AN INVESTIGATION INTO FACTORS AFFECTING TEACHERS' IMPLEMENTATION

OF A READING COMPREHENSION STRATEGY

A Dissertation

by

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ABSTRACT

Professional development (PD) is defined as ongoing learning opportunities available to educators and is known to be one of the most important tools in improving the effectiveness of teachers and teaching practices. Results from state and national reading assessments indicate that reading achievement among grade 4 and grade 8 students has continued on a downward trajectory for several decades. In knowing that making meaning of the text is the goal of reading, teachers providing students effective instruction in reading comprehension is essential. Intentional instruction in reading comprehension begins with teachers receiving effective PD leading to growth in teacher knowledge and practice, resulting in student gains in reading comprehension. However, research has shown that many PD initiatives fail to achieve changes in teachers' practices, which leads one to consider what occurs throughout PD that may encourage or discourage teachers from being open to change. Factors such as a teacher's mindset, zone of proximal development, self-perception of abilities to teach reading comprehension, attitudes and beliefs related to PD, and feelings about pedagogical change should be considered when teachers attend a PD event. This research aims to identify the variables which may foster or hinder a teacher's ability to implement evidence-based practices learned at a reading comprehension professional development event.

DEDICATION

This dissertation is dedicated to my loyal and dependable husband, Eric, who has always supported my goals, and to my wonderful sons, Logan, Dax, and Tate, who encouraged me to persevere on the tough days and celebrated my accomplishments along the way. I would also like to dedicate this dissertation to my parents, Karen and Mike Pevoto, who have been my constant support from the very beginning, taught me the value of education, and continue to encourage me in all my endeavors.

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1. INTRODUCTION

1.1. Background

One of ten basic tenets put forward by the International Literacy Association (2018) is that the right to read is a basic fundamental right. For many students, efficacious reading comprehension instruction requires the explicit teaching of reading comprehension strategies, such as main idea and summarization, in order to utilize the skills needed for deep comprehension and to prevent later reading difficulties (International Literacy Association, 2018; National Institute of Child Health and Human Development, 2000; Shanahan et al. 2010; Wijekumar et al., 2019; Williams et al., 2016).

Professional development (PD) is known to be one of the most important mediators in the effectiveness of teachers and teaching practices and in improving student achievement (Desimone et al., 2005; Desimone et al., 2007). In designing PD for teachers, consideration should be given to the five-feature conceptual framework for best practices of teacher training outlined by Desimone (2009): (1) content focus, (2) active learning, (3) coherence, (4) sustained duration, and (5) collective participation. One method of incorporating Desimone's (2009) framework is through practice-based professional development (Ball & Cohen, 1999). Practice-based professional development (PBPD) is a type of PD which emphasizes the development of deeper understandings related to effective instructional practice (Harris et al., 2012). PBPD is distinguished by its shift from simply delivering knowledge to focusing on opportunities for practice during PD (Ball & Cohen, 1999; McKeown et al., 2014). PBPD offers teachers the opportunity to reflect on their own and others' teaching practices before taking strategies learned back to the classroom (Ball & Cohen, 1999).

PBPD is utilized by Wijekumar and colleagues as their structure for PD when presenting the Knowledge Acquisition and Transformation (KAT) framework to teachers (Wijekumar et al. 2014, 2017, 2018). The KAT framework is undergirded by Meyer's Text Structure Framework (1975) and Kintsch's Construction-Integration Model (1988, 1998, 2004) in which readers extract textual information from the text base and generate a situation model. Through this process, readers are able to discover relationships between sentences in texts while also investigating prior knowledge and the situational model in order to make meaning of text (Wijekumar et al., 2021). The KAT Framework provides direct and explicit text structure-based reading comprehension instruction for students. KAT guides students in using the top-level structure of a text to generate the main idea, summarize the text, and extrapolate inferences.

As previously noted, research has shown that PD is one of the most productive and effective ways to improve teaching practices. However, studies have also shown that PD efforts often fail to achieve changes in teachers' practices (Darling-Hammond et al., 2017). Rubie-Davies and colleagues (2015) discovered that teachers with high expectations of themselves and their students result in higher student learning outcomes. As a result, a teacher's mindset while learning new strategies has a direct connection to the instruction delivered in the classroom. A finding by Strosher (2003) related to teachers' years of experience and higher likelihood of exhibiting a fixed mindset the longer in-service has ignited my interest in learning more about how a teacher's prior experiences may be related to their mindset and other factors (e.g., beliefs and attitudes, self-perception, openness to change, and zone of proximal development). It is through understanding the impact of a teacher's zone of proximal development (TZPD), PD

trainers can be better prepared to create meaningful learning opportunities which maximize the tools and strategies available to educators, thus further improving student learning outcomes.

Finally, it is important to understand that teacher talk plays a significant role in the delivery of classroom instruction. Goodwin et al. (2021) found that teacher talk matters for upper elementary students; more specifically, teacher explanations and teacher questioning showed evidence of improving reading comprehension and performance. The teacher's role, as well as talk used during KAT instruction, is critical for making meaning to promote the generation of a coherent memory of what is being read. Through an exploration of what type of teacher talk teachers consistently use at months beyond PD (MBPD) and years beyond PD (YBPD) when delivering the KAT strategy (e.g., questioning, academic language, components of text structure) will assist future PD trainers in how to meet the needs of teachers at all professional development stages.

1.2. Statement of the Problem and Purpose of the Research

Reading comprehension and the teaching of it are multifaceted, and research has established that students benefit from explicitly taught reading comprehension instruction (Beerwinkle et al., 2018; NRP, 2000; Shanahan et al., 2010; Wijekumar et al., 2019). Results from the National Assessment of Educational Progress (NAEP, 2019, 2022) indicated that reading achievement among grade 4 and grade 8 students has continued on a downward trajectory. Failing to present students with explicit instruction pertaining to reading comprehension strategies early in their academic careers may have negative consequences that extend beyond the elementary school years (Ness, 2011; Shanahan, 2020).

One established solution to this problem is effective educator PD, which aims to improve teacher knowledge of evidence-based practices related to reading comprehension and an improvement in student outcomes (Desimone, 2009; Hudson et al., 2021; Loucks-Horsley et al., 2010). PD using the KAT framework has been shown to be a successful tool in reversing the decades-long downward trend in reading achievement (NAEP, 2019, 2022; Wijekumar et al., 2012, 2013, 2014). Given the findings related to mindset (Dweck, 2006; Yilmaz, 2022) and its impact on how a teacher might receive and act upon professional development, the aim in the present study is to examine the mindset of teachers attending a reading comprehension PD and how their years of experience, beliefs and attitudes, openness or reluctance to pedagogical change, and zone of proximal development impact a teacher's mindset (Clarke & Hollingsworth, 2002; Desimone, 2009; Dweck, 2006; Elhusain & Khojah, 2020; Kern & Graber, 2020; Ketelhut, 2020; Kuusisaari, 2014; Maskit, 2011; McCullagh, 2012; Quirk et al., 2010; Shabani et al., 2020; Wennergren, 2016; Warford, 2011; Yilmaz, 2022). Additionally, an investigation into the classroom talk used while delivering the KAT framework to 4th and 5th grade students will increase an understanding of the impact of language used in instruction (Goodwin et al., 2021).

1.3. Significance of the Research

The objectives of this dissertation are both theoretical and practical in nature. From a theoretical perspective, the studies will add to our knowledge of the information learned from previous research related to reading comprehension, professional development, mindset, teacher's zone of proximal development, and other possible factors impacting teachers as they attend and implement strategies learned at a PD. Practically, by investigating teachers' mindsets and attitudes during a reading comprehension professional development event and spending time

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observing the classroom talk of three teachers at months beyond PD and years beyond PD, I hoped to uncover the factors that may affect how teachers' differing mindsets and feelings influence their engagement in such PD events. Uncovering factors that may affect implementation of and fidelity to evidence-based reading comprehension practices learned at PD may help to move the field forward when planning and considering future PD events for educators. Furthermore, this study also seeks to fill a gap in the literature pertaining to the relationships between teacher PD and factors affecting a teacher's mindset (i.e., beliefs, attitudes, feelings about change, and factors related to a teacher's zone of proximal development).

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2. THE EFFECT OF A TEACHER'S MINDSET ON THE CASCADING ZONES OF PROXIMAL DEVELOPMENT: A SYSTEMATIC REVIEW

The early 20th-century work of psychologist Lev Vygotsky continues to provide insights into how learning is optimized for both students and educators (Shabani et al., 2010). Vygotsky claimed that static measures used to assess mental functioning do not give an accurate account of what is possible for individuals through collaboration with more knowledgeable others (Kuusisaari, 2014; Shabani et al., 2011). Vygotsky's sociocultural theory of human learning describes learning as a social process and the origination of human intelligence in society or culture (Elhussain, 2020; Vygotsky, 1978). Vygotsky (1962) asserted that the social and cultural context of development cannot be separated. Therefore, Vygotsky's sociocultural theory of mind attempts to explain the processes through which learning and development occur (Shabani et al., 2010). Vygotsky postulated the idea of learning as a "future-in-the-making" whereby development is perpetuated by socially mediated help from an expert other, and a recognition of the learner's background is valued as next levels of cognitive capacity are considered (Warford, 2011, p. 255). A core wisdom of a Vygotskyan approach is the idea that learning leads to development through interactions with others followed by integration into the individual's mental structure (Vygotsky, 1978; Warford, 2011).

2.1. Rationale for the Study

The zone of proximal development is important in both education and psychology. By understanding how ZPD and a teacher's ZPD (TZPD) function, teachers and professional development (PD) trainers can be better prepared to create meaningful learning opportunities which maximize the tools and strategies available to educators, thus further improving student

learning outcomes. Through understanding the impact of an individual's ZPD, instructional coaches and PD instructors (i.e., more knowledgeable others) may be able to increase or decrease the level of support needed in order to arrive at independence and a newly acquired ZPD, thereby encouraging continued learning. As Murphy et al. (2015) suggested, social interactions which promote reflection should be used as a tool for promoting growth and transformation of an educator's knowledge and ability.

The current study is of interest due to the many factors that should be considered when preparing for a PD event with teachers. The information gleaned through this systematic review will be useful in better understanding how to create the most meaningful and intentional PD in which teachers' needs are scaffolded in order to provide necessary supports. The cascading zones of proximal development help make sense of the diverse needs of teachers so they can be adequately addressed.

2.2. Literature Review

2.2.1. Zone of Proximal Development

A tenet of Vygotsky's sociocultural theory is the zone of proximal development (ZPD), which is used as a measure of the distance between what a learner is able to do and a proximal level that they might attain through guidance and collaboration with a more knowledgeable other (Vygotsky, 1978). Cole & Cole (2001) call attention to the term proximal as it "indicates how the assistance provided by a more knowledgeable other goes just beyond the learner's current capacity" by building on current capabilities (as cited in Shabani et al., 2010, p.239). The more knowledgeable other (MKO) is someone with a higher level of knowledge than the learner and is able to provide necessary instruction during the learning process.

Cognitive development occurs as a result of interactions within a cultural and historical context. Vygotsky also put forth the notion that any higher mental function goes through an external social stage in its development before becoming an internal cognitive function (Vygotsky, 1962). This process of learning begins with the MKO doing most of the cognitive work. Then, the learner and MKO share responsibility for the work being done. Finally, the learner is able to perform the task independently, thus moving themselves to a new ZPD (Ash et al., 2003).

The development that occurs through the ZPD is part of a larger, deeper framework, which encompasses:

1. *Phylogenesis*, the human biological endowment that makes development possible,

2. *Sociocultural history*, which concerns the growth of cultural differentiation, and

3. *Ontogenesis*, is represented by interactions between biological and cultural forces across the developmental lifespan (Warford, 2011, p. 253).

Essentially, learners proceed from expert- to self-assistance and later from internalization to repetition as new knowledge becomes automatized as an ability rather than a proximal level of development (Shabani, 2010; Warford, 2011).

2.2.2. Teachers' Zone of Proximal Development

While Vygotsky's research into ZPD was focused on the malleable, growing minds of children, it is plausible that adult learners bring with them a neural network with less plasticity due to life experiences and an array of formal operations (Warford, 2011). This less flexible neural network of assets may become a liability for in-service teachers confronted with new instructional practices and the complexities of teaching and learning. Warford (2011) posited the

notion that it is critical to connecting teachers' actual development to the larger picture of research regarding teaching and learning (e.g., sociocultural history) in such a way that "weaves expert and experiential knowledge" (p. 253) into one that becomes part of a teacher's personal narrative. Understanding the framework of ZPD offers the opportunity to dig deeper into the ontogenesis, or the development of personal narratives, of both preservice and in-service teachers as a way to more fully understand the factors at play within a teacher's zone of proximal development.

Within the ZPD, it is possible to investigate the way a learner's performance is mediated socially. Studies have shown that considering a "shared understanding of intersubjectivity" has been accomplished by moving the learners from current capabilities to a higher, culturally mediated level of development (Shabani et al., 2011, p.2). Simply put, individuals have the greatest likelihood of learning when working together with more skilled others during collaboration to learn and internalize new information and skills (Fani et al., 2011; Murphy et al., 2015; Shabani et al., 2011; Wu, 2004). The goal of collaboration with a more capable other is to provide the opportunity for completing a task or turning theory into practice when working independently. It is through this process that learners, be they children or adults, will elevate to a new ZPD, thus shrinking the gap between what can be done with assistance versus what can be done independently.

The goal of a teacher is to encourage students to strive for working at and beyond their current ZPD (Wu, 2004). In order to stimulate student progress, "teachers must have profound and structured content, pedagogical, and pedagogical content knowledge, i.e., they must have their own higher levels of TZPD" (Wu, 2004, p.15). Warford (2011) posited the notion that

"teaching teachers the Vygotskyan way envisions a three-way conversation that places teachers' prior experiences as learners and often tacit beliefs about pedagogy into conversation with pedagogical content" (p.252). Moreover, Warford (2011) reported that the goal is always to stay within the 'zone' between a learner's actual capacities and a proximal set of knowledge and skills they can attain via mediation from an expert other. Similarly, when considering the teachers' zone of proximal development, studies suggest what teachers are able to understand and do on their own and a proximal level they might attain through strategically mediated help from more knowledgeable others (e.g., colleagues, mentors, instructional coaches, etc.) (Wu, 2004). Wu (2004) and Murphy et al. (2015) suggested that TZPD should be used as an approach in professional development in order to create programs in which educators reflect on their teaching as a way to promote the growth and transformation of teachers' knowledge.

Furthermore, Warford (2011) suggested that there are four stages of teachers' ZPD: self-assistance, teacher-assistance, internalization, and recursion. Within Stage 1: Self-assistance, reflection occurs as a" tuning-in phase" of pedagogical dispositions based on personal experiences, beliefs, and assumptions about teaching and learning (Warford, 2011, p. 254). During Stage 2: Teacher-assistance or Assistance from More Knowledgeable Others, educators are encouraged to use methods such as observing an MKO, coaching cycles with an MKO, and pre- and post-tests regarding conceptual knowledge of content to be taught. The third stage of a teachers' ZPD is Internalization. An educator's capacity to use the pedagogical knowledge afforded them during PD opportunities help to "weave together personal, professional, and theoretical narratives" to increase effectiveness of an individual's pedagogical content

knowledge (Warford, 2011, p. 255). Finally, Stage 4 is the Recursion phase in which teachers turn theory into practice through repeated application.

Lempert-Shepell (1995) defines reflection as "the ability to make one's own behavior an object of study; to manage it via the ability to regard oneself as the ideal other" (p.434). Reiman (1999) suggests that teacher reflection must be sustained over time "to stimulate substantive growth, as substantial learning occurs in periods of conflict, confusion, and over long periods of time" (p.610). Moreover, Lempert-Shepell (1995) contends that there is value in 'cognitive conflict' as a mechanism to encourage teacher reflection (p.438). Through reflection, internal conflict can be used as a catalyst for change. Van Wyk et al. (2019) posited the notion that when preservice teachers experience "cognitive discomfort" (p. 276), true learning takes place. For in-service teachers, abandoning a comfortable instructional practice is difficult, but it is through this process of cognitive discomfort that growth occurs.

Conflict and reflection can lead teachers to shift their mindsets more readily. Prolepsis is a way of organizing and understanding information by centering it as a cultural-historical activity that extends a present activity into future understanding and learning (White, 1998). The purpose of proleptic instruction is to create a space or optimal distance between actual and potential development (Van Wyk et al., 2019). Prolepsis involves teaching in a way that assumes that the learners know more than they actually do in order to "create invitational structures and spaces for learners to step into and grow" (van Lier, 2004, p.153). Additionally, prolepsis accommodates for the "not yet" associated with learning mindsets as described by Dweck & Leggett (1988). It's through the notion of prolepsis that a bridging from one zone of proximal development to another is paved and teacher growth occurs.

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2.3. The Current Study

The purpose of the current study was to investigate previous research conducted regarding Vygotsky's zone of proximal development and its implications for preservice and in-service teachers through what has been termed teachers' zone of proximal development (Warford, 2011). Limited research is available about the teachers' zone of proximal development regarding reading instruction and reading comprehension. This systematic search contributes to further development in the area of teacher knowledge and growth through the lens of teaching and learning as a socio-cultural process (Ash et al., 2003). I intended to answer these research questions through this systematic review:

    1. What approaches have been utilized in the research to investigate teacher ZPD?

    2. What methods have been shown to affect a teacher's ZPD?

2.4. Methodology

2.4.1. Literature Search Procedure

I identified literature tied to Vygotsky's zone of proximal development and a teacher's zone of proximal development. In searching for literature related to these two topics, I used EBSCO, ERIC, PsycINFO, ProQuest, and Google Scholar. First, I conducted an initial screening using titles and abstracts followed by a secondary screening of the full texts.

To begin the literature search, I used the keyword search terms "zone of proximal development" AND "teachers zone of proximal development" AND "professional development" (503 articles), "zone of proximal development" AND "teachers zone of proximal development" AND "professional development" AND "collaboration" (24 articles). The search was conducted on February 14, 2022 and yielded a total of 527 articles. After an abstract screening and deleting

duplicates, I uploaded the titles and abstracts of 80 articles to Rayyan (Ouzzani et al., 2016), a web-based systematic review tool. A further refinement of the 80 articles resulted in 41 articles for full-text screening. After conducting a full-text screening of the 41 articles, 28 were excluded from the systematic review resulting in 13 included studies. Of the 13 studies, four of them were non-empirical research regarding the theoretical framework of Vygotsky's ZPD and the notion of a teacher's ZPD. The remaining nine studies were qualitative and mixed methods designs.

2.4.2. Inclusion and Exclusion Criteria

The inclusion criteria were as follows. If studies did not meet all criteria, they were excluded. Note that no date range was set so all existing literature was evaluated for inclusion.

1. Publication was written in English.

2. Studies used were quantitative, qualitative, or mixed methods.

3. Participants were preservice or in-service teachers. Preservice teachers are those working toward an undergraduate degree plus certification. Inservice teachers have earned a teaching certificate and are licensed classroom teachers.

4. Participants were educators teaching across several content areas including reading, social studies, science, and/or math.

5. Inservice teachers had to be teaching in a K-12 setting.

6. Non-empirical research regarding Vygotsky's zone of proximal development and teacher's zone of proximal development

The exclusion criterium was as follows:

1. Studies focused on a child's zone of proximal development.

2.4.3. Study Coding

Coding information was obtained from the full texts of 13 studies eligible for this systematic review based on the inclusion and exclusion criteria. A codebook was created with the following information listed by study: citation, publication type (e.g., article or dissertation), study design (e.g., quantitative, qualitative, or mixed methods), quantitative (e.g., quasi-experimental, true experimental, or not quantitative research), qualitative (e.g., content analysis, case study, ethnography, phenomenology, action research, or not qualitative research), theoretical framework, constructs being investigated (e.g., ZPD, TZPD, professional development, collaboration, teacher reflection, scaffolding), data collection, data analysis (i.e., measure of artifacts), participant information (e.g. teacher type, subject area, sample size, grade level, intervention type, and location of study). See Table 2.1: Codebook.

2.4.3.1. Participant Information

Participant information was extracted for each study in the following categories: number of participants, level of educator experience, grade level taught, and location of participants as many of the studies were located outside of the United States. Due to the nature of the studies being primarily qualitative, the number of participants ranged between one and 66. For the level of educator experience, I distinguished between preservice teachers (e.g. those working toward an undergraduate degree plus certification) and in-service teachers (e.g. teachers who have earned a teaching certificate and are licensed classroom teachers). For grade level taught, I categorized teachers into elementary (i.e., Kindergarten - 5th grade) and secondary (i.e., 6th grade - 12th grade).

2.4.3.2. Study Design and Methodologies

Of the nine studies investigated through this systematic review, one was mixed methods design and eight were qualitative design (e.g., case study, action research, or generic qualitative).

2.4.3.3. Qualitative Information

Of the studies included in this systematic review, three were qualitative action research studies, four were case studies, and one was considered generic qualitative because this study followed the central tenets of a qualitative study (e.g., participant observations, participant interviews, focus groups, questionnaires, reflection sessions, participant journals, etc.).

2.4.3.4. Mixed Methods Information

One of the studies included in this systematic review was a Mixed Methods study, whereby semi-structured interviews were analyzed inductively and teacher journal reflections were analyzed quantitatively.

2.4.3.5. Theoretical Framework Information

Four of the articles included as a basis for this systematic review were non-empirical research that made use of theoretical data shared by authors interested in investigating the theoretical framework of Vygotsky's Sociocultural Theory. A principal tenet of Sociocultural Theory is the zone of proximal development (Aljaafreh & Lantolf, 1994; Vygotsky, 1978). As previously stated, the ZPD occurs when the social interaction occurs between a student and a more knowledgeable individual in a particular subject matter (Vygotsky, 1978). Vygotsky's zone of proximal development and the notion of a teacher's zone of proximal development (Shabani, 2010; Smagorinsky, 2013; Warford, 2011; Wu, 2004) were of particular interest in this review.

2.4.4. Synthesis Procedures

The procedures for this systematic review involved synthesizing the primary studies by study features to allow for comparisons across critical information. Studies were synthesized first by participant information and then by study design. Given the research question, factors contributing to a teacher's ZPD were of particular interest. In order to further synthesize the information in the studies, I created a table in order to investigate the approaches used and the impact of those approaches on a teacher's ZPD. See Table 2.2: Approaches and Impact on TZPD.

2.5. Results

2.5.1. Corpus of Primary Studies

Overall, this synthesis included nine primary studies which met my inclusion criteria. The primary studies were published between 1996 and 2020. A total of 185 participants were included across all primary studies with sample sizes ranging from one (McCullagh, 2012) to 66 (Wennergren, 2016). Global representation can be found in the corpus of studies with research conducted across eight different countries from four continents around the world. The synthesis results are summarized below for each research question.

