMENT UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.

AUBURN UNIVERSITY

COLLEGE OF EDUCATION
CURRICULUM & TEACHING

INFORMED CONSENT
for a Research Study Entitled
"Making Teacher Thinking Transparent: An Examination of Teacher Think-Aloud Instruction"

You are invited to participate in a research study to improve students' reading comprehension and metacognitive awareness through metacognitive teacher training in self-regulation using think-aloud instructional strategies. The study will be conducted by Sarah Woods, Auburn University Graduate Student, under the direction of Dr. Victoria Cardullo, Associate Professor of Curriculum and Teachin in the Auburn University Department of Curriculum and Teaching. You were selected as a possible participant because you are an in-service, 3rd – 5th grade reading teacher with the Macon County School District.

What will be involved if you participate? If you decide to participate in this research study, you wil be asked to attend training on using think-aloud instructional strategy and implement think-alouds during reading instruction. The anticipated time commitment will be approximately <u>12-15 hours ove</u> <u>11 weeks</u>. This includes trainings, observations, interviews and taking a survey. You will be asked to take the Metacognitive Awareness Inventory (MAI) survey. The trainings will include group discussions, evaluating instruction and collaborative lesson planning. The researcher will make two classroom observations and share observations. Additionally, the researcher will interview all participating teachers one-on-one at the beginning and end of the training on your knowledge and thoughts of the metacognitive professional development training. The interviews will be audio recorded. Within two weeks following the individual interviews, the researcher will transcribe the audio recordings of the interviews and will destroy the recordings immediately once they are transcribed.

STAR Reading and/or Reading Street assessment scores will be collected from participating teachers classes.

Are there any risks or discomforts? The only risk is breach of confidentiality. There are precautions in place to avoid this risk. All data collected will be kept confidential and in a secure location.

Are there any benefits to yourself or others? If you participate in this study, you can expect to become more aware of metacognitive instructional strategies. Additionally, the students will learn best practices to use when participating in reading tasks, and the intention is students will independently use the strategies and become better readers.

Are there any costs? If you decide to participate, there will be no cost to you.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as lon as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of Curriculum and Teaching.

5040 HALEY CENTER

AUBURN, AL 36849-5212

TELEPHONE:

334-844-4434

FAX:

334-844-6789

www.auburn.edu

Participant's initials _____

The Auburn University Institutional Review Board has approved this Document for use from 09/04/2019 to ----------
Protocol # 19-181 EP 1905

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AUBURN
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CURRICULUM & TEACHING

Your privacy will be protected. Any information obtained in connection with this study will remain confidential. Information obtained through your participation may be published in a professional journal or presented at a conference, and used for dissertation defense.

If you have questions about this study, please ask them now *or* contact Sarah Woods at 478-538-0271 or via email at sbw0018@auburn.edu. You may also contact Dr. Victoria Cardullo at vmc0004@auburn.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334)-844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

_____   _____   _____   _____
Participant's signature   Date   Investigator obtaining consent   Date

_____   _____
Printed Name   Printed Name

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