2.5.2. Research Question 1: Approaches Used to Investigate Teacher ZPD

The first research question was written to investigate which approaches have been utilized in researching teacher ZPD. Through qualitative and mixed methods research, there are multiple methods to collect data. In my investigation, I was interested in what approaches have been used to investigate teachers' ZPD. Of the 22 methods used to collect data among the nine studies in this systematic review, pre/post questionnaires, video recordings and video-supported

reflections, self-reflection, and scaffolding were among the most used (Kuusisaari, 2014; McCullagh, 2012; Murphy et al., 2015; VanWyk et al., 2019; Wennergren, 2016; and Wu, 2004). Several modes of interview were used in the studies: formal and semi-structured interviews, focus group interviews, and interviews taped and transcribed (Ash et al., 2003; Elhussain et al., 2020; Murphy et al., 2015; Van Wyk et al., 2019; Wennergren, 2016; and Wu, 2004). Collaboration and peer collaboration were used in both Elhussain et al. (2020) through online shared journals and Murphy et al. (2015) where co-planning, co-practice, and co-evaluation were used as a collaborative tool between preservice teachers and in-service teachers. Scaffolding was another documented tool used in three of the studies (Kuusisaari, 2014; McCullagh, 2012; & Van Wyk et al., 2019). Additional approaches used, although not as frequently, were ethnographic field notes, observations, teacher surveys, document analysis, note-taking, shadowing, and poster presentations (Ash et al., 2003; McCullagh, 2012; Murphy et al., 2015; Torres, 1996; Wennergren, 2016; and Wu, 2004).

2.5.3. Research Question 2: Methods Affecting Teacher ZPD

The second research question asked what methods have been shown to make the most significant effect on a teacher's ZPD. Given that the most used technique to capture information about teachers' ZPD was various types of interviews (e.g., individual interviews, semi-structured interviews, and focus group interviews), it can be concluded that this is a useful technique for learning about the factors that influence teacher change and growth through ZPD. Both preservice and in-service teachers note that there are benefits to working reciprocally through the co-construction of knowledge, co-exploration, and critique of their work together. Additionally, in Murphy et al. (2015), significant benefits were noted for preservice teachers in their growth of

ZPD when they are included in the planning, practice, and evaluation process of teaching and learning. In Elhussain et al. (2020), results indicate that teachers may not be comfortable sharing teaching failures openly in online teaching journals. Van Wyk et al. (2019) reported that preservice teachers working in a supportive community of practice and the guided prolepsis encouraged movement from one ZPD to another. Wu (2004) found through the audiotaped interviews teachers shared that their participation in the Middle School Math Project afforded them the opportunity to reflect on their level of understanding and move further in their growth through levels of TZPD.

Another factor affecting the TZPD was the collaboration tools used as a bridge between the learner and the more knowledgeable other in order to encourage growth through a proximal level of ZPD. While the online journals shared between peers in Elhussain et al. (2020) were not found to be a successful tool for increasing professional growth, Torres (1996) discovered that the teachers' systematic inquiry groups led participants to discover new dimensions of their teaching by watching themselves on video and collaborating with peers about the co-construction of pedagogical knowledge. In Wennergren (2016), in-service teachers worked in a collaborative partnership with a "critical friend" during an action research project in which teacher pairs created an inquiry question and used shadowing as an impetus for conversations about instructional practices related to the inquiry question. In this study, teachers stated that they preferred comfortable collaboration in lieu of difficult conversations where teacher pairs offered critical feedback. Wennergren noted that while the role of the critical friend was created as a way to use the tenets of Vygotsky's ZPD to encourage teacher growth, most teachers did not utilize the critical friend to its full potential.

Questionnaires and surveys were additional useful tools for gathering information about teachers' perceptions of their own knowledge and attitude related to the content area and professional development being studied. Murphy et al. (2015) utilized pre-and post-questionnaires to propose and test an explanatory model for coteaching in preservice science teacher education. The results of the questionnaires were not shared in the paper. Van Wyk et al. (2019) studied preservice teachers during their life science teaching experience. Because they were interested in undergraduate student teachers' perceptions of teaching in communities of practice, a 13 open-ended questionnaire and reflection sheets were utilized to investigate respondents' feelings, experiences, discomforts, and possible improvements to the life science project. Wu (2004) used a questionnaire before and after the mathematics professional development, Middle School Mathematics Project, in order to understand teacher preparation, teacher attitudes, and support structures in place to promote teacher changes in classroom teaching through levels of TZPD.

It is well-documented that video-supported reflection has the opportunity to empower teachers to take greater control of their progress and allow for a more constructivist approach to professional learning (McCullagh, 2012). Video recordings, transcriptions, and reflections were found to be an impactful tool in four of the nine studies investigated in this systematic review. McCullagh (2012) suggested video "may support reflection and help teachers to reframe their experiences" (p.139). In recent years, video has become a more popular tool to support teacher growth and development (Brophy, 2004, as cited in McCullagh, 2012). When teachers are afforded the time and space to review and reflect on instructional practices through the use of video recording, it is then that teachers are able to further develop their practice. The studies in

this systematic review that used video as a learning and reflection tool found that it afforded teachers an actual account of practices to reveal beliefs and assumptions, levels of engagement, and areas for improvement. This development may continue to occur with a more knowledgeable other (e.g., instructional coach, researcher, etc.) in order to move the teacher's zone of proximal development to the next level.

2.6. Discussion

Vygotsky's sociocultural theory of human learning describes learning as a social process and the origination of human intelligence in society or culture (Vygotsky, 1978; Elhussain, 2020). Vygotsky (1962) asserted that the social and cultural context of development cannot be separated. Therefore, sociocultural theory of mind attempts to explain the processes through which learning and development occur (Shabani et al., 2010). Vygotsky postulated the idea of learning as a "future-in-the-making" (Warford, 2011, p. 255) whereby development is perpetuated by socially mediated help from an expert other, and a recognition of the learner's background is valued as next levels of cognitive capacity are considered. A core wisdom of a Vygotskyan approach is the idea that learning leads to development through interactions with others followed by integration into the individual's mental structure (Vygotsky, 1978; Warford, 2011).

The purpose of this systematic review was to investigate previous research conducted regarding Vygotsky's zone of proximal development and its implications for preservice and in-service teachers through what has been termed teachers' zone of proximal development (Warford, 2011). The absence of current research on TZPD, especially in regards to reading

comprehension instruction, results in the lack of evidence for how teachers develop TZPD and use evidence-based reading comprehension strategies in classroom instruction.

Future research should focus on approaches used to impact teachers' ZPD positively as seen in the studies used in this systematic review. Additionally, based on the findings of the qualitative studies used in this review of the literature, future research could benefit from investigating quantitative approaches used to impact teachers' ZPD through differentiation based on teachers' needs. In considering the individual needs of teachers attending a professional development event, exploring TZPD using an initial assessment of knowledge and skills related to a teaching concept in order to create knowledge groups (e.g., poor knowledge, fair knowledge, good knowledge, excellent knowledge) might afford professional development creators the opportunity to scaffold learning groups to more effectively meet the needs of both preservice and in-service teachers

Following the creation of knowledge groups, collaboration and scaffolding with a more knowledgeable other (e.g., modeling, coaching, constructive feedback, co-planning) may show promise in bridging educators from one ZPD level to the next independent level of understanding. Finally, administering a content knowledge assessment, or posttest, could be useful as a method for investigating the actual growth of a teacher's ZPD.

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Table 2.1. Codebook.

Variable	Code
Citation	APA 7
Type of Publication	Article or Dissertation
Study Design	quantitative, qualitative, mixed methods
Quantitative	Quasi-Experimental or True Experimental
Qualitative	Content Analysis, Case Study, Ethnography, Phenomenology, Action Research
Theoretical Framework	Zone of proximal development, Social Constructivist View, Social Cognition Theory
Constructs Studied	ZPD, TZPD, Professional Development, Collaboration, Teacher Reflection, Scaffolding
Data Collection	Pre/Posttest, Survey/Questionnaire, Focus Group, Latent Class Analysis
Data Analysis (Measures of Artifacts)	Recorded Lessons, Interviews, Transcripts, Data collected in a journal/log, In-Person Observations, Random Sample of Student Work
Location of Study	
Teacher Type or Educator Experience	Preservice, Inservice
Subject Area	Reading, Reading Comprehension, Math, Science, Not Specified
Sample Size	N Preservice, N Inservice
Intervention Type	
Grade Level	elementary, secondary

Table 2.2. Approaches and Impact.

Author & Year	Article Title	Design & Number of Participants	Level of Educator Experience	Approaches	Impact
Ash, D., & Levitt, K. (2003)	Working within the zone of proximal development: Formative Assessment as Professional Development	**Case Study** Two studies: Case 1 - 2 participants; Case 2 - 26 participants; case study focuses on two participants	Case 1 - In-service educators (IST) Case 2 - In-service and Preservice educators (PST)	*Formative assessment focused on teacher learning through an inquiry science program. *ethnographic field notes *interviews (taped & transcribed) *in-class visits	*Teachers developed a deeper understanding of their own teaching practices by using a continual feedback loop using formative assessments. *The relationship between the IST and PST works best when reciprocal. *Teacher transformation occurs when IST and PST are involved in the co-construction of knowledge, co-exploration, and critique of their own work.
Elhussain, S. & Khojah, A. (2020)	Collaborative reflection on shared journal writing to foster EFL teacher CPD	**Mixed Methods** 10 teachers were randomly selected out of 150 teachers for the two stages of data collection	In-service teachers	*Teachers collaborated using an online shared journal for six weeks. *semi-structured interviews were analyzed using systemic functional linguistics (SFL) *SFL is a descriptive & interpretive framework for viewing language as a strategic meaning-making resource	*Through continuous professional development using online teaching journals (OTJs), professional growth was expected. *Results indicated that teachers might not be comfortable sharing failures openly in OTJs.
Kuusisaari, H. (2014)	Teachers at the zone of proximal development – Collaboration promoting or hindering the development process	**Case Study** 3 teams (9 participants)	In-service teachers	*During a 2-day PD, teacher teams worked to develop teaching based on learning theories through collaboration. *video recordings & transcriptions *scaffolding by specific guidance from an MKO	*1 of 3 teams were successful *Too much agreement in collaboration does not result in teacher growth (TZPD). *Teams worked to participate in knowledge construction, which was not an easy process.
McCullagh, J. (2012).	How can video-supported reflection enhance teachers' professional development?	**Case Study** 1 participant	In-service teacher	*video-supported reflection allows teachers to take center stage within their professional development *scaffolding - Teachers share their common understanding and use it to fit new perspectives. *observation, interpretation, modification (TZPD)	*Video can empower teachers to take greater control of their progress and allow for a more constructivist approach to professional development.
Murphy, C., Scantlebury, K., and Milne, C.(2015)	Using Vygotsky's zone of proximal development to propose and test an explanatory model for conceptualising coteaching in preservice science teacher education	**Action Research** 20 participants	Ten preservice teachers were paired with ten in-service teachers.	*Co-teaching with PSTs *pre/post questionnaires *semi-structured interviews *document analysis (e.g., plans, evaluations, observations, essays, and reflective practice) *co-planning, co-practice, and co-evaluation	*Co-teaching with PSTs in three distinct phases (co-planning, co-practice, and co-evaluation) lead PSTs through new ZPDs *significant benefits for PSTs as they become part of the planning/practice/evaluation process of teaching and learning
Torres, Myriam N. (1996).	Teacher researchers in the zone of proximal development: Insights for teacher education	**Action Research** 25 participants	23 female and two male in-service teachers in a master's degree program	*Teachers' systematic inquiry group (SIG) *note-taking *work in progress reports *recording teaching - analysis of discourse and reflection *peer collaboration *self-reflection	*Participants discovered new dimensions of their teaching by watching themselves teaching on video. *ISTs participate actively in the co-construction of pedagogical knowledge through peer collaboration. *ISTs developed self-confidence as generators of pedagogical knowledge.

Van Wyk, G. & De Beer, J. (2019)	Bridging the Theory–Practice Divide: Life Sciences Student Teachers' Perceptions of Teaching in Communities of Practice at a Teaching School	**Generic Qualitative** 39 participants	preservice teachers	*individual interviews *focus group interviews *reflection sessions *questionnaire *reflection sheets *scaffolding *inductive analysis which highlighted four levels of TZPD	*A supportive community of practice was developed within groups of PSTs. *A guided prolepsis occurred and pushed PSTs to new ZPDs.
Wennergren, A. (2016)	Teachers as learners – with a little help from a critical friend	**Action Research** 66 participants (33 partnerships)	in-service teachers	*Timeline: over two years *Year 1: Three researchers shadowed teachers five days/month at each school; formal and informal conversations were documented *Year 2: Critical friends were pairs which decided on a focal point to study (an inquiry question); teachers shadowed colleagues in pairs; ISTs analyzed and drew conclusions. *written case descriptions *poster presentations *meta-reflections	*The role of a critical friend was hard to internalize. Most ISTs did not utilize the critical friend to its full potential. *Teachers stated that they preferred comfortable collaboration in lieu of difficult conversations or critiques.
Wu, Zhonghe (2004) dissertation	The study of middle school teachers' understanding and use of mathematical representation in relation to teachers' zone of proximal development in teaching fractions and algebraic functions	**Case Study** 11 participants	6th and 7th-grade in-service teachers	*two year period *PD - Middle School Math Project *before PD: a survey of teacher preparation, teacher attitudes, and support structures *interviews (audiotaped) *questionnaires - before and after PD *lessons videotaped three times	*PD enhanced abilities in effective teaching. *This study developed a concrete measurement of teachers' knowledge in learning and using mathematical representations. *Findings provided a systematic and measurable way to understand teacher change. *Researcher discovered patterns of relationship in teacher changes in classroom teaching through levels of TZPD.
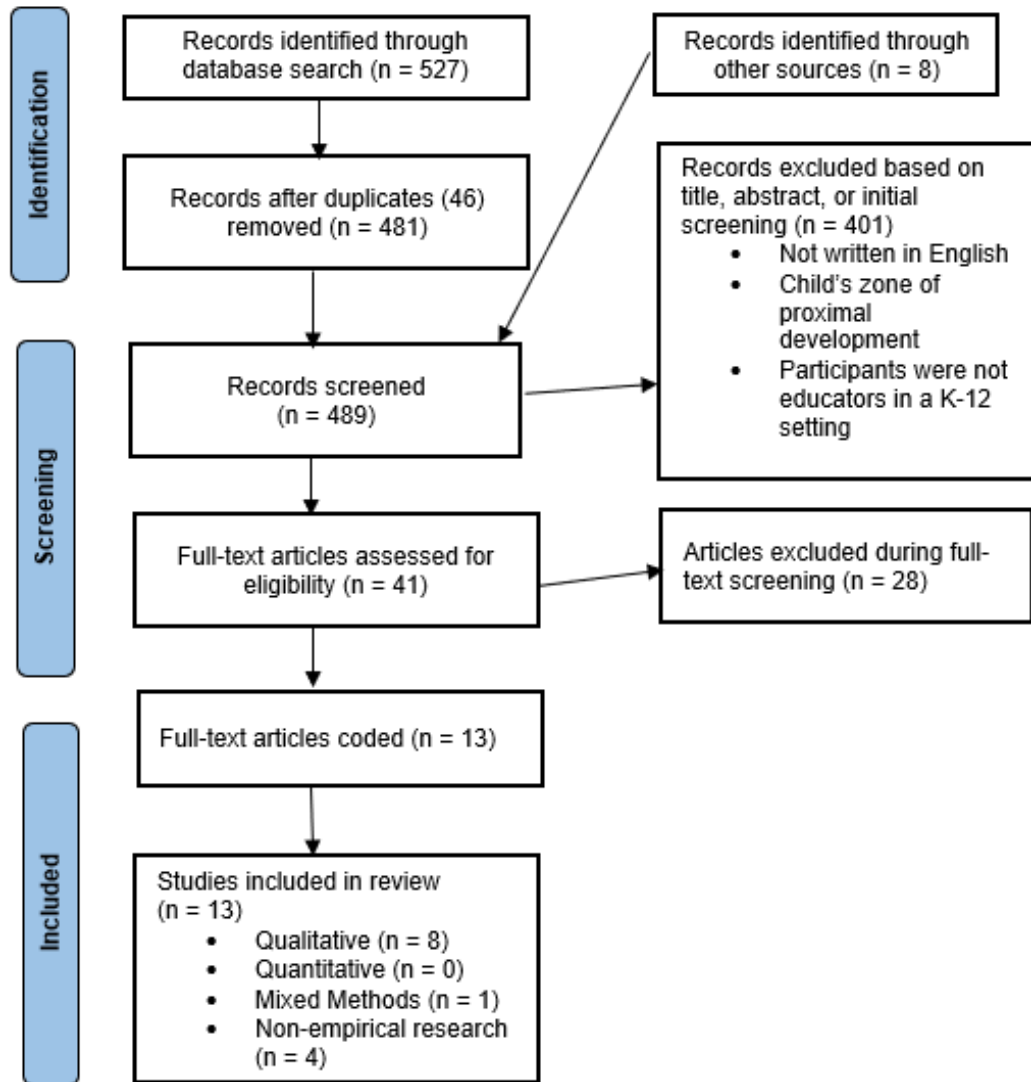
Figure 2.1. Flowchart of the Search and Screening Process.

3. FACTORS IMPACTING A TEACHER'S MINDSET FOLLOWING A READING COMPREHENSION PROFESSIONAL DEVELOPMENT EVENT

3.1. Rationale for the Study

Professional development (PD) is defined as a "life-long dynamic process that occurs throughout a teacher's career" (Maskit, 2011, p. 852) and is known to be one of the most important mediators in the effectiveness of teachers and teaching practices (Desimone et al., 2007) and in improving student achievement (Desimone et al., 2005). Many educational reforms emphasize teacher learning and improved instruction to increase student learning (Desimone, 2009; Sykes, 1996). Results from the National Assessment of Educational Progress (NAEP, 2019) indicated that reading achievement among grade 4 and grade 8 students has continued on a downward trajectory for several decades. One approach to solving this problem is effective educator Practice-Based Professional Development (PBPD), which leads to a growth in teacher knowledge of evidence-based practices, an improvement in teaching practices in reading comprehension, and an improvement in student outcomes (Desimone, 2009; Hudson et al., 2021; Loucks-Horsley et al., 2010). Loucks-Horsley et al. (2010) posited the notion that PD is an integral part of supporting effective teacher practices. Quality PD creates opportunities for teachers to collaborate in their learning as an avenue to positively change the learning environment within their own school and classroom (Darling-Hammond et al., 2017). However, Darling-Hammond et al. (2017) discovered that many PD initiatives fail to achieve changes in teachers' practices, which leads one to consider what occurs during a PD event that may encourage or discourage teachers from being open to pedagogical change. This was a focus of the current research study.

Recent research by Rubie-Davies and colleagues (2015) found that teachers with high expectations of themselves and their students result in higher student learning outcomes. As a result, a teacher's mindset while learning new strategies has a direct connection to the instruction delivered in the classroom. A teacher's growth mindset is characterized by the belief that there is room for growth in every student's learning (Dweck, 2009) as well as in their own. Rattan et al. (2012) posited the notion that instruction is presumably more effective when delivered by a teacher with a growth mindset. Teachers with high expectations for their students and themselves tend to adopt significantly different instructional practices in comparison to teachers with low expectations for their students and themselves (Rubie-Davies, 2007). Related to teachers' background characteristics, Strosher (2003) found that in-service teachers with a higher age were more likely to have a fixed mindset, meaning that there may be a belief that intelligence is static and cannot be changed. This finding by Strosher (2003) has ignited this research into learning more about how a teacher's years of experience and professional development stage may be related to their mindset and other factors (e.g., beliefs and attitudes, self-perception, openness to change, and zone of proximal development). Furthermore, by implementing this study during a reading comprehension PBPD event, the research investigated how teachers' differing mindsets and feelings might influence their engagement in such PBPD events. It also sought to fill gap in the literature pertaining to the relationships between teacher PBPD and factors affecting a teacher's mindset (i.e., beliefs, attitudes, feelings about change, and factors related to a teacher's zone of proximal development).

Given the findings related to mindset and its impact on how a teacher might receive and act upon professional development, the aim in the present study was to examine the mindset of teachers attending a reading comprehension PD and how their years of experience, beliefs and

attitudes, and openness or reluctance to use interventions impact a teacher's mindset. Thus, this research study sought to answer the following research questions:

1. To what extent does years of experience predict teachers' mindsets toward ability to implement ideas learned at a professional development event for reading comprehension while controlling for gender and education level?

2. To what extent does self-perception of teaching abilities predict teachers' mindsets at a professional development event?

3. To what extent do teachers' beliefs and attitudes toward implementation of a reading comprehension strategy predict teachers' mindsets at a professional development event?

4. To what extent does openness or reluctance to use a reading comprehension strategy predict teachers' mindsets at a professional development event?

3.2. Literature Review

This literature review is divided into three distinct sections. First, I shared information regarding reading comprehension, the use of text structures to find logical connections between ideas in the text, and how text structures can be used to improve student comprehension outcomes through implementation of the Knowledge Acquisition and Transformation Framework (KAT). Then, I discussed professional development and the tenets of practice-based professional development. Finally, I presented theory and research about relevant factors such as mindset, attitudes, beliefs, self-perception, and openness or reluctance to pedagogical change, and how these factors may offer insight into the perspectives of teachers when asked to attend and implement a reading comprehension strategy learned at PBPD.

3.2.1. Improving Reading Comprehension

Reading comprehension is a complex process, defined as, "the process of simultaneously extracting and constructing meaning through interaction and involvement in written language" (Snow, 2002, p. 11). The academic importance of reading comprehension cannot be understated, leading researchers to claim that "the most important thing about reading *is* comprehension" (Gambrell et al., 2002, p.3). The most widely cited recommendation for improving reading comprehension is increasing instruction in comprehension strategies such as comprehension monitoring, cooperative learning, graphic and semantic organizers, question answering, question generation, story structure analysis, and summarization (National Reading Panel, 2000). In the report, the National Reading Panel (NRP) highlighted the importance of comprehension strategy instruction, explaining, "The idea behind explicit instruction of text comprehension is that comprehension can be improved by teaching students to use specific cognitive strategies or to reason strategically when they encounter barriers to comprehension when reading" (NRP, 2000, p. 3-4). In effective comprehension instruction, teachers coach readers each time they approach a text (Duke & Pearson, 2002). Teacher training and professional development is used as a vehicle to impart teachers with the importance and value of reading comprehension instruction. Without it, explicit strategy instruction which promotes students' understanding of text may fail to occur (Ness, 2016).

In the following sections (e.g., Text Structures for Reading Comprehension and Knowledge Acquisition and Transformation Framework), information about one of the specific strategies suggested by the What Works Clearinghouse Practice Guide for Improving Reading Comprehension in Kindergarten Through Grade 3 ~~for improving reading comprehension~~, text structure analysis, was shared (Shanahan et al., 2010).

3.2.1.1. Text Structures for Reading Comprehension

Five top-level structures have been found to undergird most texts: sequence, description, comparison, problem-solution, and cause-effect (Meyer, 1975), with sequence and description often being nested within the structures of comparison, cause-effect, and problem–solution (Meyer & Wijekumar, 2007; Wijekumar et al., 2012). Authors signal their intent by explicitly or implicitly placing discourse markers for the reader (e.g., cause and effect signaled by the words due to). Top-level structures serve as a framework for readers to identify relationships between ideas, thereby aiding the development of a coherent mental representation of a text (Boegaerds-Hazenberg et al., 2020; Wijekumar et al., 2012). Identifying the top-level structures facilitates readers to remove extraneous information from their working memory and focusing solely on the most important idea units from the text (Pearson & Cervetti, 2015; Schmalhofer et al., 2002). Kendeou & van den Broek (2007) and Meyer et al. (1980) found that higher-performing readers tend to be those who recognize and make use of the top-level structures of text to support their understanding of the text. As a result, reducing the cognitive load further ensures the ability of readers to make inferences relevant to the main idea (Meyer & Poon, 2001; Wijekumar et al., 2012). Numerous studies over the past 20 years have suggested that teachers can support and improve students' reading comprehension abilities by showing them how to use top-level structures as a reading strategy to support the generation of main ideas, summaries, and inferences after reading (Boegaerds-Hazenberg et al., 2020; Hebert et al., 2016; Hudson et al., 2021; Pyle et al., 2017; Wijekumar et al., 2012, 2014, 2017, 2019).

3.2.1.2. Knowledge Acquisition and Transformation (KAT) Framework

The Knowledge Acquisition and Transformation (KAT) framework was developed through research by Wijekumar et al. (2014, 2017, 2018). The KAT framework is undergirded

by Meyer's Text Structure Framework (1973) and Kintsch's Construction-Integration Model (1998, 2004) in which readers extract textual information from the textbase and generate a situation model. Through this process, readers are able to discover relationships between sentences in texts while also investigating prior knowledge and the situational model in order to make meaning of text (Wijekumar et al., 2021). The KAT Framework provides direct and explicit text structure-based reading comprehension instruction for students. KAT guides students in using the top-level structure of a text to generate the main idea, summarize the text, and extrapolate inferences. Web-based instructional software which teaches students to utilize top-level structures has produced positive outcomes for upper-elementary students' reading comprehension abilities. Wijekumar et al. (2012, 2013, 2014) and Wijekumar et al. (2020) have implemented KAT via an instructional, web-based text structure software (Intelligent Tutoring System for the Text Structure Strategy [ITSS]) with fourth- and fifth-grade students in high-poverty, rural, and suburban schools. In these studies, ITSS text structure instruction replaced approximately 20-45 minutes of students' weekly language arts classroom instruction. Across studies, students who engaged with ITSS scored statistically significantly higher on reading comprehension measures than students who did not receive ITSS instruction (Wijekumar et al., 2012, 2013, 2014; Wijekumar et al., 2020). Moreover, Wijekumar et al. (2012) found that the number of questions students answered correctly throughout the ITSS lessons significantly and positively correlated with students' posttest reading comprehension scores ($r=.20$).

While web-based ITSS lessons that follow the KAT framework have been effective, research supports that even a high-quality curriculum cannot wholly substitute the benefits of a knowledgeable teacher who can plan for effective instruction and respond to students' questions and misunderstandings in the moment (Bembry et al., 1998; Snow et al., 1991). Thus, providing

teachers with PD focused on reading comprehension has proven to be beneficial in promoting teachers' knowledge (e.g., Goldfeld et al., 2021; Masters et al., 2010).

3.2.2. Professional Development

Professional development (PD) is key in supporting teachers' development of effective teaching practices (Loucks-Horsley et al. 2010). While teacher content knowledge is difficult to change (Desimone & Garet, 2015), practice-based professional development aids teachers in transferring the information learned in the professional development to daily instructional settings, which is a critical aspect of effective teacher training (Garet et al., 2001, 2008). As Darling-Hammond and McLaughlin (2011) highlight, "teachers learn by doing, reading, and reflecting (just as students do); by collaborating with other teachers; by looking closely at students and their work; and by sharing what they see" (p. 83). Summer programs and brief workshops are common formats used to bring new ideas to teachers who are typically busiest during the academic year. While these approaches can create change in teachers' beliefs and knowledge, educators benefit from ongoing PD that allows time for teachers to grapple with new concepts, experiment in the classroom, reflect on their practice, and receive feedback from researchers (Darling-Hammond et al., 2017). Evidence suggested that characteristics of high-quality PD includes ongoing support, just-in-time assistance, teacher collaboration, opportunities to inform and align instruction with school practices (Fishman et al., 2013).

In studying teachers' attitudes toward pedagogical changes, Maskit (2011) found changes regarding a variety of teaching strategies and content, at different stages of professional development (e.g., Pre-service, Induction, Competency Building, Enthusiasm and Growth, Stability, Career Frustration, Career Wind-Down, and Career Exit; Burke, 1987). Maskit suggested that considerations of a teacher's stage of professional development be considered

when planning future PD and its influence on teachers' attitudes toward pedagogical changes (Maskit, 2011).

In the next section, I discussed the method known as practice-based professional development by which participants learn, plan, and present lessons during the reading comprehension PBPD attended by teachers as part of the larger study.

3.2.2.1. Practice-Based Professional Development (PBPD)

Practice-based professional development (PBPD) is a type of PD which focuses on developing deeper understandings and increased skills related to effective instructional practice (Harris et al., 2012). In designing PD for teachers, consideration is given to the five-feature conceptual framework for best practices of teacher training outlined by Desimone (2009): 1) content focus, 2) active learning, 3) coherence, 4) sustained duration, and 5) collective participation. One method of incorporating Desimone's (2009) five-feature framework is through practice-based professional development (Ball & Cohen, 1999). PBPD offers teachers the opportunity to reflect on their own and others' teaching practices (Ball & Cohen, 1999). Through this reflective process with colleagues, teachers engage in rich conversations, which ultimately improve their confidence and ability to adequately share the instructional strategies with students. PBPD is characterized by a shift from simply delivering knowledge to focusing on educational practice or the tasks and activities teachers use for instruction within the classroom (Ball & Cohen, 1999; McKeown et al., 2014).

Six elements of PBPD were highlighted in Harris et al. (2012) based on research by experts in the field of PBPD: 1) collaboration among teachers within the same school, 2) differentiation based on current students' strengths, characteristics, and needs, 3) considering the pedagogical and content knowledge of teacher participants, 4) modeling from an expert coach, 5)

using materials applicable to actual classroom instruction, and 6) independent practice with feedback from an expert coach and peers (Ball & Cohen, 1999; Ball et al., 2008, Garet et al., 2001). Harris et al. (2012) suggested creating small teams of teachers to promote supportive learning environments. While teacher content knowledge is difficult to transform (Desimone & Garet, 2015), PBPD aids teachers in transferring the information learned in the professional development to daily instructional settings by providing the opportunity to practice delivering a lesson and through the immediate feedback offered by an expert trainer. This leads teachers through the reflection process, which is a critical aspect of effective teacher training (Garet et al., 2001, 2008). As Darling-Hammond and McLaughlin (2011) highlight, "teachers learn by doing, reading, and reflecting (just as students do); by collaborating with other teachers; by looking closely at students and their work; and by sharing what they see" (p. 83).

In this study, teachers received two days of PBPD about the KAT framework followed by two coaching and modeling sessions in the classroom and on-going support through Zoom and monthly webinars promoting fidelity of implementation. PBPD allows teachers the opportunity to reflect on their and others' teaching practices by "uncovering the conceptual development" addressed in instructional materials and by designing lessons to "enhance that development" (Ball & Cohen, 1999; Loucks-Horsley et al., 2010). Teachers are afforded the opportunity to observe other teachers and engage in rich conversations with trainers and colleagues, and consequently, improve their confidence and capacity to share the instructional materials with students.

3.2.3. Factors Influencing the Effectiveness of PD

In the following five sections, I shared a review of the literature concerning factors such as mindset, attitudes, beliefs, self-perception, openness or reluctance to pedagogical change, and

how these factors may offer insight into the perspectives of teachers when asked to attend and implement a reading comprehension strategy learned at PD.

3.2.3.1. Mindset

Carol Dweck's influential work in 2006 on mindset has led to a deeper understanding regarding how students can reach their highest potential through a growth mindset (incremental theory) in which intelligence is seen as a continuously growing and evolving rather than a fixed mindset (entity theory) in which intelligence is thought to be fixed and unchangeable. Dweck and Leggett (1988) explained a "social-cognitive model of motivation and personality that framed a theory of implicit conception of the nature of ability based on work in goal orientation and behavioral patterns" (as cited in Bartell et al, 2015, p.733).

Research done by Dweck and colleagues has demonstrated that helping students develop a growth mindset can improve academic achievement (Blackwell et al., 2007; Dweck, 2008). Through Dweck's research, it has been shown that students learn to understand that, regardless of ability level, the key to academic growth is effort and attitude (Dweck, 2006). Dweck (2006) found that people with a growth mindset believe intelligence is malleable and can be developed through hard work and perseverance. Challenges are seen as a positive way to learn and grow and often select activities that could help them improve (Zeng et al., 2019). By applying the mastery approach, the focus is shifted to what can be done to improve in the future. Additionally, Zhao et al. (2018) found that growth mindset predicted grit while internal motivation mediated this relationship among Chinese students. Grit can be defined as perseverance of effort and consistency of interest. Zeng et al. (2016, 2019) found a positive relationship between students' growth mindset and perseverance of effort and engagement. A further explanation of this finding indicated that the positive relationship between mindset and

school engagement was demonstrated through an effort to improve ability and intelligence by studying and working hard (Zeng et al., 2019; Blackwell et al., 2007).

Conversely, people with a fixed (entity) mindset have been found to avoid challenges, get frustrated easily, and find constructive feedback to be threatening (Dweck, 2006). Research has shown that people with a fixed mindset are likely to choose activities they think they are capable of doing easily while trying to avoid any challenges that may put their intelligence at risk. (e.g., Zeng et al., 2016; Mouratidis et al., 2017; Whittington et al., 2017). When faced with difficulty or failure, someone with a fixed mindset would interpret their self-identify negatively (Zeng et al., 2019). Being vulnerable to setbacks is not deemed as acceptable to those with a fixed mindset (Whittington et al. 2017). As a result of differing mindsets, people tend to respond to setback and failure differently thus leading them to have different degrees of happiness (Whittington et al., 2017).

3.2.3.1.1. Teacher mindset.

While much of the research regarding mindset has centered around the mindsets of students, it is also important to consider the consequences of teachers' fixed or growth mindsets and the impact on student outcomes. Rattan et al. (2012) posited the idea that instruction is presumably more effective when delivered by a teacher with a growth mindset. A teacher's growth mindset is characterized by the belief that there is room for growth in every student's learning (Dweck, 2009) as well as in their own. Teachers with high expectations for their students and themselves tend to adopt significantly different instructional practices in comparison to teachers with low expectations for their students and themselves (Rubie-Davies, 2007). Rubie-Davies and colleagues (2015) discovered that teachers with high expectations of themselves and their students result in higher student learning outcomes. Research has

demonstrated that teachers' implicit theories of intelligence and ability impact their behaviors in the classroom, including their instructional approaches (Swann & Snyder, 1980) and their sense of self-efficacy (Strosher, 2003). All in all, teachers play a critical role in influencing students' beliefs about their own abilities and are often communicated in subtle ways (Rattan et al., 2012).

While there is substantial research on student mindset and its impact on student performance, research related to teacher mindsets presents a gap in the research literature (Gleason, 2016). In one unpublished dissertation study, Strosher (2003) found that in-service teachers with a higher age were more likely to have a fixed mindset, meaning that there may be a belief that intelligence is static and cannot be changed. In a second unpublished dissertation study, Seibert (2006) found that 50% of the 63 secondary social studies teachers held a growth mindset, 18% held a fixed mindset, and 32% had a neutral mindset. Helping teachers understand the impact of their own mindset and how it relates to classroom instruction affords the opportunity for greater outcomes for all students.

Several variables should be considered when investigating a teacher's mindset (e.g., self-perceptions, beliefs, attitudes, and feelings about pedagogical change). Just as teachers' differing beliefs influence their PD experiences (Bartell et al., 2015), I examined these more closely in hopes of understanding how teachers' beliefs and attitudes, self-perception of abilities, and perspective on pedagogical change affect a teacher's mindset during a reading comprehension PD event. Thus, this study aimed to examine teachers' mindsets while attending a district-mandated reading comprehension professional development event.

This set of beliefs that shape how we think, feel, and make sense of our world contribute to our behavior in any given situation. When considering the psychological framework formed through a teacher's mindset, much of the literature pointed to concepts such as teacher self-

perceptions, teachers' attitudes and beliefs, considerations for change, and feelings regarding professional learning and growth (Clarke & Hollingsworth, 2002; Desimone, 2009; Dweck, 2006; Elhusain & Khojah, 2020; Hudson, 2021; Kern & Graber, 2020; Ketelhut, 2020; Kuusisaari, 2014; Maskit, 2011; McCullagh, 2012; Quirk et al., 2010; Shabani et al., 2020; Warford, 2011; Wennergren, 2016; and Wisniewski et al., 2022). Consequently, studying these variables may help improve the uptake of PBPD.

In the current study, I narrowed the focus on teachers' mindsets regarding professional development and implementation of new instructional practices as an avenue for investigating the factors which influence teacher pedagogy.

3.2.3.2. Teacher Self-Perceptions

Self-perceptions are defined as "privileged access to thoughts not dependent on the interpretation of behavior. The perceptions of others rely on indirect behavioral indicators" (Fauth et al., 2020, p. 147). Self-efficacy is a "belief in one's capability to organize and execute the courses of action required to manage prospective situations" (Bandura, 1995, p.2; Lazarides et al., 2021). The confidence to make changes can be described as a type of self-efficacy. In Hudson (2021), elementary teachers were asked 12 questions on a survey prior to attending a reading comprehension PD pertaining to teachers' self-perceptions of teaching various reading comprehension constructs and their confidence level of classroom practices. On average, teachers believed they had moderate knowledge for teaching comprehension to elementary students. Approximately 16% of the participants believed they held "very good" or "expert" knowledge for the teaching of reading comprehension. However, participants scored themselves statistically significantly lower on their ability to teach reading comprehension to below-average readers than typically developing and above-average readers. Additionally, teachers' average

self-perception of knowledge for reading comprehension instruction was positively, statistically significantly related to teachers' scores on the Teacher Knowledge of Reading Comprehension – Self-Perceptions (Hudson, 2021). However, self-perception score (γ_{40}=-0.43, p=0.35) did not significantly predict participants' scores during the third observation.

Through a mixed methods approach, Haland et al. (2021) were interested in teachers' self-perceptions of read aloud practices in a first-grade classroom. The researchers documented read-aloud practices of 299 teachers and their attitudes in order to analyze their practices. Teachers perceived read aloud as an opportunity to engage and entertain students in lieu of using that instructional practice with intentional stops and limited focus on improving comprehension skills. While the context of the study takes place in Norway, the implications of their findings can be used for future research in any classroom setting.

Wisniewski et al. (2022) investigated how teachers' self-perceptions and students' perceptions of instruction were correlated upon comparison. Kolar et al. (1996) posited that "self-perceptions are less associated with actual behavior than the perceptions of others" (p. 313). Previous research has indicated that teachers' self-perceptions differ from students' perceptions (Wisniewski et al., 2020). Personal assumptions of abilities vary based on gender in so much that males often over-estimate their performance when compared to females who tend to perceive their skills as inaccurately low (Beyer & Bowden, 1997). Findings have "indicated a pervasive gender bias in self-concepts related to performance" (Wisniewski et al., 2021, p. 780). Researchers (Dunning et al., 2003; Kruger & Dunning, 1999) have discovered that less-skilled individuals usually overestimate their abilities because they are less likely to reflect on what they do. However, Dunning et al. (2003) also found the highly-skilled people underestimated their

capabilities for the sake of humility. Interestingly, Den Brok et al. (2006) noted that many teachers tend to overestimate aspects of their teaching practice.

In the present study, I narrowed the focus on teachers' self-perceptions about teaching reading comprehension. Further, I was interested in teachers' self-perceived confidence level when asked to teach reading comprehension skills to students at a variety of instructional levels.

3.2.3.3. Teacher Beliefs & Attitudes

Teacher beliefs are the notions or claims teachers hold or would like to be true and can be related to learners, knowledge, teaching practices, themselves, parents, the instructional context, and the organizational context (Valcke et al., 2010). Investing in teachers' beliefs of teacher professional development (Desimone, 2009; van Driel et al., 2012) was found to be a valuable practice in ensuring that beliefs are linked to classroom practices (Merchie et al, 2018). In a study conducted by Ness (2016), researchers were interested in the factors influencing teachers' attitudes toward the need and usefulness of reading comprehension instruction in content area classrooms. Teachers reported not feeling qualified or responsible for providing explicit instruction in reading comprehension. Pressure to cover content in preparation for state standardized tests was seen as a barrier to providing reading instruction.

A study by Quirk et al. (2010) investigated teachers' beliefs about reading motivation through the development of a 64-item survey questionnaire designed to ask teachers to rate the importance of addressing students' motivation for reading through 12 motivational constructs (e.g., self-efficacy, challenge, importance, recognition, compliance, and autonomy support). Quirk and colleagues suggested that the development of a reliable measure of teachers' beliefs regarding student motivation to read is an important step in conducting additional

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research examining how these beliefs might influence student outcomes in the area of reading. An important result of this study is the finding that teachers' beliefs about student motivation to read can be reliably measured across a range of motivational constructs.

In a 2019 study, Mills and colleagues investigated the historical notion that PD efforts have aimed to change teachers' beliefs and understanding, with the assumption that teacher practice will change accordingly (Harris, 1980; Mills et al., 2019). Given the basis of the theoretical framework of the Interconnected Model of Professional Growth (IMPG), in which teacher beliefs, teacher practices, and student outcomes are connected in a complex, nonlinear relationship, teacher change requires reflection and interpretation of those beliefs (Clarke & Hollingsworth, 2002; Guskey, 1986). In this case study, while the PD did affect change of teachers' reported beliefs, this was not reflected in the teacher's practice. Mills et al. suggested that PD include opportunities for teachers to reflect on their own practice and consider external factors contributing to pedagogical change beyond PD.

Aiming to provide insight in the way teachers' beliefs about teaching diverse learners related to teachers' noticing of inclusive classroom characteristics, Roose et al. (2019) were concerned about the way teachers' beliefs serve as filters for accepting, interpreting, and integrating new approaches (Hermans, 2009; Roose et al., 2019; Woolfolk Hoy et al., 2006). Teachers' beliefs have been put forward as an important explanatory factor in teachers' interpretation of classroom events and teachers' behavior (Valcke et al., 2010).

After an extensive literature review of teacher beliefs, Parejes (1992) concluded that "knowledge and beliefs are inextricably intertwined, but the potent affective, evaluative, and episodic nature of beliefs make them a filter through which new phenomena are interpreted" (p. 325). Thus, literature showed that teacher beliefs serve as selective sieves for teachers'

perceptions of classroom situations (Pajares, 1992). Teacher beliefs have a pervasive impact on the learning environments they create and ultimately, student outcomes (Knopp & Smith, 2005; Woolfolk Hoy et al., 2006). Educator beliefs are a "catalyst for (in)equitable teaching practices and possibly (in)equitable outcomes" (Roose et al., 2019, p. 141).

Teacher thinking theory "assumes that teacher beliefs profoundly influence instructional decisions and actions taken by teachers" (Knopp & Smith, 2005; Pajares, 1992; Roose et al., p. 142; Woolfolk Hoy et al., 2006). The aim of PD is to change and improve teacher practice. In doing so, it must simultaneously address teachers' beliefs (Ketelhut et al., 2020).

In the current study, I narrowed the focus to teachers' beliefs about professional development and implementation of new instructional practices as an avenue for investigating how teacher beliefs influence instructional decisions.

3.2.3.4. Teacher Change

Change is necessary to the teaching process in order to improve student outcomes (Samaranayake et al., 2018). Historically, research on teacher change has been conducted in reference to "external sources such as government, school administration, or professional development initiatives suggesting or requiring teachers to make changes" (Kern & Graber, 2020, p. 80). Professional development is considered the primary route for teacher improvement (Cohen and Hill, 2000; Guskey, 2002; Samaranayake et al., 2018), and ever-evolving and changing curricula and expectations of school districts require teacher change. Ketelhut et al. (2019) proposed the idea that although not all innovations are successful, those who manage to affect change in education do so, in part, by "engaging teachers in fruitful PD" (p. 175) with teacher reflection as a crucial part of growth and change.

Dispositions were described as teachers' tendencies to think and behave in a particular way (Wasicsko, 2007), and they are representative of their knowledge, attitudes, and beliefs (Murrell et al., 2010) about teaching. Kern and Graber (2018) examined dispositions toward the change process relative to initiation. In this study, the term *teacher change* is referred to as *pedagogical change* implemented by teachers. Pedagogical change has been defined as alterations in instructional resources, teaching approaches, and beliefs about pedagogy theory (Fullan, 2007; Kern et al., 2018). Additionally, teacher dispositions have received attention in educational literature due to a strong relationship to teaching practices (Diez, 2007). The literature regarding change identified three dispositions that have the potential to affect pedagogical change: 1) dissatisfaction with current practice (Shaw et al., 1991), 2) self-efficacy to change (Bandura, 1995), and 3) willingness or openness to change (Fullan, 2007). Related to the process of change, dispositions include how teachers perceive the necessity of change and their own ability to successfully implement that change (Vannatta & Fordham, 2004). Shaw, Davis, and McCarty (1991) theorized that teachers' individual dispositions toward change are the primary determinants of whether or not teachers attempt to initiate pedagogical changes.

Teachers' beliefs and knowledge are thought to be interconnected with their practice and result in changes in instructional practice (Clarke & Hollingsworth, 2002). They built on Guskey's (1986) model which suggests that PD experiences are connected to teacher beliefs, teacher practices, and student outcomes in a complex, interconnected, and nonlinear relationship (Guskey, 1986; Clarke & Hollingsworth, 2002). Clarke and Hollingsworth (2002) developed a model of teacher professional growth called the Interconnected Model of Professional Growth (IMPG). Several studies have been conducted using IMPG (Justi & Driel, 2005; Kafyulilo et al., 2015; Ketelhut et al. 2019; and McNeill et al., 2016). This model has four analytic domains: 1)

The *external domain* in which sources of information or resources from outside the classroom are shared with teachers (i.e. PD experienced outside of the classroom); 2) The *domain of practice* refers to professional experimentation or the pedagogies teachers use in their classroom, 3) The *personal domain* encompasses teacher knowledge, beliefs, and attitudes and has a direct effect on how new knowledge is implemented in the classroom, and 4) The *domain of consequence* refers to outcomes resulting from implementing a new pedagogy. These domains represent "multiple growth pathways" (Mills et al., 2019, p. 1792) where change occurs through reflection and enactment within and between domains. The entire process of professional growth is situated within constraints and affordances of the change environment. Providing support while teachers work to integrate newly acquired knowledge is a critical aspect in promoting change (Ketelhut et al., 2020). Fortunately, PD opportunities have the potential to incite change as a catalyst to engage teachers in implementing evidence-based practices (Ketelhut, 2020).

Another factor at play concerned with teacher change is that the typical research perspectives are top-down relative to teacher change, which is often resisted by teachers and is less sustainable (Fullan, 2007; Guskey, 2002; Kern et al., 2018). However, little is known about how change is initiated and its associated internal and external factors (Kern et al., 2018). Teachers exercise a great deal of autonomy in teaching, and their individual decision-making processes dictate nearly all instructional decisions (Hargreaves & Fullan, 2012). Most pedagogical change, therefore, is likely a result of self-initiation. Interestingly, dispositions toward change were found to be individual and enduring such that teachers who made more past changes were more likely to also make future changes (Kern & Graber, 2017).

Maskit (2011) studied teachers' attitudes toward pedagogical changes, those changes regarding a variety of teaching strategies and content, at different stages of professional

development (e.g., Pre-service, Induction, Competency Building, Enthusiasm and Growth, Stability, Career Frustration, Career Wind-Down, and Career Exit; Burke, 1987). Maskit suggested that considerations of a teacher's stage of professional development be considered when planning future PD and its influence on teachers' attitudes toward pedagogical changes (Maskit, 2011).

Through reflection, internal conflict can be used as a catalyst for change. Van Wyk et al. (2019) posited the notion that when preservice teachers experience "cognitive discomfort" (p. 276), true learning takes place. For in-service teachers, abandoning a comfortable instructional practice is difficult, but it is through this process of cognitive discomfort that growth occurs. Reiman (1999) suggested that teacher reflection must be sustained over time "to stimulate substantive growth, as substantial learning occurs in periods of conflict, confusion, and over long periods of time" (p.610). Lempert-Shepell (1995) defines reflection as "the ability to make one's own behavior an object of study; to manage it via the ability to regard oneself as the ideal other" (p.434). Additionally, Lempert-Shepell (1995) contended that there is value in 'cognitive conflict' (p.438) as a mechanism to encourage teacher reflection and pedagogical change. This conflict and reflection can lead teachers to shift their mindsets more readily.

Perseverance is persistence in doing something despite difficulty or delay in achieving success. Perseverance of effort could be a potential mediator in the relationship between growth mindset and work engagement (Zeng, 2019). Puente-Diaz and Cavazos-Arroyo (2017) discovered a positive relationship between growth mindset and effort, and they explained that growth mindset is "related to a preference for progress cues emphasizing learning and improvement" (p. 4).

In the present study, I narrowed the focus to teachers' dispositions regarding pedagogical change through attendance at a PD event. Implementation of new instructional practices was used as an avenue for investigating how pedagogical changes experienced by teachers influenced instructional decisions.

3.3. The Present Study

3.4. Development and Implementation of the T-MACSP Teacher Self-Efficacy Survey

Surveys are a tool frequently used to acquire information in social and psychological research (Singleton & Straits, 2009). Surveys offer the opportunity for qualitative, quantitative, or a mixed methods approach for gathering information from participants (Punch, 2003). The self-efficacy survey used in this study, T-MACSP (**T**eacher - **M**indset, **A**ttitude and beliefs, **C**hange, and **S**elf-**P**erception), contains constructs such as mindset, self-perception, beliefs and attitudes, and openness or reluctance to pedagogical change.

The initial draft of the T-MACSP survey was created and reviewed by a team of experts. Sixty-one items were developed. Further refinement of the measure was conducted through teacher focus groups prior to administration in the school setting.

3.4.1. Focus Group

Six classroom teachers and KAT teacher ambassadors reviewed the T-MACSP draft survey in an effort to understand the perspectives and experiences of teachers as they completed the preliminary survey. Focus group participants were asked to complete the survey through Qualtrics and record the time it took them to complete the full survey. Additionally, teachers were asked to take notes regarding questions or confusion about each survey item.

Focus group participants were teachers with five or more years of classroom teaching experience and those that had participated in the KAT PD during previous years of study

implementation. After each participant completed the survey, a Zoom meeting was scheduled to discuss feedback and suggestions. This meeting took place over a two-hour period where each focus group member shared the time taken for the survey (i.e., 13 minutes on average), their opinions about the survey items in relation to their own mindset while attending PD, and offered additional question ideas and clarifications needed on vocabulary used in the original survey. For example, one question asked to teachers was related to how they respond to constructive feedback. Each group member shared additional adjectives for how the term feedback makes them feel (e.g., appreciated, supported, motivated, unaffected, ashamed, etc.), and those suggestions were taken into consideration as refinement to the survey.

3.5. Methodology

To investigate the factors which may affect a teacher's mindset about PD, a survey was developed and distributed to teachers participating in or those who have participated in a two-day reading comprehension PD event. Specifically, this study aimed to identify relationships between a teacher's mindset and their self-perceptions, beliefs, attitudes, and openness or reluctance to change to discover how future PD should be developed to ensure the highest degree of fidelity in implementation of the KAT framework.

This study was undertaken within the context of a larger research study designed to test the effectiveness of KAT reading comprehension PD opportunity delivered to teachers via a web-based Massively Open Online Virtual (MOOV) PBPD (e.g., Wijekumar et al., 2013, 2014) and its impact on grades 2-5 students' reading comprehension outcomes. Research has shown that teachers' implicit theories of ability impact their behaviors in the classroom and communication with students (Rattan et al., 2012; Strosher, 2003; Zeng, 2019). PD is known to be one of the most important influencers in the efficacy of teachers and teaching practices

(Desimone et al., 2007) and in improving student achievement (Desimone et al., 2005).

However, a gap in the research exists regarding factors affecting a teacher's mindset (i.e., self-perceptions, beliefs, attitudes, and feelings about pedagogical change) about PD interacts to produce positive or negative outcomes for both the teacher and student.

3.5.1. Research Design and Data Collection

In order to answer the research questions, a teacher self-efficacy survey (T-MACSP) was administered to teachers who are attending or have attended a two-day PD event relating to the KAT Framework for reading comprehension. Teachers from several school districts in a Southwestern state in the U.S. were asked to complete the T-MACSP by logging into their individual account on the Massively Open Online Virtual (MOOV) platform at https://it.literacy.io. The MOOV platform provides a convenient and secure user interface for data collection and is used for KAT PD registration, to house PD modules completed synchronously and asynchronously and over 2,500 researcher-created KAT materials (e.g., lesson guides, PowerPoint presentations, student videos, KAT posters and bookmarks, and research done by the KAT team) for teachers to use following PD, and is the site where students login to participate in the Intelligent Tutor for the Structure Strategy (i.e., ITSS). For those teachers who have already attended PD, an email (see Appendix B) was sent out on February 28, 2023, from the it.literacy.io site requesting that PD attendees complete the survey prior to March 31, 2023. I included my email address in the email sent out in the event that there were questions about survey completion. Data collection was accomplished over a four-week period through the MOOV platform. The participating teachers completed the web-based survey individually. For those participants who completed the survey, their names were entered into a drawing for one of fifteen $50 Amazon gift cards. An email was sent to the teachers who completed the survey to

thank them for their participation and to let them know they had been entered into the drawing for a gift card. On March 31, the names of the completed survey respondents were randomly selected. Winners of the gift cards were emailed to inform them that they would receive an Amazon gift card through email.

Institutional review board (IRB) approval was granted prior to conducting all research procedures and district approval of the research has been obtained. Teachers signed inform consent documents at the beginning of the study agreeing to participate in the research.

3.5.1.1. Setting and Participants

Teachers from a Southwestern state in the United States who had participated in a district-mandated professional development event for an evidence-based reading comprehension strategy completed a Likert scale questionnaire in an effort for researchers to understand the mindset and possibly factors implementation of a reading comprehension strategy of PD attendees.

3.5.1.1.1. Teachers

Participants were 195 ($n = 176$ Female) from 12 different school districts in the southwestern United States. All participants were a part of the larger study and received two days of reading comprehension PBPD prior to participating in the present study. As part of the larger study, the districts involved expected all participants to implement KAT instruction in their classroom instruction; however, participation in the T-MACSP Self Efficacy Survey was voluntary.

Teacher demographic information was collected and is presented in Table 3.1. Table 3.1 also presents teacher demographic information from the state in which the research took place.

No significant differences were found between the survey respondents and the overall population of teachers in the state.

Of the 195 participants, 143 (73.3%) were general education classroom teachers, 34 (17.44%) were instructional specialists or coaches, six were special education teachers (3.08%), one (0.51%) was a paraprofessional, four (2.05%) served in administrative roles, and seven (3.6%) did not report their roles in education. While 14 teachers did not report their years of teaching experience, the average years of teaching experience reported was 11 years (range 0 to 25 years), with a standard deviation of 7.53. Of the participants, 106 (54.4%) received their certification through a traditional undergraduate program leading to a bachelor's degree and teaching credentials, 49 (25%) participants received their certification through an alternative certification program, 13 (7%) participants received their certification through a master's program that also awarded a teaching credential, and 12 (6%) participants received their teaching credentials through a post-baccalaureate credentialing program. Fourteen (7%) participants did not identify their certification route. The participants' educational levels include 127 (65.13%) Bachelor's Degree, 51 (26.15%) Master's Degree, and one (0.51%) Doctorate Degree. Fourteen participants (7%) did not disclose their education level.

3.5.2. Procedures

Access to the teachers was secured through the districts' participation in the larger study on KAT reading comprehension instruction. Teachers were recruited using both purposive and convenience sampling. Purposive sampling was used because of the need to recruit participants who are employed to specifically teach reading to grade 2-5 students. The participating districts agreed to allow the research team to hold a two-day PBPD at various points throughout the school year. All 2-5 grade teachers were expected to attend, and the professional development

session lasted for approximately seven hours per day. As part of the larger study, participants signed inform consent documents agreeing to participate in the research.

For those teachers who already attended PD, an email (see Appendix B) and survey link was sent out on February 28, 2023, from the it.literacy.io site requesting that PD attendees complete the survey prior to March 31, 2023. I included my email address in the mass email sent out in the event that there were questions about survey completion. The participating teachers completed the web-based survey individually. Participation in the T-MASCP was voluntary and participants were assured that all information would be kept confidential and that information would be de-identified after it was collected. An email was sent to the teachers who completed the survey to thank them for their participation.

3.5.3. Survey Instrument

The T-MACSP survey included 13 items from the validated Mindset Theory Scale (Cronbach's $\alpha = 0.803$; Yilmaz, 2022) and 14 items from Teacher Knowledge of Reading Comprehension - Self-Perception scale (Cronbach's $\alpha = 0.92$; Hudson, 2021). Additionally, because no prior validated measures exist, I developed an instrument with 24 additional items related to 1) teacher beliefs and attitudes and 2) openness or reluctance to teacher change (Clarke & Hollingsworth, 2002; Desimone, 2009; Dweck, 2006; Kern & Graber, 2020; Ketelhut, 2020; Maskit, 2011; and Quirk et al., 2010). Reliability (Cronbach's α) for items related to teacher beliefs, attitudes, and openness or reluctance to teacher change were calculated and reported further below in the results section.

The T-MACSP Self-Efficacy Survey data was explored for missingness and determinations were made as to treatment methods used for missing data when conducting analyses. Specifically, the research used complete case analysis (i.e., responses with no missing

data across any of the questions) for this study. Basic data cleaning (i.e., importing, recoding, and reshaping) and descriptive and inferential statistical tests were conducted using Stata 17.0 (StataCorp, 2021) to answer all research questions. Descriptive analyses included frequency counts, percentages, and mean scores for both individual item scores and overall construct scores on the T-MACSP. An exploratory factor analysis was conducted on all constructs, both validated and unvalidated, to verify the applicability of survey constructs to this population. This also allowed me to analyze the results to determine patterns among the different constructs (i.e., mindset, self-perception, attitudes and beliefs, and teacher change). Specifically, Pearson correlation coefficients (r) among teacher mindset scores and teacher characteristics (i.e., years of experience, gender, and education level) were explored, using alphas (Type I error rate) at both $p<.05$ (*) and $p<.01$ (**) levels. The survey items that comprised the T-MACSP Self-Efficacy Survey were fit into a linear regression model in order to predict factors affecting teachers' mindsets toward implementation of a new reading comprehension strategy and their likelihood to continue to make pedagogical changes.

3.5.4. Measures

A link to the T-MACSP Self-Efficacy Survey was sent out to professional development participants in order to explore a number of factors including teacher mindset. See Appendix A for the list of survey questions included. Participants were asked 51 Likert-scale items related to mindset, beliefs and attitude, openness or reluctance to change, and self-perception.

3.5.4.1. Dependent Variable

The primary dependent variable for this analysis is Teacher Mindset. Possible responses from participants for the 13 items on the Teacher Mindset construct (i.e., Mindset Theory Scale, Yilmaz, 2022) included Strongly Agree, Agree, Somewhat Agree, Somewhat Disagree,

Disagree, or Strongly Disagree. Items ranged from 1-6, and items were reverse-coded, where necessary. Items associated a "1" with lower values related to a growth mindset and higher values associated with fixed mindset.

3.5.4.2. Independent Variables

3.5.4.2.1. Demographics

The Grade 2-5 teachers responsible for teaching reading from school districts in a Southwestern state were invited to participate in the study. Teacher demographic information, including years of experience, race, gender, level of education, and school-level role was collected and presented in Table 3.1.

3.5.4.3. T-MACSP self-efficacy survey.

The T-MACSP survey included 13 items from the validated Mindset Theory Scale (Cronbach's $\alpha = 0.803$; Dweck, 2006; Yilmaz, 2022). Through the development of the Mindset Theory Scale, which includes four subsections: Procrastination (four items), Immutability of Belief (three items), Belief in Improvement (three items), and Effort (three items), Yilmaz (2022) found that the Mindset Theory Scale could be used as a valid and reliable way to assess mindset as "mindset includes thoughts, beliefs, emotions, motives, and intentions" (p. 2).

3.5.4.3.1. Teacher knowledge of reading comprehension – self-perception (T-SP).

Hudson (2021) asked elementary teachers 12 questions as part of the Teacher Knowledge of Reading Comprehension - Self-Perception (Cronbach's $\boldsymbol{\alpha} = 0.92$) survey prior to attending a reading comprehension PD pertaining to teachers' self-perceptions of teaching various reading comprehension constructs and their confidence level of classroom practices. Possible responses from participants for the Self-Perception construct included Minimal, Moderate, Very Good, or

Expert with items ranging from 1-4 with "1" for minimal, "2" for moderate, "3" for very good, and "4" for expert.

On average, teachers responding to Hudson's (2021) Teacher Knowledge of Reading Comprehension – Self Perception survey believed they had moderate knowledge for teaching comprehension to elementary students. Approximately 16% of the participants believed they held "very good" or "expert" knowledge for the teaching of reading comprehension. However, participants scored themselves statistically significantly lower on their ability to teach reading comprehension to below-average readers than typically developing (p<.001) and above-average readers (p<.001). Additionally, teachers' average self-perception of knowledge for reading comprehension instruction was positively, statistically significantly related to teachers' scores on the Teacher Knowledge of Reading Comprehension. However, self-perception score (γ_{40}=-0.43, p=0.35) did not significantly predict participants' scores during the third observation.

Two additional questions were added to the T-MACSP in the Self-Perception construct to investigate teachers' perceptions of their abilities to teach multiple standards within the same lesson and to collect individual short-answer responses regarding the ease with they are able to locate evidence-based practices as part of their instructional planning (i.e., How would you rate your ability to teach multiple standards during the same lesson? and one open-ended question: Where do you locate evidence-based practices?). Reliability (i.e., Cronbach's α) for additional items related to teacher self-perceptions was calculated and maintained (Cronbach's α = 0.92).

3.5.4.3.2. Teacher beliefs and attitudes (T-BA).

A researcher-developed measure with 13 items related to teacher beliefs and attitudes concerning professional development, use of reading strategies, feelings about working with someone more knowledgeable than themselves, and dispositions related to personal expectations

about student outcomes based on tenets of previous research was included in the T-MACSP self-efficacy survey based on the literature. Questions included, but were not limited to: 1) I believe it is important to attend many professional development events in order to learn new ideas, 4) I believe it is important to learn and use evidence-based reading comprehension strategies in my instruction, 5) I believe it is important to follow the reading textbook and materials given to me by my school district, and 9) When I work hard to teach a particular concept in reading and my students struggle, it makes me feel like I'm not a good teacher. Additionally, one open-ended question was asked (i.e., What indicators do you use to decide if a reading strategy is effective or not and should continue to be used in your instruction?). Prior research has shown that teachers may feel unqualified for providing explicit instruction in reading comprehension but instead feel great pressure to cover content in preparation for standardized testing in lieu of providing a balanced amount of systematic and explicit instruction (Ness, 2016). Quirk and colleagues (2010) suggested that the development of a reliable measure of teachers' beliefs regarding student motivation to read is an important step in conducting additional research examining how these beliefs might influence student outcomes in the area of reading through 12 motivational constructs (e.g., self-efficacy, challenge, importance, recognition, compliance, and autonomy support). An important result of this study is the finding that teachers' beliefs about student motivation to read can be reliably measured across a range of motivational constructs. Mills and colleagues (2019) investigated the historical notion that PD efforts have aimed to change teachers' beliefs and understanding, with the assumption that teacher practice will change accordingly (Harris, 1980; Mills et al., 2019). Mills et al. (2019) suggested that PD include opportunities for teachers to reflect on their own practice and consider external factors contributing to pedagogical change beyond PD.

Possible responses from participants for the Teacher-Beliefs and Attitudes construct include Strongly Agree, Agree, Somewhat Agree, Somewhat Disagree, Disagree, or Strongly Disagree with items ranging from 1-6 with "1" for Strongly Agree and "6" for Strongly Disagree.

3.5.4.3.3. Teacher change (T-C).

Previous research has suggested that professional development is considered the primary route for teacher improvement (Cohen & Hill, 2000; Guskey, 2002; Samaranayake et al., 2018), and ever-evolving and changing curricula and expectations of school districts require teacher change. Teacher dispositions have received attention in educational literature due to a strong relationship to teaching practices (Diez, 2007). Dispositions are described as teachers' tendencies to think and behave in a particular way (Wasicsko, 2007), and they are representative of their knowledge, attitudes, and beliefs (Murrell et al., 2010) about teaching. The literature regarding teacher change has identified three dispositions that have the potential to affect teacher change: 1) dissatisfaction with current practice (Shaw et al., 1991), 2) self-efficacy to change (Bandura, 1995), and 3) willingness or openness to change (Fullan, 2007).

The 11 researcher-developed questions posed regarding pedagogical change to teachers as part of the T-MACSP survey were related to openness or reluctance to change. Questions included but were not limited to: 1) I am open to learning new strategies for teaching reading comprehension, 3) It takes a lot of convincing for me to take a new strategy and incorporate it into my instruction, and 9) Too many pedagogical changes creates "a mess" at work. Possible responses from participants for the Teacher-Beliefs and Attitudes construct include Strongly Agree, Agree, Somewhat Agree, Somewhat Disagree, Disagree, or Strongly Disagree with items ranging from 1-6 with "1" for Strongly Agree and "6" for Strongly Disagree. Because I

developed this survey, reliability coefficients (Cronbach's alpha) and exploratory factor analysis techniques (i.e., factor loading and construct development) were used to validate these measures. See Figure 3.1 for a breakdown of survey items. Reliability for items related to teacher beliefs and attitudes and openness or reluctance to teacher change (i.e., Cronbach's α) was calculated and reported.

3.5.5. Data Analysis

The aim in the present study was to examine the mindset of teachers and to what extent different factors (e.g., self-perception, beliefs and attitudes, and openness or reluctance to change) affect teachers' abilities and openness to implement ideas learned at a reading comprehension professional development event. Given that this study is not an intervention, and I am only claiming to explore the relationship between constructs (i.e., no causal inferences), I used a non-experimental, correlational design to answer research questions related to teacher mindset.

Data were coded based on the descriptors outlined in the data analysis section. All constructs in this analysis consisted of a summative score (i.e., adding up all the numeric responses from the Likert scale items). For example, to create a continuous dependent variable, the teachers' mindset scores were calculated as a summative measure. Further, items were grouped by construct based on their criteria outlined in the instrument information so that analysis of each construct could be examined.

3.5.5.1. Research Question 1

To answer RQ1 (To what extent, if any, does years of experience predict teachers' mindsets toward ability to implement ideas learned at a professional development event for reading comprehension while controlling for gender and education level?), I used multiple linear

regression to analyze if years of experience, gender, and education level can predict teachers'

mindset toward ideas learned at a professional development event for reading comprehension.

Individual items and the overall mindset score for each respondent were analyzed in order to

determine if there are correlations between teachers' years of experience and mindset while

controlling for gender and education level. Prior to statistical analysis, all mindset items were

totaled for each participant to determine a continuous dependent variable. Based on prior studies

of teacher mindset, Pearson correlation coefficients (r) among mindset scores and teachers' years

of experience were computed as well. For all correlational statistical procedures, inferential

statistics were used to test whether the coefficient statistics are statistically significantly

correlated at the $p < .05$ and $p < .01$ levels. Correlations among concepts were reported. A

multiple linear regression model was fit to explore the relationships between these demographic

characteristics and teachers' mindsets, using the following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(years\ of\ experience) + \beta_2(gender)$$
$$+ \beta_3(education\ level)$$

For RQ1, I hypothesized that teachers with more years of experience (i.e., 16+ years of

teaching experience) predict a fixed mindset based on Strosher (2003) finding that teachers with

higher chronological age tended to have a fixed mindset. Strosher (2003) found that in-service

teachers had the highest percentage of entity (i.e., fixed) theorists and were the only group that

did not have statistically significant higher number of incremental (i.e., growth) theorists when

compared to those with a fixed mindset. Of the 34 respondents with fixed mindset, 10 were male

and 24 were female; given that 21% of the participants in the study were male and 79% were

female, there were a statistically proportionate number of male and female entity theorists [χ^2 (1,

n=34) = 1.32, p>.05]. Of the 95 respondents with a growth mindset, 19 were male and 76 were

female. This was statistically proportionate given the number of male and female participants

[$\chi^2(1) = .07$, p>.05].

3.5.5.2. Research Question 2

To answer RQ2 (To what extent, if any, does self-perception of teaching abilities predict teacher's mindset at a professional development event?), I used simple linear regression to analyze if a teacher's self-perceptions to teaching reading comprehension can predict mindset. Individual items and the overall mindset score for each respondent were analyzed in order to determine if there were correlations between teachers' self-perception scores. Prior to statistical analysis, all mindset items were totaled for each participant to determine a continuous dependent variable. Based on prior studies of self-perception, Pearson correlation coefficients (*r*) among mindset scores and self-perception were computed as well. For all correlational statistical procedures, inferential statistics were used to test whether the coefficient statistics are statistically significantly correlated at the $p < .05$ and $p < .01$ levels. Correlations among concepts were reported. A multiple linear regression model was fit to explore the relationships between teachers' self-perception and mindset, using the following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(self - perception)$$

For RQ2, I hypothesized teachers' self-perceptions of teaching reading comprehension would predict a significant relationship between teachers' self-perception and mindset scores of teachers attending a professional development event for reading comprehension based on Hudson (2021) in which respondents believed they had moderate knowledge for teaching reading comprehension to elementary students. In Hudson (2021), approximately 16% of the participants believed they held "very good" or "expert" knowledge for the teaching of reading comprehension. However, participants scored themselves statistically significantly lower on their

ability to teach reading comprehension to below-average readers than typically developing (p<.001) and above-average readers (p<.001). Additionally, teachers' average self-perception of knowledge for reading comprehension instruction was positively, statistically significantly related to teachers' scores on the Teacher Knowledge of Reading Comprehension.

3.5.5.3. Research Question 3

To answer RQ3 (To what extent, if any, does teachers' beliefs and attitudes toward implementation of a reading comprehension strategy predict a teacher's mindset at a professional development event?), I used multiple linear regression to analyze if teachers' beliefs and attitudes toward implementation of a reading comprehension strategy predict teachers' mindset toward ideas learned at a professional development event for reading comprehension. Individual items and the overall mindset score for each respondent was analyzed in order to determine if there were correlations between teachers' beliefs and attitudes. Prior to statistical analysis, all mindset items were totaled for each participant to determine a continuous dependent variable. Based on prior studies of teacher beliefs and attitudes, Pearson correlation coefficients (r) among mindset scores and teachers' beliefs and attitudes were computed as well. For all correlational statistical procedures, inferential statistics were used to test whether the coefficient statistics are statistically significantly correlated at the $p < .05$ and $p < .01$ levels. Correlations among concepts were reported. A multiple linear regression model was fit to explore the relationships between teachers' beliefs and attitudes and mindset, using the following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(beliefs) + \beta_2(attitudes)$$

For RQ3, I hypothesized a significant relationship between teachers' mindset scores and teachers' beliefs and attitudes related to attending a reading comprehension PD and instructional practices related to teaching reading comprehension. Prior research has shown that teachers may

feel unqualified for providing explicit instruction in reading comprehension but instead feel great pressure to cover content in preparation for standardized testing in lieu of providing a balanced amount of systematic and explicit instruction (Ness, 2016). RQ3 increases the knowledge base for future research regarding how a teachers' beliefs and attitudes can be correlated to teachers' mindsets.

3.5.5.4. Research Question 4

To answer RQ4 (To what extent, if any, does openness or reluctance to use a reading comprehension strategy predict a teacher's mindset at a professional development event?), I used multiple linear regression to analyze if a teacher's openness or reluctance to pedagogical change involving a reading comprehension strategy can predict a teacher's mindset. Individual items and the overall mindset score for each respondent were analyzed in order to determine if there are correlations between teachers' feelings related to their openness and/or reluctance to change. Prior to statistical analysis, all mindset items were totaled for each participant to determine a continuous dependent variable. Based on prior studies of pedagogical change, Pearson correlation coefficients (r) among mindset scores and openness and/or reluctance to change were computed as well. For all correlational statistical procedures, inferential statistics were used to test whether the coefficient statistics are statistically significantly correlated at the $p < .05$ and $p < .01$ levels. Correlations among concepts are reported. A multiple linear regression model was fit to explore the relationships between teachers' openness/reluctance to PD and mindset, using the following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(openness) + \beta_2(reluctance)$$

For RQ4, I hypothesized that there would be a significant relationship between teachers' mindset scores and their openness and/or reluctance to change related to teaching a reading

comprehension strategy learned at KAT PD. Ketelhut et al. (2019) proposed the idea that although not all innovations are successful, those who manage to affect change in education do so, in part, by "engaging teachers in fruitful PD" (p. 175) with teacher reflection as a crucial part of growth and change. Dispositions are described as teachers' tendencies to think and behave in a particular way (Wasicsko, 2007), and they are representative of their knowledge, attitudes, and beliefs (Murrell et al., 2010) about teaching. The literature regarding teacher change has identified three dispositions that have the potential to affect teacher change: (1.) dissatisfaction with current practice (Shaw et al., 1991), (2.) self-efficacy to change (Bandura, 1995), and (3.) willingness or openness to change (Fullan, 2007). Results from RQ4 increase the knowledge base for future research regarding how a teacher's disposition have a possibility to affect pedagogical change.

3.6. Results

Results were generated using Stata 17.0 (StataCorp, 2021). In the present study, the Mindset Theory Scale scores of elementary teachers who had participated in a reading comprehension professional development were analyzed in order to discover relationships between teachers' mindsets and their self-perceptions, beliefs, attitudes, and openness or reluctance to change. Additionally, I was interested investigating the possible relationship between teachers' mindsets and their gender, years of teaching experience, and education level based on previous research which noted that "teachers with more experience were more likely to be entity theorists and therefore believe intelligence is a stable trait" (Strosher, 2003, p. 18).

3.6.1. Exploratory factor analysis of T-MACSP Self-Efficacy Survey

In order to examine the number of underlying factors, exploratory factor analysis (EFA) was used to uncover complex patterns. EFA is usually the first step in building scales or new

metrics (Yong & Pearce, 2013). Factor analysis is based on an underlying theoretical model called the Common Factor Model which suggests that "observed measures are affected by underlying common and unique factors, and the correlation patterns need to be determined" (Yong & Pearce, 2013, p. 83).

Two of the constructs used in the T-MACSP Self-Efficacy Survey were previously validated measures (Hudson, 2021; Yilmaz, 2022), but I chose to conduct an exploratory factor analysis of those constructs to evaluate factor loadings. Using an eigenvalue and scree plot approach, I determined the factor loadings for both the Mindset Theory Scale (Yilmaz, 2022) and Teacher Self-Perceptions (Hudson, 2021). See Tables 3.2 and 3.3 for the factor loadings related to each construct, respectively.

Because there was not a previously validated survey created to measure teachers' mindsets in relation to teachers' beliefs, attitudes, openness and/or reluctance to change regarding teaching reading comprehension, I created survey items based on available literature. These survey items fit into two categories: Teacher Beliefs and Attitudes and Teacher Change. In the interest of ensuring that the factor structures of the instruments used in the researcher-created measures were consistent with the literature, a series of principal component factor analyses with oblique rotation (i.e., Promax rotation) were conducted, one for the Teacher Beliefs and Attitudes construct, and one for the Teacher Change construct. The following sections report the results of each of these principal component analyses for the T-MACSP Self-Efficacy Survey (i.e., Mindset Theory Scale, Teacher Self-Perceptions, Teacher Beliefs and Attitudes, and Teacher Change). See Appendix C for the revised version of the T-MACSP Self-Efficacy Survey.

3.6.2. T-MACSP: Mindset Theory Scale

While conducting an exploratory factor analysis, I allowed any factors to emerge in the data. Using an eigenvalue and scree plot approach, I determined that only one factor emerged. Figure 3.2 displays a scree plot for the EFA, which displays the amount of variability each of the factors is able to account for from largest to smallest (Binks-Cantrell et al., 2012; Yong & Pearce, 2013). Consistent with the most stringent criterion suggested by Tabachnick and Fidell (1989), items with factor loadings of less than .40 should be eliminated. Although Mindset Theory Scale questions two, four, and eight have a factor loading of <0.4, the decision was made to keep all questions because this was a previously validated scale. The single factor explained 90.9% of the total variance. All items relate on a scale from fixed to growth mindset. The Cronbach's alpha was 0.85 when all items were included, which indicated good reliability. Thus, all questions appeared to demonstrate a reliable measure. Table 3.2 illustrates the rotated factor loadings for the Mindset Theory Scale construct.

3.6.3. T-MACSP: Teacher Self-Perception

As with the Mindset Theory Scale construct, I allowed any factors to emerge in the data related to teacher self-perception. Using an eigenvalue and scree plot approach, I determined that only one factor emerged. Figure 3.3 displays a scree plot for the EFA, which offers a visual of the amount of variance each of the factors is able to account for in descending order (Binks-Cantrell et al., 2012; Yong & Pearce, 2013). This factor explained 89.4% of the variance with an eigenvalue of 6.38. Table 3.3 illustrates the factor loadings for the Teacher Self-Perception construct. With a Cronbach's alpha of 0.92, this construct has excellent reliability (Konting et al., 2009).

3.6.4. T-MACSP: Teacher Beliefs and Attitudes

Based on literature regarding teachers' beliefs and attitudes about teaching reading comprehension, the principal component analysis of the construct, Teacher Beliefs and Attitudes, was restricted to two factors. Upon development of and prior to teacher participation in the T-MACSP Self-Efficacy Survey, this construct consisted of 13 questions related to beliefs and attitudes about teaching reading. Two of those 13 questions asked participants to respond to a question regarding how long they are willing to try a new reading comprehension strategy before discarding it and an open-ended question related to the indicators used in deciding if a strategy is effective or not. Therefore, these two questions were not considered in the factor analysis. Figure 3.4 displays a scree plot for the EFA, which graphs the amount of variability each of the factors is able to account for in descending order (Binks-Cantrell et al., 2012). Consistent with the most stringent criterion suggested by Tabachnick and Fidell (1989), items with factor loadings of less than .40 were eliminated. This conservative criterion resulted in three survey items being removed (Q2, Q5, and Q10) and a decision to create two individual constructs: Teacher Beliefs and Teacher Attitudes. Consequently, a five-item modified construct was used to measure Teacher Beliefs, and a three-item modified construct was used to measure Teacher Attitudes. The Teacher Beliefs factor had an eigenvalue of 2.05 and 77.1% variance explained, and the Teacher Attitudes factor had an eigenvalue of 0.95 and 35.6% variance explained. See Table 3.4 for factor loadings of the Teacher Beliefs construct and the Teacher Attitudes construct. While the Cronbach's alpha for both newly created constructs fell slightly below the reliability level of 0.70 (considered to be a "fair" reliability; Konting et al., 2009), the Teacher Attitude construct was close to that limit with an alpha of 0.67 while the Teacher Beliefs construct came in at 0.62.

Thus, Cronbach's alpha measurement to demonstrate internal consistency showed an acceptable, albeit poor, internal reliability of both newly developed constructs.

3.6.4.1. T-MACSP: Openness or Reluctance to Pedagogical Change

Based on literature (Fullan, 2007; Kern & Graber, 2020; Samaranayake et al., 2018; Shaw et al., 1991; Vannatta & Fordham, 2004; Wasicsko, 2007;) regarding teachers' openness or reluctance to pedagogical change, the principal component analysis of the construct, Teacher Change, was restricted to two factors. Upon development of and prior to teacher participation in the T-MACSP Self-Efficacy Survey, this construct consisted of 11 questions related to feelings about pedagogical change when teaching reading. One of those 11 questions asked participants to share how they felt about receiving constructive or critical feedback, and there was a possibility of 13 choices with more than one answer choice being selected. Therefore, that question was not considered in the factor analysis. Figure 3.5 displays a scree plot for the EFA, which graphs the amount of variability each of the factors is able to account for in descending order (Binks-Cantrell et al., 2012; Yong & Pearce, 2013). Consistent with the most stringent criterion suggested by Tabachnick and Fidell (1989), items with factor loadings of less than .40 were eliminated. This conservative criterion resulted in three survey items (questions 2, 5, and 10) being removed and a decision to create two individual constructs: Openness to Pedagogical Change and Reluctance to Pedagogical Change. Consequently, a six-item modified construct was used to measure Openness to Pedagogical Change, and a two-item modified construct was used to measure Reluctance to Pedagogical Change. The Openness to Pedagogical Change construct had a 2.54 eigenvalue and 77.5% variance explained. The Reluctance to Pedagogical Change construct had a 1.05 eigenvalue and 32.0% variance explained. See Table 3.5 for factor loadings of the Openness to Pedagogical Change construct and Reluctance to Pedagogical Change

construct. The Cronbach's alpha for both newly created constructs met the requirement for the

good and acceptable reliability level of 0.70 (Konting et al., 2009). The Openness to Pedagogical

Change construct demonstrated an internal consistency of 0.75 while the Reluctance to

Pedagogical Change construct came in at 0.70, thus Cronbach's alpha measurement to

demonstrate internal consistency resulted in an acceptable internal reliability of both newly

developed constructs. See Figure 3.6 for the final T-MACSP survey items based on the factor

analysis.

3.6.5. Descriptive Statistics

Table 3.6 displays the means and standard deviations for the T-MACSP Self-Efficacy

Survey. Items were scored based on the Likert scale responses to survey questions. For Mindset

Theory Scale, the mean was 27.3 ($SD = 7.48$), with a range of 13 to 51. With the low range of

scores being correlated to growth mindset (e.g., scores between 13-39 indicate a growth mindset)

and scores greater than 39 indicating a fixed mindset. When looking at each individual construct,

the teacher self-perception mean was 37.55 ($SD = 5.14$) with a range of 14 to 52, signifying that

most teachers feel very good about their abilities to teach concepts such as vocabulary, reading

comprehension, main idea, summarization, and inferencing. Additionally, teachers reported

feeling very good at discerning between an effective or ineffective reading comprehension

strategy. In considering teacher beliefs as a predictor of teachers' mindsets, a higher mean score

indicated stronger beliefs about the importance of using evidence-based practices, learning new,

effective strategies for teaching reading comprehension, and working with a more

knowledgeable other in order to become a more effective educator. The mean Teacher Beliefs

score was 26.21 ($SD = 2.52$) with a range of 19 to 30, demonstrating that teachers feel strongly

about the importance of improving their own practice. Likert-scale scores for openness to

pedagogical change range from 1 as "Strongly Disagree" to 6 being equal to "Strongly Agree."

Survey results about teacher change indicated that educators are open to receiving and

implementing new strategies for teaching reading comprehension ($M = 5.51$, $SD = 0.58$), but

they are less comfortable practicing a new strategy with colleagues ($M = 4.51$, $SD = 0.84$). With

an overall mean of 30.99 ($SD = 3.2$), the data suggested that most teachers are open to

pedagogical change.

3.6.6. Assumption Checking

The data were screened for possible violations of the assumptions underlying regression.

An examination of the residuals versus predicted (RVP) scatterplot revealed no violations of the

linearity or homoscedasticity assumptions, and the distribution of the residuals was found to be

approximately normal (sk = 0.29, ku = 2.86). The Breusch-Pagan/Cook-Weisberg test for

heteroskedasticity was non-significant, $X^2(1) = 2.32$, $p = 0.13$. Correlations between teachers'

mindset scores and teacher self-perception, teacher beliefs, teacher attitudes, openness to

pedagogical change, and reluctance to pedagogical change can be found in Table 3.7. Because

the correlation between all independent variables were <0.8, there did not appear to be any

violation of multicollinearity. Further, all variance inflation factors (VIF) for each of the

variables were 1.81 or below, which indicates no violation of multicollinearity. In summary,

based on the screening of the data, it appeared appropriate to have proceeded with the regression.

3.6.7. Research Question 1 Results

To answer RQ1 (To what extent, if any, does years of experience predict teachers'

mindset toward ability to implement ideas learned at a professional development event for

reading comprehension while controlling for gender and education level?), a multiple linear

regression model was fit to explore the relationships between these demographic characteristics

and teachers' mindsets, using the following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(years\ of\ experience) + \beta_2(gender)$$

$$+ \beta_3(education\ level)$$

Correlation and multiple regression analyses were conducted to examine the relationship

between teachers' mindset scores and years of experience, gender, and education level. Results

indicated that teachers' mindset scores are not significantly correlated with the predictors,

indicating that neither years of experience, gender, or education level were predictive of

teachers' mindsets. Basic descriptive statistics are shown in Table 3.6. Regression coefficients

are shown in Table 3.8. The multiple regression model with both predictors produced $R^2 = 0.00$,

$F(3, 177) = 0.59$, $p = 0.62$. The three-predictor model was able to account for <1% of the

variance in Mindset Theory Scale scores. Each of the predictor variables did not have a

significant (i.e., $p<0.05$) correlation with Mindset Theory Scale scores. It was found that years of

experience ($\beta = 0.06$, $p = 0.47$, CI 95% [-0.48, 1.05]), gender ($\beta = -0.06$, $p = 0.45$, CI 95% [-6.66,

2.95]), and education level ($\beta = -0.08$, $p = 0.31$, CI 95% [-3.35, 1.06]) did not significantly

predict teacher mindset scores.

3.6.8. Research Question 2 Results

To answer RQ2 (To what extent, if any, does self-perception of teaching abilities predict

teachers' mindsets at a professional development event?), a simple linear regression model was

fit to explore the relationships between teachers' self-perception and mindsets, using the

following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(self - perception)$$

Simple linear regression was used to test if teacher self-perception significantly predicted teacher mindset. The overall regression was not statistically significant ($R^2 = 0.01$, $F(1,193) = 2.64$, $p=0.11$). Thus, it can be concluded that teacher self-perception of teaching reading comprehension did not significantly predict teacher mindset scores ($\beta = -0.12$, $p = 0.11$, CI 95% [-0.37, 0.36]).

3.6.9. Research Question 3 Results

To answer RQ3 (To what extent, if any, does teachers' beliefs and attitudes toward implementation of a reading comprehension strategy predict teacher's mindset at a professional development event?), a multiple linear regression model was fit to explore the relationships between teachers' beliefs and attitudes and mindset, using the following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(beliefs) + \beta_2(attitudes)$$

Multiple linear regression was used to test if teacher beliefs and teacher attitudes significantly predicted teachers' mindsets. The overall regression was statistically significant ($R^2 = 0.22$, $F(2,192) = 26.84$, $p<0.001$). It was found that teacher beliefs significantly predicted teacher mindset ($\beta = -0.39$, $p <0.001$, CI 95% [-1.46, -0.79]) wherein the negative correlation of -0.39 indicated that, as teacher beliefs increased, mindset scores decreased toward *growth* mindset. Additionally, it was found that teacher attitudes significantly predicted teacher mindset scores ($\beta = 0.17$, $p < 0.001$, CI 95% [0.12, 0.86]) wherein a positive association meant that increases in attitude scores were associated with an increase in mindset scores toward a *fixed* mindset.

3.6.10. Research Question 4 Results

To answer RQ4 (To what extent, if any, does openness or reluctance to use a reading comprehension strategy predict teacher's mindset at a professional development event?), a

multiple linear regression model was fit to explore the relationships between teachers'
openness/reluctance to PD and mindset, using the following equation:

$$\widehat{Mindset} = \beta_0 + \beta_1(openness) + \beta_2(reluctance)$$

Correlation and multiple regression analyses were conducted to examine the relationship
between teachers' mindset scores and openness and reluctance to pedagogical change. Results
indicated that each of the pedagogical change (e.g., openness and reluctance to pedagogical
change) scores are significantly correlated with the criterion, indicating that openness and
reluctance to change are predictive of teachers' mindsets. Basic descriptive statistics and
regression coefficients are shown in Tables 3.6 and 3.8. The multiple regression model with both
predictors produced $R^2 = 0.27$, $F(2, 192) = 36.05$, $p<0.001$. The two-predictor model was able to
account for 27% of the variance in Mindset Theory Scale scores. Each of the predictor variables
had a significant ($p<0.05$) correlation with Mindset Theory Scale scores. It was found that
openness to pedagogical change significantly predicted teacher mindset (β= -0.46, $p <0.001$, CI
95% [-1.37, -0.79]) wherein the negative correlation of -0.46 indicated that, as openness to
pedagogical change increased, mindset scores decreased toward *growth* mindset. Similarly, it
was found that reluctance to pedagogical change significantly predicted teacher mindset scores
($\beta = 0.16$, $p = 0.01$, CI 95% [0.13-0.99]) wherein a positive association meant that increases in
reluctance scores were associated with an increase in mindset scores toward a *fixed* mindset.

3.7. Discussion

This study aimed to examine the mindset of elementary teachers ($n=195$) and to what
extent different factors (e.g., self-perception, beliefs and attitudes, and openness or reluctance to
change) affect teachers' abilities and openness to implement ideas learned at a reading
comprehension professional development event. While much of the research regarding mindset

has centered around the mindsets of students, it is also important to consider the consequences of teachers' fixed or growth mindsets and its impact on student outcomes. Rattan et al. (2012) posited the idea that instruction is presumably more effective when delivered by a teacher with a growth mindset. A teacher's growth mindset is characterized by the belief that there is room for growth in every student's learning (Dweck, 2009) as well as in their own. Teachers with high expectations for their students and themselves tend to adopt significantly different instructional practices in comparison to teachers with low expectations for their students and themselves (Rubie-Davies, 2007).

Given that this study is not an intervention, I was interested in exploring the relationships between constructs (i.e., no causal inferences). I used a non-experimental, correlational design to answer the research questions related to teacher mindset. While there have been many studies written to address mindset, self-perception, teacher beliefs, and factors impacting teacher change, few studies have empirically examined the connection between teachers' mindsets and possible factors affecting a teacher's mindset (i.e., self-perceptions, beliefs, attitudes, and feelings about pedagogical change) when receiving and implementing strategies learned at a professional development event for reading comprehension.

3.7.1. T-MACSP Self-Efficacy Survey

After conducting an exploratory factor analysis of individual constructs contained in the T-MACSP Self-Efficacy Survey, revisions were made to two constructs (i.e., Teacher Beliefs and Attitudes and Teacher Change) which resulted in the deletion of five questions overall and the branching of constructs into Teacher Beliefs, Teacher Attitudes, Openness to Pedagogical Change, and Reluctance to Pedagogical Change. However, results for the non-linear factor analysis may be strengthened with a larger sample size. Thus, future research may wish to

continue evaluating the psychometric properties (e.g., reliability, item discrimination, factor analysis) of the T-MACSP in order to replicate the findings presented here with a wider population of teachers.

3.7.1.1. Impact of Years of Experience, Gender, and Education Level on Teachers' Mindsets

The purpose of RQ1 was to investigate whether years of experience predicted teachers' mindset toward ability to implement ideas learned at a professional development event for reading comprehension while controlling for gender and education level. I predicted that teachers with more years of experience (i.e., 16+ years of teaching experience) would have a fixed mindset based on the Strosher (2003) finding that teachers with higher chronological age tended to have a fixed mindset. Strosher (2003) found that in-service teachers had the highest percentage of entity (i.e., fixed) theorists when compared to pre-service teachers and were the only group that did not have a statistically significant higher number of incremental (i.e., growth) theorists when compared to those with a fixed mindset. In the current study, the three-predictor model was able to account for <1% of the variance in Mindset Theory Scale scores. Each of the predictor variables did not have a significant ($p<0.05$) correlation with Mindset Theory Scale scores. It was found that years of experience did not significantly predict teacher mindset. Additionally, it was found that gender did not significantly predict teacher mindset scores. Finally, it was found that education level did not significantly predict teacher mindset scores.

Unlike previous literature (Gleason, 2016; Rattan et al., 2012; Strosher, 2003) concerning the relationship between teachers' mindsets and years of experience, the present study's findings revealed that years of experience did not play a statistically significant role where mindset was concerned. In fact, of the teachers with advanced years of experience (e.g., 21+ years), only 0.5%

(i.e., one participant) of educators in the total sample of participants demonstrated a fixed

mindset. When looking specifically at the educators with 21+ years of experience, 4.3% of the

23 teachers in this group exhibited a fixed mindset. It seemed reasonable to take a look at the

group of educators just below the 21+ years of experience (i.e., 16-20 years of experience), and

the results again showed that only one participant demonstrated a fixed mindset. However, there

were three of the 31 educators in this group with a score on the Mindset Theory Scale one point

away from the cut point between growth and fixed mindset. It is possible that the sample of

veteran educators who participated in the T-MACSP Self-Efficacy Survey are those that made

the choice to continue in the teaching profession after the COVID-19 pandemic, while many

teachers with advanced years of experience took that opportunity to leave the profession. While

the findings related to mindset and years of experience contradict previous research efforts, I was

also interested in discovering how the novice teachers (e.g., 0-1 years of experience) would fare

with mindset scores. Interestingly, of the 19 teachers in with 0 to 1 year of experience, two

demonstrated a fixed mindset (11% out of 19) and three responded with a near fixed mindset

result (e.g., scored 38 or 39 when 40 signified fixed mindset). Future research would benefit

from a more thorough investigation using interviews and observations to glean information about

the mindsets of veteran teachers.

3.7.1.2. Impact of Self-Perception on Teachers' Mindsets

To investigate the impact of teachers' self-perceptions on their mindsets, I hypothesized

teachers' self-perceptions of teaching reading comprehension would predict a positive

relationship between teachers' self-perception and mindset scores of teachers attending a

professional development event for reading comprehension based on Hudson's (2021) research

in which respondents believed they had moderate knowledge for teaching reading

comprehension to elementary students. In Hudson (2021), approximately 16% of the participants believed they held "very good" or "expert" knowledge for the teaching of reading comprehension. However, participants scored themselves statistically significantly lower on their ability to teach reading comprehension to below-average readers than typically developing and above-average readers. Additionally, teachers' average self-perception of knowledge for reading comprehension instruction was positively, statistically significantly related to teachers' scores on the Teacher Knowledge of Reading Comprehension

Similarly to Hudson (2021), the T-MACSP - Teacher Self-Perception survey results indicated that participants rated themselves lowest (i.e., 2.68 out of 4) on their ability to teach reading comprehension to below-average readers. In addition, teachers scored themselves as having moderate confidence when rating their ability to discern between an effective or ineffective reading comprehension strategy (i.e., 2.7 out of 4). Teachers' self-perceptions of their abilities to teach main idea and student-friendly definitions ranked as the highest means overall (e.g., 3 and 3.03, respectively) indicating that they feel "very good" about teaching these two concepts. When simple linear regression was conducted to investigate the relationship between teachers' mindsets and teacher self-perception, no statistical significance was found. Researchers (Kruger & Dunning, 1999; Dunning et al., 2003) have discovered that less-skilled individuals usually overestimate their abilities because they are less likely to reflect on what they do. However, Dunning et al. (2003) also found the highly-skilled people underestimated their capabilities for the sake of humility. Moreover, Den Brok et al. (2006) noted that many teachers tend to overestimate aspects of their teaching practice.

3.7.1.3. Impact of Teachers' Beliefs and Attitudes on Teachers' Mindsets

Teacher beliefs are the claims teachers hold or would like to be true and can be related to learners, knowledge, teaching components, themselves, parents, the instructional context, and the organizational context (Valcke et al., 2010). Investing in teachers' beliefs of teacher professional development (Desimone, 2009; van Driel et al., 2012) is a valuable practice to ensure that beliefs are linked to classroom practices (Merchie et al, 2018). In a study conducted by Ness (2016), researchers were interested in the factors influencing teachers' attitudes toward the need and usefulness of reading comprehension instruction in content area classrooms. Teachers reported not feeling qualified or responsible for providing explicit instruction in reading comprehension. Research has shown that teachers' implicit theories of ability impact their behaviors in the classroom and communication with students (Rattan et al., 2012; Strosher, 2003; Zeng, 2019). After an extensive literature review of teacher beliefs, Parejes (1992) concluded that "knowledge and beliefs are inextricably intertwined, but the potent affective, evaluative, and episodic nature of beliefs make them a filter through which new phenomena are interpreted" (p. 325). Thus, literature shows that teacher beliefs serve as selective sieves for teachers' perceptions of classroom situations (Pajares, 1992). Teacher beliefs have a pervasive impact on the learning environments they create and ultimately, student outcomes (Knopp & Smith, 2005; Woolfolk Hoy et al., 2006).

I hypothesized the relationship between teachers' mindset scores and their beliefs and attitudes related to attending a reading comprehension PD and instructional practices related to teaching reading comprehension would indicate a positive association. The overall regression was statistically significant. It was found that teacher beliefs significantly predicted teacher mindset wherein the negative correlation of -0.39 indicated that, as teacher beliefs increased,

mindset scores decreased toward *growth* mindset. Additionally, it was found that teacher attitudes significantly predicted teacher mindset scores. Wherein a positive association meant that increases in attitude scores were associated with an increase in mindset scores toward a *fixed* mindset. An additional question was asked of respondents in the Teacher Attitudes construct. Survey participants were asked to identify the length of time given to the implementation of a new reading comprehension strategy before discarding it and looking for something new. Thirty percent (i.e., 58 respondents) shared that they typically try a new reading comprehension strategy for six weeks before discarding it, 20% (i.e., 39 respondents) allow only two weeks to try a new strategy before discarding it, 18% (i.e., 36 respondents) allocate a full year to a new reading comprehension strategy before discarding it, but only 13% (i.e., 26 respondents) give it one semester before moving to a different strategy. The results of this study increase the knowledge base for future research regarding how a teachers' beliefs and attitudes can be correlated to teachers' mindsets and the importance of addressing these factors in order to produce optimal student outcomes.

3.7.1.4. Impact of Openness or Reluctance to Change on Teachers' Mindsets

Pedagogical change has been defined as alterations in instructional resources, teaching approaches, and beliefs about pedagogical theory (Fullan, 2007; Kern et al., 2018). Historically, research on teacher change has been conducted in reference to "external sources such as government, school administration, or professional development initiatives suggesting or requiring teachers to make changes" (Kern & Graber, 2020, p. 80). The literature regarding teacher change has identified three dispositions that have the potential to affect teacher change: 1) dissatisfaction with current practice (Shaw et al., 1991), 2) self-efficacy to change (Bandura, 1995), and 3) willingness or openness to change (Fullan, 2007). Related to the process of change,

dispositions included how teachers perceive the necessity of change and their own ability to successfully implement that change (Vannatta & Fordham, 2004). Shaw et al. (1991) theorized that teachers' individual dispositions toward change are the primary determinants of whether or not teachers attempt to initiate pedagogical changes.

Professional development is considered the primary route for teacher improvement (Cohen & Hill, 2000; Guskey, 2002; Samaranayake et al., 2018), and ever-evolving and changing curricula and expectations of school districts require teacher change. Ketelhut et al. (2019) proposed the idea that although not all innovations are successful, those who manage to affect change in education do so, in part, by "engaging teachers in fruitful PD" (p. 175) with teacher reflection as a crucial part of growth and change.

Based on prior research, I hypothesized that there would be a positive relationship between teachers' mindset scores and their openness and/or reluctance to change related to teaching a reading comprehension strategy learned at KAT PD. The two-predictor model was able to account for 27% of the variance in Mindset Theory Scale scores. Each of the predictor variables had a significant correlation with Mindset Theory Scale scores. It was found that openness to pedagogical change significantly predicted teacher mindset insomuch that the negative correlation indicated that, as openness scores increased, mindset scores decreased toward a *growth* mindset. Similarly, it was found that reluctance to pedagogical change significantly predicted teacher mindset scores wherein a positive association meant that increases in reluctance scores were associated with an increase in mindset scores toward a *fixed* mindset.

Additionally, teachers were asked to select from 13 choices (e.g., supported, motivated, grateful, discouraged, overwhelmed, anxious, etc.) about how they feel or respond to constructive or critical feedback as an element of pedagogical change. For the most part,

respondents shared that they feel open-minded (39%) and appreciate (37%) constructive or critical feedback. Seventeen percent of survey participants feel supported when they receive constructive or critical feedback. Only one percent of respondents claimed to feel discouraged, overwhelmed, or anxious when receiving feedback. There were five additional choices that were not chosen by any of the respondents (e.g., grateful, unaffected, ashamed, worried, or anxious).

These findings help validate theoretical accounts in acknowledging the role that teachers' mindsets play in classroom instruction and further investigates the importance of exploring factors affecting the implementation of evidence-based instructional practices.

3.7.2. Limitations

While this study contributes to the literature regarding factors affecting a teacher's mindset when receiving and acting on information presented at a professional development event for reading comprehension, it is not without its limitations. First, a convenience sample was used rather than a randomly selected sample due to the constraints of the study's parameters. The participants were all employed in districts where the KAT approach was being implemented. It is possible that survey results may differ if the survey were sent out to teachers statewide. Furthermore, given that this was a convenience sample, and I relied on those PD attendees with an intrinsic motivation to complete a requested task, it is hard to know the motivation. For example, teachers that are generally interested in participating in professional development may have been more likely to respond. Thus, there could be some motivation bias in that it is difficult to know the motivating factors of the 195 that chose to complete the survey and why other PD participants chose not to open or complete the survey. Moreover, a larger sample size would help to make more accurate generalizations due to it being more representative of the population.

The T-MACSP Self-Efficacy Survey was sent out to over 2,000 KAT professional development participants, but only 195 completed the survey. Even with the possibility of winning a $50 Amazon gift card for finishing the survey, the completion rate was low at approximately 9%. Two hundred thirty-one educators started the survey, but not all completed it before the deadline of March 31. Of the 195 respondents, 175 of those are currently participants in one of the KAT intervention studies. The remaining 20 respondents participated in the KAT PD during one of the online opportunities made available to teachers worldwide. With over 90% of respondents being those being observed and actively coached by KAT research team members, it is conceivable that the outcomes may not be generalized to the greater population of teachers. Additionally, because these PD participants were emailed and asked to log in to it.literacy.io and take the survey on their own time, it is possible that this contributed to the low response rate. In the future, adding time into the two-day PD event agenda for T-MACSP Self-Efficacy Survey to be completed may result in increased participation. Moreover, it is possible that teachers' mindsets related to implementation of a reading comprehension strategy may be a more useful tool to address prior to beginning PD as a way for PD trainers to better understand the attendees and the factors impacting their reception and use of the strategy.

I noted that of the educators who started the survey but did not complete all questions, 53% did not complete the Mindset Theory Scale questions and 28% of the incomplete surveys were stopped after the short answer question at the end of the Teacher Self-Perception section. Because the previously-validated Mindset Theory Scale was the foundation for which the data analysis was run, it was necessary for that to be at the beginning of the survey. However, in future survey development, I will consider moving all short answer questions to the end as to

alleviate possible survey fatigue which may have contributed to the number of incomplete submissions.

After conducting an EFA for the constructs included in the T-MACSP Self-Efficacy Survey, it was determined that the Cronbach's alpha for newly created constructs in the Teacher Beliefs and Teacher Attitudes sections were poor. In future research, it would be advisable to include additional questions related to teacher beliefs and attitudes in order to improve the internal reliability of each construct.

Finally, when preparing to analyze the data collected through this research study, a more complex regression equation with all predictors would be preferred to address the positive or negative relationship of all survey constructs over single models used to explore the true relationships between these constructs while controlling for correlations between the constructs themselves. For instance, there was a moderate correlation between openness to pedagogical change and teacher beliefs. However, these constructs were not utilized in the same regression models. Therefore, the correlations between the constructs were not fully considered in their separate regression models. In this research study, I was interested in investigating teachers' years of experience, gender, and education level as a predictor of mindset as one regression equation separate from other constructs. Due to the sample size in this study, I chose to keep them as separate models. Consequently, a regression model was not run to investigate teachers' years of experience, gender, education level, self-perceptions, beliefs, attitudes, and feelings about pedagogical change as a predictor of teacher's mindset.

3.7.3. Implications for Practice

The education field can be strengthened by this awareness of teachers' mindsets related to their self-perceptions, beliefs, attitudes, and openness and/or reluctance to change in an effort

to improve student outcomes. Moreover, professional development leaders and instructional support staff members have a unique and critically important opportunity to grow as transformational leaders when utilizing the results from the present study. As evidenced by outcomes of the T-MACSP Teacher Self-Efficacy Survey, many survey respondents acknowledged that they look to instructional coaches and district-level experts to locate and implement evidence-based practices in lieu of turning to peer-reviewed journals or the What Works Clearinghouse, making it of the utmost importance that instructional leaders are adequately trained and prepared in best practices.

3.7.4. Implications for Research

Prior to conducting the present study, limited research was available related to factors affecting a teacher's mindset about professional development for reading comprehension and how those factors interact to produce positive or negative outcomes for both the teacher and student. This study aimed to identify relationships between a teacher's mindset and their self-perceptions, beliefs, attitudes, and openness or reluctance to change in order to discover how future PD should be developed. These findings ensure the highest degree of fidelity in implementation of not only the KAT framework but all initiatives related to improving student outcomes.

3.7.5. Conclusions and Future Research

The study in this dissertation attempted to address gaps in the education field related to teachers' mindsets and factors affecting implementation of a reading comprehension strategy learned at professional development. The present findings were from a sample of elementary teachers, instructional coaches, administrators, and paraprofessionals who participated in an intensive professional development focused on evidence-based reading comprehension

instruction. Based on the findings, it is worth noting that while an overwhelming majority of teachers present with a growth mindset. In conclusion, it is important to be aware of the factors at play when presenting new information at a professional development event.

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Table 3.1. Teacher Demographics.

Category	Participants n=195		State (Grades K-12) N=377,836[a]	
	n	%	*N*	%
Ethnic Distribution				
Hispanic	48	24.62%	111,310	29.46%
White	108	55.38%	208,112	55.08%
African-American	20	10.26%	44,546	11.79%
Asian	1	0.51%	7,405	1.96%
Other	1	0.51%	6,460	1.71%
Not Reported	17	8.72%		
Gender				
Female	176	90.26%	285,493	75.56%
Male	6	3.07%	92,343	24.44%
Not Reported	13	6.67%		
Highest Degree Held				
High School	2	1.03%	5,290	1.4%
Bachelor's	127	65.13%	278,087	73.6%
Master's	51	26.15%	91,814	24.3%
Doctorate	1	0.51%	2,645	0.7%
Not Reported	14	7.18%		
Years of Experience				
Beginning Teacher	13	6.67%	26,826	7.1%
1-5 Years	45	23.08%	109,194	28.9%
6-10 Years	30	15.38%	72,167	19.1%
11-15 Years	39	20.00%	72,922	19.3%
16-20 Years	31	15.90%	3,778	10.0%
21+ Years	23	11.79%	59,320	15.7%
Not Reported	14	7.18%		
Role				
Classroom Teacher	143	73.33%		
Instructional Coach or Specialist	34	17.44%		
Special Education Teacher	6	3.08%		
Administrator	4	2.05%		
Paraprofessional	1	0.51%		

Not Reported	7	3.59%

District Participation

District A	2	1%
District B	5	2.7%
District C	2	1%
District D	1	0.53%
District E	28	14.36%
District F	3	1.6%
District G	1	0.53%
District H	26	13.30%
District I	89	45.74%
District J	2	1%
District K	2	1%
District L	34	17.55%

[a]Population statistics could not be obtained pertaining to role and district makeup at the state level.

Table 3.2. Factor Loadings for Mindset Theory Scale.

Items	Factor Loadings
Q1 I believe my intelligence level will not change.	0.67
Q2 I force myself to do and learn new things.	0.21
Q3 I can do some things differently, but I don't think I can change many of my primary characteristics.	0.50
Q4 I feel threatened when doing a new task.	0.34
Q5 I think that people's intelligence is one characteristic they cannot change.	0.76
Q6 It's in my hands to develop my intelligence.	0.64
Q7 I avoid trying new things because it stresses me out.	0.46
Q8 I try to learn lessons from my mistakes.	0.28
Q9 I can learn new things, but I don't think I can change my intelligence level.	0.77
Q10 I believe that even an intelligent person can improve their intelligence.	0.68
Q11 I think that striving for higher intelligence is useless.	0.68
Q12 I try to learn new things from the achievements of the people around me.	0.46
Q13 I can increase my intelligence level significantly.	0.77
Eigenvalue	4.47
Variance Explained	90.9%

Note: While Q2, Q4, and Q8 fall below 0.40, I did not drop these questions because this construct came from a previously validated measure.

Table 3.3. Factor Loadings for Teacher Self-Perception.

Items	Factor Loadings
Q1 How would you rate your ability to teach vocabulary?	0.69
Q2 How would you rate your ability to teach prefixes, suffixes, and root words?	0.64
Q3 How would you rate your ability to provide student-friendly definitions?	0.66
Q4 How would you rate your ability to teach reading comprehension?	0.75
Q5 How would you rate your ability to teach reading comprehension to typically developing readers?	0.70
Q6 How would you rate your ability to teach reading comprehension to below-average readers?	0.64
Q7 How would you rate your ability to teach reading comprehension to above-average readers?	0.69
Q8 How would you rate your ability to teach text structures as a reading comprehension strategy?	0.74
Q9 How would you rate your ability to teach main idea?	0.75
Q10 How would you rate your ability to teach summarization?	0.72
Q11 How would you rate your ability to teach inferencing?	0.73
Q12 How would you rate your ability to teach multiple standards during the same lesson?	0.75
Q13 How would you rate your ability to discern between an effective or ineffective reading comprehension strategy?	0.63
Eigenvalue	6.38
Variance Explained	89.4%

Table 3.4. Factor Loadings for Teacher Beliefs and Attitudes.

Items	Factor 1: Beliefs	Factor 2: Attitudes
Q1 I believe attending many reading-related professional development events is important for learning new ideas.	0.45	
Q2 I believe students need to know many strategies for reading comprehension (e.g., making predictions, activating prior knowledge, using context clues, monitoring comprehension, questioning, writing the main idea, and writing a summary).	-0.24*	
Q3 I believe that working with an instructional coach or someone more knowledgeable than me is a beneficial way to become a better reading teacher.	0.53	
Q4 I believe it is important to learn and use evidence-based reading comprehension strategies in my instruction.	0.59	
Q5 I believe it is important to follow the reading textbook and materials given to me by my school district.	-0.03*	
Q8 When my students struggle with reading, I am more inclined to look for new strategies and techniques to help them	0.43	
Q10 My students are all expected to reach a common high standard in reading, but they are given different levels of support and time to accomplish it.	-0.31*	
Q11 I enjoy learning new, effective strategies for teaching reading comprehension.	0.59	
Q6 When a reading skill or strategy is hard to teach, it discourages me.		0.49
Q7 When a reading skill or strategy is hard to teach, it motivates me to work on it more.		0.60
Q9 When I work hard to teacher a particular concept in reading and my students struggle, I feel like I'm not a good teacher.		0.48
Eigenvalue	2.05	0.95
Variance Explained	77.1%	35.6%

Note. Q2, Q5, and Q10 were dropped due to low factor loadings (<.40).

Table 3.5. Factor Loadings for Teacher Change.

Items	Factor 1: Openness	Factor 2: Reluctance
Q1 I am open to learning new strategies about how to teach reading comprehension.	0.68	
Q4 When I learn a new strategy for reading comprehension, I like to talk it over with my colleagues.	0.64	
Q5 When I learn a new strategy for reading comprehension, I like to practice it with my colleagues.	0.52	
Q6 I enjoy using new knowledge and skills learned in a professional development to improve my instruction.	0.69	
Q7 I am more inclined to change my teaching practices when I have support from colleagues and the administration.	0.47	
Q10 I appreciate constructive feedback from someone more knowledgeable than me.	0.57	
Q2 I am inclined to express my opinion when a new reading comprehension strategy is introduced that may change how I have previously taught reading comprehension.		-0.38*
Q3 It takes a lot of convincing for me to incorporate a new reading comprehension strategy into my instruction.		-0.35*
Q8 Too many pedagogical changes create "a mess" in my instruction.		0.53
Q9 I do not appreciate having new strategies and expectations forced upon me by my school district.		0.55
Eigenvalue	2.54	1.05
Variance Explained	77.5%	32.0%

Note. Q2 and Q3 were dropped due to low factor loadings (<.40)

Table 3.6. Teacher Outcomes (*n*=195).

	M (SD)	Min	Max
Mindset Theory Scale			
I believe my intelligence level will not change.	2.26 (1.26)	1	6
I force myself to do and learn new things.	2.19 (1.19)	1	6
I can do some things differently, but I don't think I can change many of my primary characteristics.	3.01 (1.16)	1	6
I feel threatened when doing a new task.	2.32 (0.97)	1	5
I think that people's intelligence is one characteristic they cannot change.	2.13 (1.00)	1	6
It's in my hands to develop my intelligence.	1.79 (0.78)	1	5
I avoid trying new things because it stresses me out.	2.52 (1.10)	1	6
I try to learn lessons from my mistakes.	1.34 (0.54)	1	4
I can learn new things, but I don't think I can change my intelligence level.	2.29 (1.02)	1	6
I believe that even an intelligent person can improve their intelligence.	1.67 (0.79)	1	6
I think that striving for higher intelligence is useless.	1.64 (0.85)	1	6
I try to learn new things from the achievements of the people around me.	1.86 (0.82)	1	6
I can increase my intelligence level significantly.	2.2 (0.92)	1	5
Mindset Theory Scale Total Score	27.26 (7.48)	13	51
Teacher Self-Perception			
How would you rate your ability to teach vocabulary?	2.97 (0.45)	1	4
How would you rate your ability to teach prefixes, suffixes, and root words?	2.90 (0.52)	1	4
How would you rate your ability to provide student-friendly definitions?	3.03 (0.54)	1	4
How would you rate your ability to teach reading comprehension?	2.91 (0.53)	1	4
How would you rate your ability to teach reading comprehension to typically developing readers?	2.81 (0.60)	1	4
How would you rate your ability to teach reading comprehension to below-average readers?	2.68 (0.63)	1	4
How would you rate your ability to teach reading comprehension to above-average readers?	2.93 (0.53)	1	4
How would you rate your ability to teach text structures as a reading comprehension strategy?	2.95 (0.57)	1	4
How would you rate your ability to teach main idea?	3 (0.47)	1	4
How would you rate your ability to teach summarization?	2.89 (0.57)	1	4
How would you rate your ability to teach inferencing?	2.86 (0.57)	1	4
How would you rate your ability to teach multiple standards during the same lesson?	2.90 (0.58)	1	4
How would you rate your ability to discern between an effective or ineffective reading comprehension strategy?	2.70 (0.58)	1	4
Teacher Self-Perception Total Score	37.55 (5.14)	14	52
Teacher Beliefs			
I believe attending many reading-related professional development events is important for learning new ideas.	4.86 (1.01)	1	6

I believe that working with an instructional coach or someone more knowledgeable than me is a beneficial way to become a better reading teacher.	5.31 (0.87)	1	6
I believe it is important to learn and use evidence-based reading comprehension strategies in my instruction.	5.54 (0.58)	4	6
When my students struggle with reading, I am more inclined to look for new strategies and techniques to help them	5.16 (0.72)	2	6
I enjoy learning new, effective strategies for teaching reading comprehension.	5.34 (0.75)	1	6
Teacher Beliefs Total Score	26.21 (2.52)	19	30
Teacher Attitudes			
When a reading skill or strategy is hard to teach, it discourages me.	3.04 (1.11)	1	6
When a reading skill or strategy is hard to teach, it motivates me to work on it more.	2.33 (0.92)	1	5
When I work hard to teacher a particular concept in reading and my students struggle, I feel like I'm not a good teacher.	3.51 (1.27)	1	6
Teacher Attitude Total Score	8.86 (2.63)	2	16
Openness to Pedagogical Change			
I am open to learning new strategies about how to teach reading comprehension.	5.51 (0.58)	4	6
When I learn a new strategy for reading comprehension, I like to talk it over with my colleagues.	5.18 (0.78)	1	6
When I learn a new strategy for reading comprehension, I like to practice it with my colleagues.	4.51 (1.14)	1	6
I enjoy using new knowledge and skills learned in a professional development to improve my instruction.	5.52 (0.84)	1	6
I am more inclined to change my teaching practices when I have support from colleagues and the administration. I appreciate constructive feedback from someone more knowledgeable than me.	5.31 (0.66)	3	6
Openness to Pedagogical Change Total Score	30.99(3.2)	23	36
Reluctance to Pedagogical Change			
Too many pedagogical changes create "a mess" in my instruction.	3.97 (1.21)	1	6
I do not appreciate having new strategies and expectations forced upon me by my school district.	3.34 (1.26)	1	6
Reluctance to Pedagogical Change Total Score	7.31 (2.17)	2	12

Table 3.7. Correlation Matrix – T-MACSP Self-Efficacy Survey.

	1	2	3	4	5	6
1. Mindset	1.0000					
2. Self-Perception	-0.1161	1.0000				
3. Beliefs	-0.4363***	-0.0249	1.0000			
4. Attitudes	0.2663**	-0.2208	-0.2368	1.0000		
5. Open to Change	-0.4982***	0.1396	0.6430	-0.2577	1.0000	
6. Reluctance to Change	0.2679*	-0.1206	-0.2536	0.2687	-0.2301	1.0000

$*=p<0.05$, $**=p<0.01$, $***=p<0.001$

Table 3.8. Regression Coefficients for the Effect on Teachers' Mindsets.

	B	*SE*	β	*t*	*p*	Lower 95% CI	Upper 95% CI
RQ1							
Number of Years Taught	0.284	0.391	0.056	0.73	0.469	-0.487	1.055
Gender	-1.855	2.434	-0.057	-0.76	0.447	-6.659	2.949
Highest Level Education	-1.141	1.117	-0.079	-1.02	0.309	-3.346	1.065
RQ2							
Teacher Self-Perception	-0.169	0.104	-0.116	-1.62	0.106	-0.374	0.036
RQ3							
Teacher Beliefs	-1.174	0.194	-0.395	-6.02	<0.001***	-1.559	-0.789
Teacher Attitudes	0.492	0.187	0.173	2.63	0.009**	0.123	0.861
RQ4							
Teacher Change: Open	-1.078	0.148	-0.461	-7.29	<0.001***	-1.369	-0.786
Teacher Change: Reluctance	0.559	0.218	0.162	2.56	0.011*	0.128	0.989

Note. *p<0.05, **p<0.01, ***p<0.001
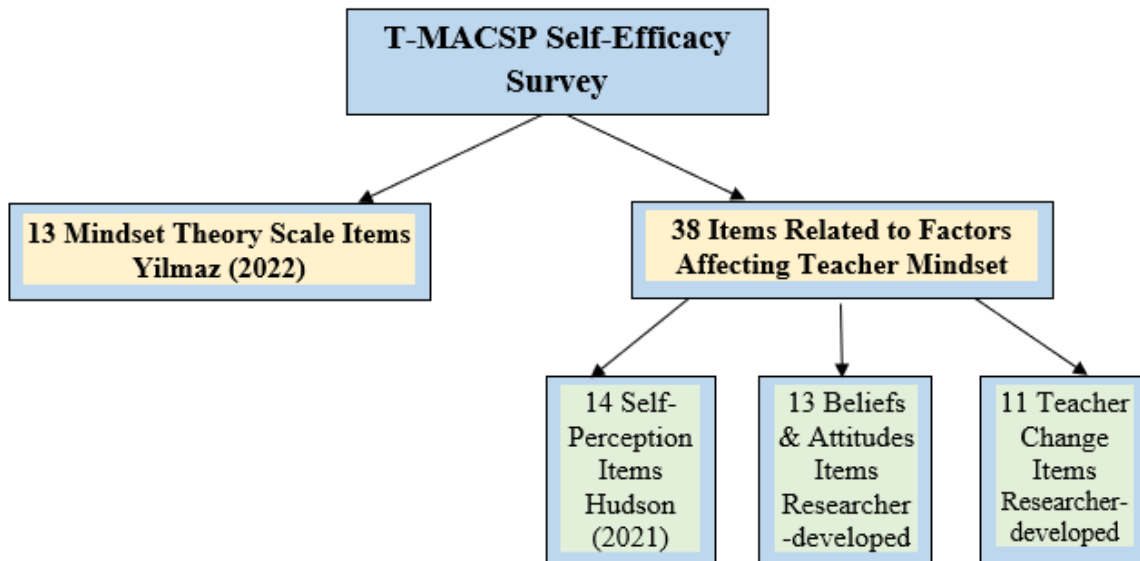
Figure 3.1. Breakdown of Survey Items.

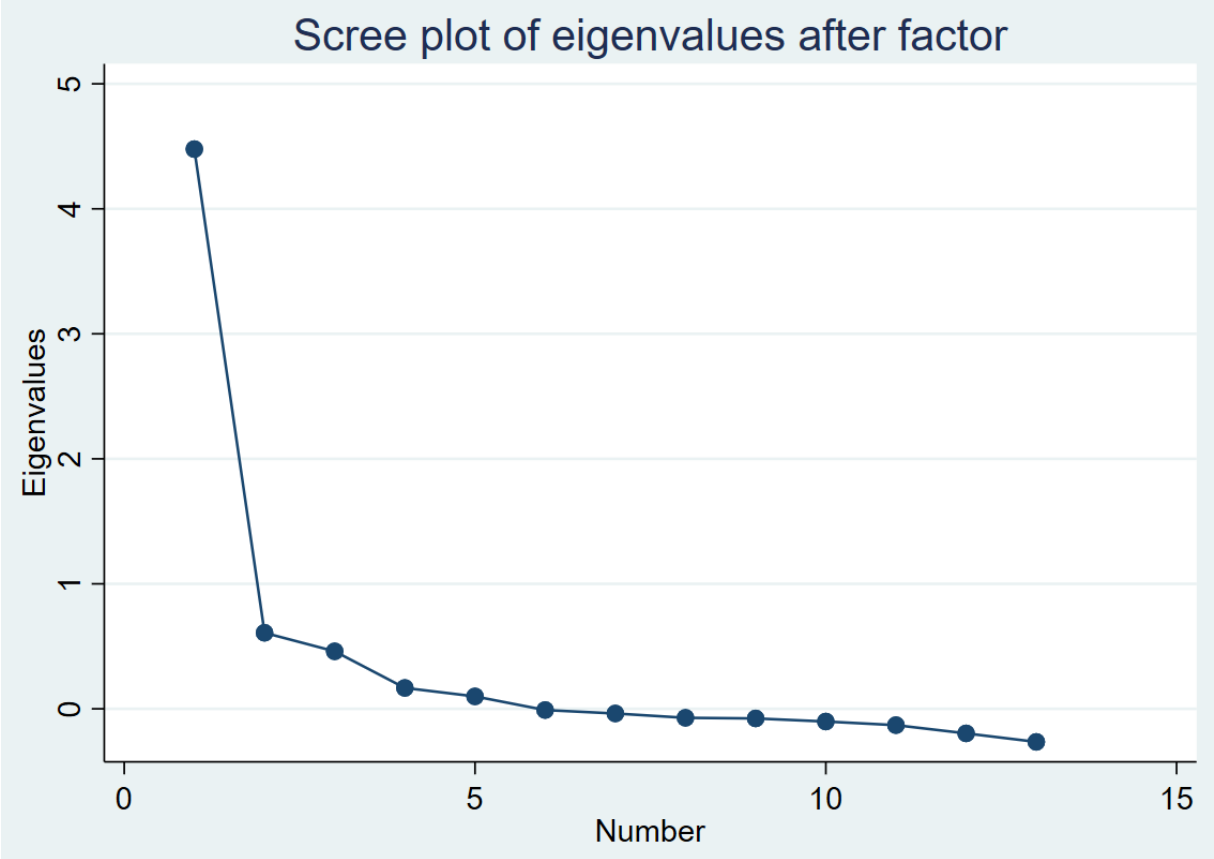**Figure 3.2. Exploratory Factor Analysis Scree Plot for Mindset Theory Scale.**
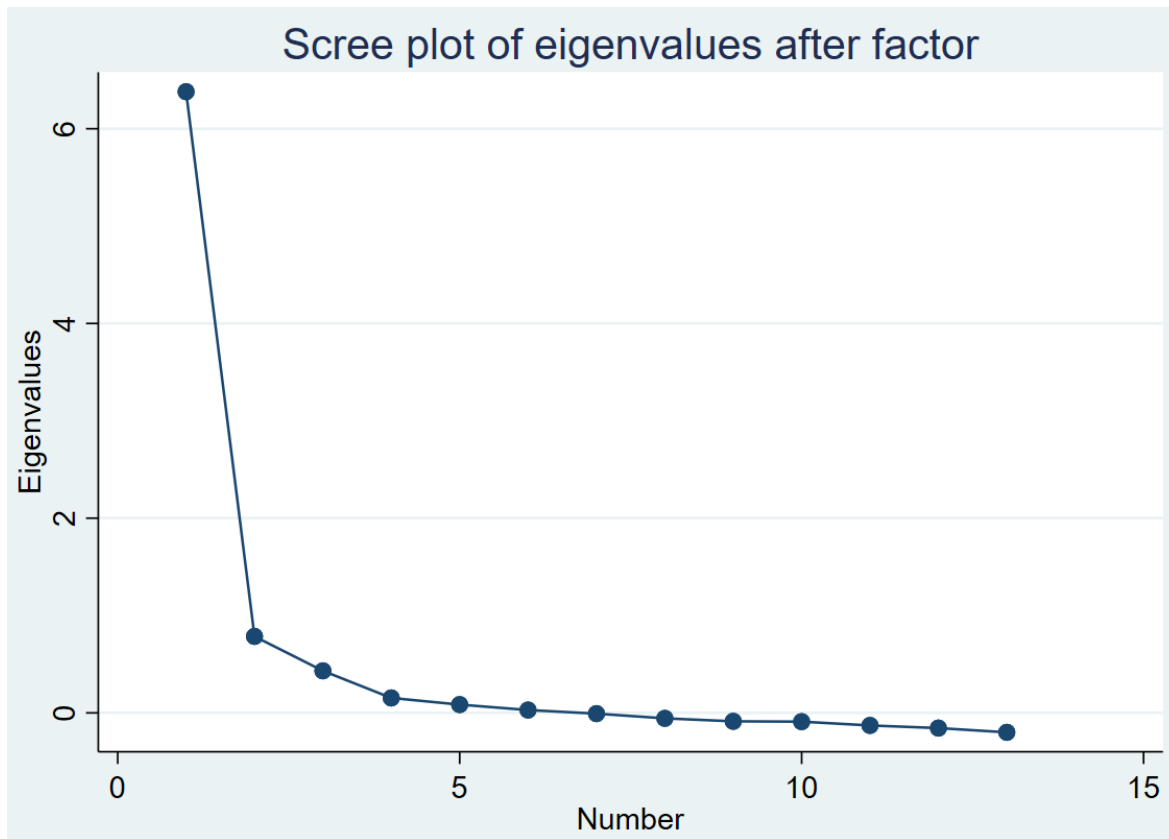
Figure 3.3. Exploratory Factor Analysis Scree Plot for Teacher Self-Perception.
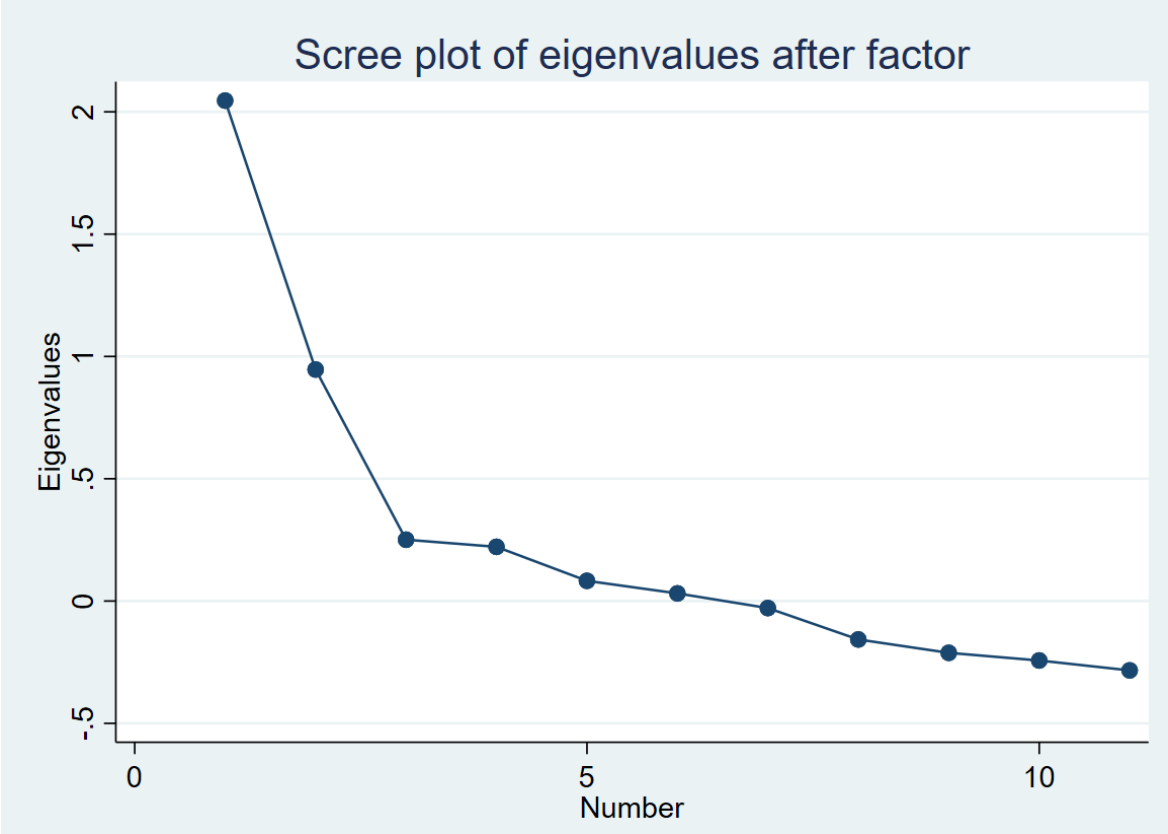
Figure 3.4. Exploratory Factor Analysis Scree Plot for Teacher Beliefs and Attitudes.
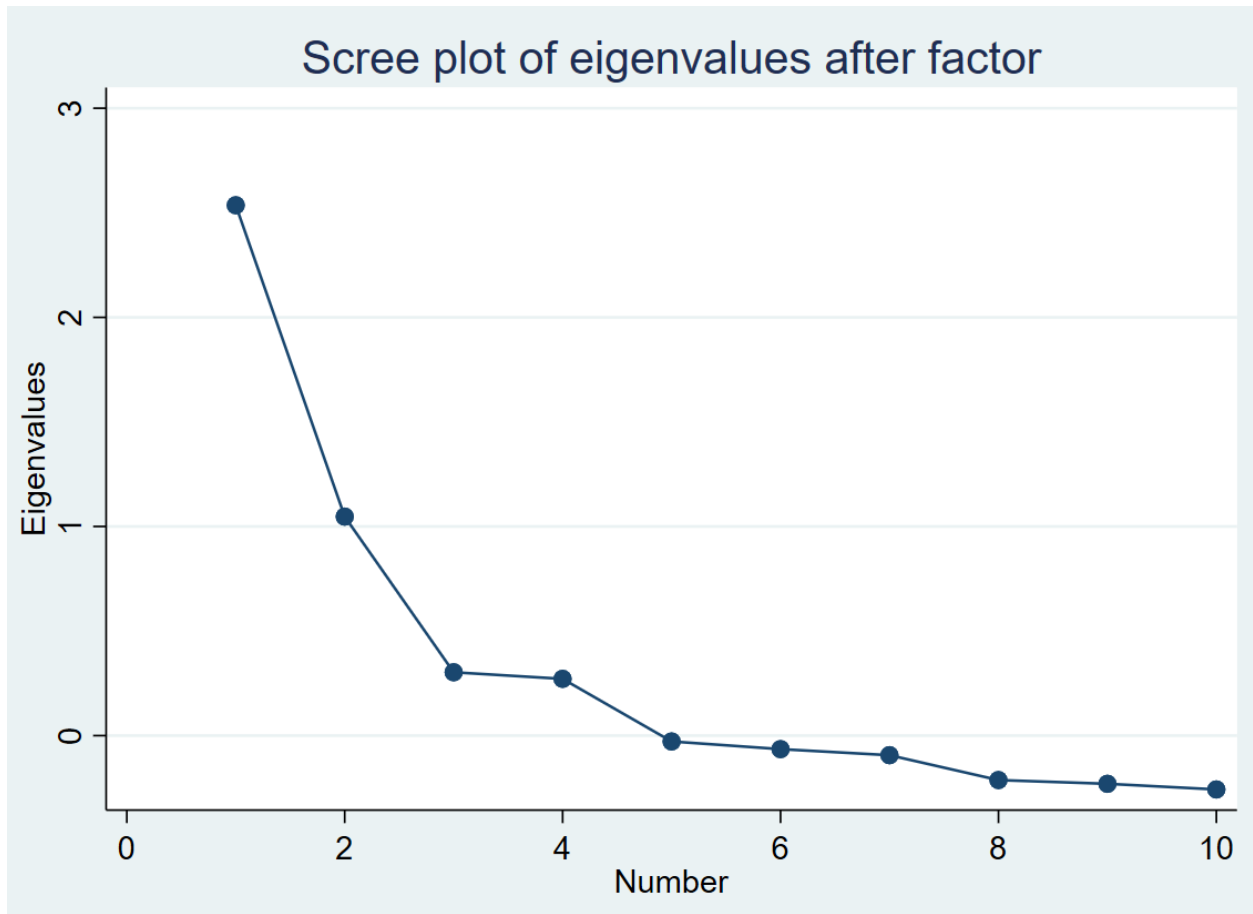
Figure 3.5. Exploratory Factor Analysis Scree Plot for Pedagogical Change.
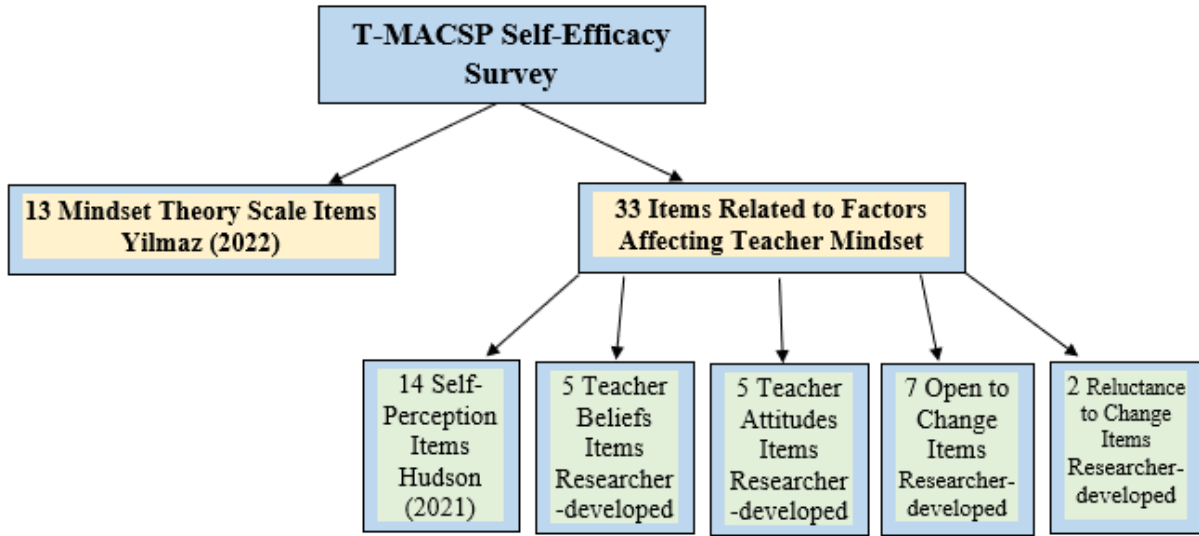
Figure 3.6. Final T-MACSP Self-Efficacy Survey Items Based on Factor Analysis.

4. THE IMPACT OF CLASSROOM TALK AND A TEACHER'S ZONE OF PROXIMAL DEVELOPMENT ON INSTRUCTIONAL OUTCOMES: A CASE STUDY

As I entered a 4th grade classroom early in the spring semester, I was immediately struck by the confidence exuding from students in the classroom. The class had just finished reading a passage, and the students were eagerly discussing the passage amongst themselves. Ms. Reed gave the students a sticky note and stated, "Today, I'm going to give you a sticky note. I want you to use the sentence stems to write your main idea. You are so good at this that this should only take you about two minutes. Then, you are going to stick your sticky note on your reading journal and pass it on. So, write your main idea on the sticky note." Students begin writing their main idea on sticky notes with ease. Two minutes later, Ms. Reed states, "Alright, thumbs up if you are ready to move on. Just a thumbs up. You guys are getting really good at this. Who would like to raise their hand and tell me what the text structure is and read your main idea?" Hands shoot up among the students seated on the carpet in front of the teacher. A student states, "I believe the text structure is problem and solution. The problem is Nelson lost his book. The solution is he found the book in his backpack." Ms. Reed beams at the student and says to the class, "Look at how short and concise that is! Short, concise, to the point. Beautiful. Who's next?" Another student is eager to share her answer and states, "I think the text structure is cause, problem, and solution. The cause is he has a rip in his backpack. The problem is he can't find his book. The solution is he found his book in his backpack." "Wow! I'm impressed. I noticed that you both came up with similar main idea statements, but your text structure was not the same. Is that okay?" And the class yells, "yes!"

4.1. Introduction

Children have long faced challenges in developing both code-focused early reading skills and meaning-focused comprehension skills to understand and derive the gist of a text (Connor et al., 2014; NAEP, 2019; NAEP, 2022; Scarborough, 2001). The NAEP results from 2022 have shown a continued decline in reading achievement among students in grade 4 and grade 8, which may be attributed to the impact of the recent COVID-19 pandemic. The complexity of skills necessary for comprehending texts, including decoding, fluency, prior knowledge, and metacognition, could contribute to these difficulties. Teachers play a crucial role in students' learning, as their own decision-making influences the instructional process. The decisions made by teachers are often based on their knowledge and beliefs (Carpenter & Fennema, 1991). Given that teachers are responsible for providing formal instruction in reading comprehension, it is essential that they possess an understanding of the importance of evidence-based strategies to help students establish logical connections within the text (Hudson, 2021; Wijekumar, 2014, 2017).

Effective practice-based professional development (PBPD) is one approach that addresses the challenges in reading comprehension instruction. PBPD supports the transformation of teachers' knowledge, resulting in improved teacher practices. It also encourages targeted teacher talk and fosters positive progress in student outcomes. PBPD plays a significant role in enhancing teachers' instructional abilities and directly impacts the quality of reading comprehension instruction (Desimone, 2009; Goodwin et al., 2021; Hudson et al., 2021a; Loucks-Horsley et al., 2010; Wu, 2004). While acknowledging that changing teacher practices is difficult (Desimone & Garet, 2015), PBPD aids teachers in translating the information learned during the two-day Knowledge Acquisition and Transformation (KAT)

PBPD to daily instructional settings, which is an important feature of effective teacher training (Garet et al., 2001, 2008). PBPD plays a fundamental role in connecting teachers' knowledge to their beliefs, and in building knowledge using specific instructional content (i.e., KAT framework). Furthermore, when investigating ways to improve teacher preparation for teaching evidence-based reading comprehension strategies, using a teacher knowledge measure for evaluating individual teachers' levels of understanding in order to tailor PBPD practices and follow-up training to the specific needs of each teacher may be possible through an investigation into each teacher's zone of proximal development (Vygotsky, 1978; Wu, 2004).

4.1.1. Purpose

In an effort to add to the literature, this multiple case study offered a detailed view into three classroom environments utilizing the KAT framework. Through classroom observations and teacher interviews, this study aimed to investigate three teachers' implementation of the KAT framework following a two-day PBPD to examine the length of time it takes for teachers to fully adopt a new comprehension strategy and feel confident in their instructional delivery. Moreover, this study focused on each teacher's zone of proximal development (TZPD) as a means of investigating how collaboration, learning with and from more knowledgeable others, and the use of self-reflection can be utilized as a means of professional growth. Finally, classroom talk (Goodwin et al., 2021) was investigated as an indicator of content learned during the PBPD.

4.1.2. Rationale for the Exploratory Case Study

Case studies are used to understand the meanings that people make in particular contexts (Yin, 2008) and are the study of a bounded system (Creswell, 2007; Denizen & Lincoln, 2005). The people in this study, participants in a Knowledge Acquisition and Transformation (KAT)

Practice-Based Professional Development (PBPD) are part of a bounded system, and given their objective of implementing the KAT framework to improve reading comprehension outcomes in a classroom of 4th or 5th graders, they share a common context. My exploration of their narratives helps to offer an in-depth understanding to discover the factors that influenced teachers to effectively incorporate the KAT framework in their classroom instruction. Through this exploration, I was interested in investigating the role of classroom talk (e.g., teacher explaining, teacher questioning, and encouragement of student talk; Goodwin et al., 2021) in teachers' classrooms with strong fidelity (i.e., a score of 5 out of 7 or greater on KAT Fidelity Observation Form) to the KAT framework. Additionally, I wanted to more thoroughly understand if the systems used to professionally develop teachers were successful in increasing teachers' knowledge of reading comprehension, thus expanding their initial zone of proximal development (Vygotsky, 1962) to the next proximal level. Thus, an exploratory, multiple case study design (Yin, 2009) was appropriate for this group of three teachers because the phenomenon within the data was a point of interest to me.

I was particularly interested in investigating these three teachers and their journey because I had seen previous success in their implementation during earlier observations and through Professional Learning Community (PLC) meetings with them. Of these three teachers, two were at months beyond professional development (MBPD), meaning they were in their first year of implementation of the KAT framework. The other teacher had been utilizing the KAT framework for three years, and she was referred to in this paper as a teacher at years beyond professional development (YBPD).

Considerable evidence suggests that an essential area of reading comprehension is understanding the features of text structures (NICHD, 2000). Reading comprehension instruction

utilizing the KAT framework through multiple genres of text (e.g., narrative, expository, poetry, etc.) addresses this idea by incorporating strategy-specific academic language and by providing scaffolded support to build this language through guidance and feedback on a regular basis using a series of checkpoints that are included in daily practice. The checkpoints include a) vocabulary instruction, b) identifying top level structure, c) generating main idea with text structure sentence stems, d) extending the main idea to a summary, and e) extrapolating inferences (Hudson et al., 2021b).

In the following section, I shared how the literature supported this in-depth investigation of teachers on their journey to implement an evidence-based reading comprehension strategy (i.e., KAT framework). My goal of understanding teachers' uptake of the strategy is intended to shed light on the process by which teachers learn a reading comprehension strategy and implement it into their daily literacy instruction.

4.1.3. Theoretical Foundation

The theoretical foundation of the study was viewed through the lens of the teachers' epistemological outlook (Fitzgerald et al., 2000) of reading comprehension and what components are most important when providing instruction for reading comprehension using the KAT framework. First, the KAT framework is grounded in the Text Structure Strategy developed by Meyer (1973, 1975, 1980) in which readers understand a text more readily if they are able to recognize the hierarchical structure (e.g., description, sequence, cause and effect, problem and solution, and comparison) used by the author (Williams, 2018). Meyer's work aligns closely to the Kintsch's Construction-Integration model of reading comprehension (Kintsch, 1998, 2004).

Kintsch's Construction-Integration (C-I) model (1998, 2004) is a theory of discourse comprehension which explains how readers extract textual information from the textbase and

generate a situation model. Text information activates readers' background knowledge, which is then integrated with the information presented in the text (Kintsch, 1998, 2004; Williams, 2018). It is through this process that readers are able to unlock the relationships between sentences in texts while also integrating prior knowledge and the situational model in order to make meaning (Wijekumar et al., 2021).

Similarly, in the KAT framework, top down processing of texts occurs via one of five text structures with bottom up processing of the sentences and paragraphs. The gist (i.e., main idea) of reading is a foundational concept in all of these models (Wijekumar et al., 2019). With the KAT framework, idea units are connected through causal relationships, problem and solution relationships, and comparison relationships. The summary is an extension of the main idea with supporting details. Consistent with the C-I model (Kintsch, 1998, 2004), readers construct meaning through top-level structures that facilitate the organization of ideas found within a text. When readers are able to identify top-level structures (e.g. cause and effect, problem and solution, and comparison), they are more likely to only consider important ideas and eliminate irrelevant information from their working memory (McDaniel, & Keefe, 2002; Meyer & Poon, 2001; Schmalhofer, Pearson & Cervetti, 2015).

Finally, Vygotsky's sociocultural theory of human learning describes learning as a social process and the origination of human intelligence in society or culture (Elhussain, 2020; Vygotsky, 1978). Vygotsky (1962) stated that the social and cultural context of development cannot be separated. Consequently, Vygotsky's sociocultural theory of mind attempts to explain the processes through which learning and development occur (Shabani et al., 2010). As shared earlier, a principle of Vygotsky's sociocultural theory is the zone of proximal development (ZPD), which is used as a measure of the distance between what a learner is able to

do and a proximal level that they might attain through guidance and collaboration with a more knowledgeable other (MKO; Vygotsky, 1978).

4.1.4. Situating this inquiry in the literature

One of the reading comprehension strategies with accumulating evidence is the Knowledge Acquisition and Transformation (KAT) framework, which uses a text's organizational structure to facilitate reading comprehension (Hudson et al., 2021b; Wijekumar et al., 2014, 2017). It is the classroom implementation of the KAT framework that is a focus of the case studies presented in this article.

4.1.5. Using the KAT Framework to Improve Reading Comprehension Outcomes

In supporting a better understanding and recall of the information within a text, Meyer (1973) established that the majority of texts we read adhere to a top-level structure leading to the identification of five text structures: sequence, description, cause and effect, problem and solution, and comparison. The KAT framework comprises evidence-based reading comprehension instruction in which readers are taught to identify top-level structures (e.g., cause and effect, problem and solution, and comparison) while using a systematic process for generating main ideas, summaries, and extrapolating inferences from text (Wijekumar et al., 2014, 2017, 2018). In particular, when the aim of reading is to have a clear and coherent mental representation of a text, text structures can become a foundation for identifying relationships between ideas, and that is supported through the KAT framework using intentional teacher talk (Bolton, 2007; Goodwin et al., 2021; Wijekumar et al., 2012).

4.1.5.1. Practice-Based Professional Development and the Role of Teacher Talk

In order to use the specific language provided in the KAT framework to encourage productive classroom talk regarding reading comprehension, prior research has recommended

the use of Practice-Based Professional Development (PBPD) to offer educators a safe space to practice new learning as a means of preparation, thus promoting the success of future classroom instruction (McKeown et al., 2019). There are five core features of professional development that lead to greater implementation of the material presented: content focus, active learning, coherence, duration, and collective participation (Desimone, 2009). Moreover, immediate feedback from trainers and peers provided through PBPD is an important factor in effective learning and confidence-building.

4.1.5.2. Considerations for Teacher Talk During Instruction

Teacher talk matters to literacy outcomes and plays a significant role in the delivery of classroom instruction (Connor et al., 2014). The teacher's role, as well as talk used during instruction, is critical for making meaning to promote the generation of coherent memory of what was read. Goodwin et al. (2021) suggested that language skills develop through conversations with more knowledgeable others (MKOs) while considering that "talk begets language development" (p. 28). It is within the classroom context that research has shown an important relationship between classroom talk and student achievement on reading-related outcomes (Connor et al., 2014).

4.1.5.3. Teacher Knowledge of Reading Comprehension (TKRC)

Research has consistently emphasized the critical role of a teacher's knowledge in effective reading instruction and improving student outcomes (Beerwinkle et al., 2018; Hudson, 2021; Peltier et al., 2022; Piasta et al., 2009). Applegate and Applegate (2004) found that pre-service teachers who lacked knowledge and motivation related to reading were limited in their ability to provide best practices in reading, similar to the notion of the Apostle Peter being unable to give what he did not possess. Additionally, Binks-Cantrell et al. (2012) discovered that

teacher educators who "lack a thorough understanding of basic language constructs were unable to give this knowledge to their teacher candidates" (p. 534). Thus, teachers must possess knowledge of evidence-based practices in reading comprehension to effectively teach these strategies, and it is reasonable to assume that there is a relationship between teachers' knowledge, classroom instruction, and student success (Peltier et al., 2020; Piasta et al., 2009; Spear-Swerling & Brucker, 2004). When teachers have a solid understanding of evidence-based practices in reading comprehension, they are better equipped to provide effective instruction, which positively impacts student outcomes.

Hudson (2021) developed and validated a measure of reading comprehension knowledge and skills based on prior research of teachers' knowledge which was used to evaluate teachers' content knowledge, pedagogical content knowledge, and application abilities of reading comprehension (see Appendix J; Binks-Cantrell et al., 2012; Peltier et al., 2020; Spear-Swerling & Chessman, 2012).

4.1.5.4. The Zone of Proximal Development in Teacher PBPD

Lev Vygotsky put forth the idea that any higher mental function goes through an external social stage in its development before becoming an internal, truly cognitive function (Vygotsky, 1962). Cole & Cole (2001) called attention to the term proximal as an indication of how the assistance provided by an MKO goes just beyond the learner's current capacity by building on their existing capabilities. The goal of this collaboration with an MKO is to provide the opportunity for carrying out a task or turning theory into practice when working independently.

Within the ZPD, it is possible to investigate the way a learner's performance is mediated socially. Through this social mediation, a "shared understanding of intersubjectivity" has been accomplished by moving the learners from current capabilities to a higher, culturally mediated

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level of development (Shabani et al., 2010, p.2). Warford (2011) reported that the goal is always to stay within the 'zone' between a learner's actual capacities and a proximal set of knowledge and skills that can be attained through mediation of an expert other. This process of learning begins with the MKO doing most of the cognitive work. Subsequently, the learner and MKO share responsibility for the work being done. Collaboration tools (e.g., collective brainstorming and peer feedback) are used as a bridge between the learner and the more knowledgeable other in order to encourage growth through a proximal level of ZPD. Eventually, the learner is able to perform the task independently (Ash et al., 2003). It is through this process that learners, be they children or adults, will elevate to a new ZPD, thus shrinking the gap between what can be done with support versus what can be done independently.

4.1.5.4.1. Teacher's zone of proximal development (TZPD).

Wu (2004) asserted that the goal of a teacher is to encourage students to strive for working at and beyond their current ZPD. In order to promote student progress, "teachers must have profound and structured content, pedagogical, and pedagogical content knowledge, i.e., they must have their own higher levels of a teacher's zone of proximal development [TZPD]" (Wu, 2004, p.15). Furthermore, student learning occurs as a result of interactions between teachers and students (Wu, 2004). Considering what teachers are able to understand and do on their own and a proximal level they might attain through strategically mediated help from MKOs (e.g., colleagues, mentors, instructional coaches, etc., Wu, 2004) is a powerful tool in the implementation of evidence-based reading comprehension strategies. Murphy et al. (2015) suggested that TZPD should be used as an approach in professional development in order to create programs in which educators reflect on their teaching as a way to stimulate the evolution and transformation of teachers' knowledge.

A closer look at the ZPD through zones organized in Wu's (2004) research illustrated the movement from learning without assistance from an MKO to a stage of continual development when knowledge is acquired and sustained through a partnership with an MKO. Through the application of TZPD, professional development trainers and instructional coaches have the opportunity to "foster teachers' skills and capacities, which gradually become internalized as learning proceeds" (Wu, 2004, p. 13). Vygotsky (1978) defined ZPD as the distance between the actual developmental level of independent learning (e.g., TKRC pretest scores) and the potential development level of learning through collaboration with MKOs (e.g., TKRC posttest scores following modeling, coaching, and ongoing feedback). Based on Wu (2004) study of teachers' ZPD when participating in a math professional development event, I intended to use the same stages (i.e., zones) as were used in their research. Zone 1 constituted development of teachers' knowledge without guidance from MKOs (e.g., baseline knowledge score prior to receiving professional development). Teachers' knowledge at Zone 1 is limited or inadequate for teaching reading comprehension. Zone 2 encompassed knowledge developed together with and guided by MKOs wherein content and pedagogical knowledge are developed. Vygotsky (1978) claimed this inter-psychological process (e.g., development fostered between people) is at the heart of cognitive development. Zone 3 occurred when teachers continued to develop their knowledge with an MKO with the inclusion of reflection on new learning. Thus, teachers reach their potential, and content and pedagogical knowledge show sustained growth (i.e., increase in TKRC post-testing scores). At Zone 3, teachers are learning in an intra-psychological function (e.g., independently). It is within and through these zones that PD trainers and instructional coaches can envision a more concrete understanding of how to improve classroom instruction while also strengthening teacher knowledge. Table 4.1 is the guide by which teachers in the present study

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were evaluated and supported in order to promote individual growth through three zones of proximal development. These cascading zones of proximal development help make sense of diverse teachers' needs so they can be intentionally addressed.

4.2. The Present Study

The educational field would be better informed about how teachers learn to teach the KAT strategy in classrooms with the inclusion of qualitative details of the teachers' journeys from pre-professional development through PBPD. This study documented three teachers' implementation across a year of classroom instruction as they refine their craft and employ the evidence-based KAT framework while eliminating contradictory strategies from their previous teaching repertoire. Identifying hindrances (e.g., too much teacher talk, teachers' prior knowledge, use of non-evidence-based strategies) and intrusions (e.g, effects of prior training, textbook organization), as well as adaptations that come with expertise in using the KAT strategy, can provide useful data alongside empirical evidence that informs overall instructional improvements. Observing teachers following PBPD at various points in their assimilation and dissemination of the strategy instruction can lay the framework for future PD and refine theoretical models for improvement in not only the professional development itself but in ways to support teachers as they integrate this strategy into their classrooms. Researchers often rely on quantitative analysis, but more qualitative data is needed to document real-world complex situations teachers face in their classrooms each day.

The aim of this study was to identify teacher behavior, teacher talk, and strategy modeling to document the evolution of teacher practice and teacher knowledge at various points following the PBPD. Additionally, teachers' knowledge level about reading comprehension

before attending PD and after implementation were measured to investigate each teacher's current and proximal ZPD. This study was designed to answer the following research questions:

1. What does KAT strategy instruction implementation look like in the classroom for elementary school teachers at Months Beyond PD (MBPD) and at Years Beyond PD (YBPD) as a result of a practice-based professional development? In what ways did consistency of implementation differ between teachers at MBPD and teachers at YBPD?

2. What type of teacher talk do novice (e.g., MBPD) and expert teachers (e.g., YBPD) use most consistently when delivering the KAT framework? (e.g., questioning, academic language, components of text structure)

3. How do approaches used during and throughout the implementation of the KAT Framework change a teacher's knowledge about reading comprehension and thus, their zone of proximal development?

4.3. Methodology

In order to evaluate teachers' initial ZPD, the Teacher Knowledge of Reading Comprehension (TKRC) survey was given to each teacher as a pretest measure prior to attending KAT PBPD. Participants were sent the TKRC post-test measure and asked to complete the test individually. Prior to assigning the post-test to the three teachers in this study, each TKRC pretest was summed for individual teachers. To evaluate teachers' growth in knowledge (i.e., movement of TZPD zones) about reading comprehension, each case was measured individually by calculating differences in teacher knowledge at pretest and post-test. Based on recommendations from Wu (2004) regarding Teachers' ZPD, I assigned teachers to a knowledge level (i.e., zone of proximal development) and recorded support from an MKO, investigated teachers' interview responses, and measured growth on TKRC measure. See Table 4.1.

Consideration was given as to what features of the reading comprehension strategy were utilized in the classroom following PBPD and explored what type of teacher talk teachers consistently used at months beyond PD (MBPD) and years beyond PD (YBPD) when delivering the KAT strategy (e.g., questioning, academic language, components of text structure). All three teachers were observed twice and interviewed individually. In addition, field notes were collected to provide context to the observed instruction.

4.3.1. Participants

Purposeful sampling was used to select the three teachers across two school districts who took part in the PBPD at different times. These teachers were observed twice during their implementation of the KAT strategy in their classrooms. Using a multiple case studies design, interviews and observations were conducted with all three teachers. Data collection was conducted with full approval from the institutional review board criteria. Those who agreed to participate in the present study possessed an understanding of the fidelity of implementation and checkpoints that should be covered in each lesson. Interview questions examined the teachers' experience regarding implementation, as well as engagement and participation of the students.

4.3.1.1. Teachers at Months Beyond Professional Development

The Months Beyond Professional Development (MBPD) teachers are those completing their first year using the KAT reading comprehension strategy. MBPD T1, Ms. Reed, has been an educator for 14 years and holds an EC-4 Elementary Education certification and an ESL certification. MBPT T1 has taught English Language Arts and Reading (ELAR) for 13 years. MBPD T2, has been an educator for two years and holds an EC-6 Elementary Education certification. MBPD T1 teaches on a departmentalized grade 4 team and has 40 students total including eight identified as dyslexic. MBPD T2, Ms. Story, teaches in a self-contained grade 5

classroom and has 22 students including seven identified with dyslexia. Teachers at MBPD were asked to submit their daily reading block schedule and indicate where text structure instruction occurs in the schedule (see Tables 4.2 and 4.3).

4.3.1.2. Teachers at Years Beyond Professional Development

The Years Beyond Professional Development (YBPD) teacher has been using this strategy for longer than one academic year. YPBD teacher, Ms. Causey, has been an educator for 14 years and holds an EC-4 Generalist certification, an EC-12 ESL certification. In addition to the KAT PD, she has received extensive training in reading programs mandated by their school districts. Ms. Causey is part of a departmentalized Grade 4 team. She is responsible for teaching English Language Arts and Reading as well as Social Studies to the 44 students making up the two classes she serves. Of those 44 students, five have been identified as dyslexic, ten receive Special Education services, and two are served under Section 504 (i.e., federal legislation designed to protect the rights of individuals with disabilities). Ms. Causey was asked to submit her daily reading block schedule and indicate where text structure instruction occurs in the schedule (see Table 4.4).

4.3.2. Observer

To ensure fidelity to the KAT framework, I was trained and became a PBPD trainer of the KAT strategy prior to joining the classrooms of both the MBPD and YBPD teachers in person. I was also trained to use the KAT Framework Classroom Fidelity Observation Instrument (Appendix E) to evaluate each lesson and provide appropriate feedback. Components of the observation instrument include: 1) introduce the lesson with hints at problem and solution, cause and effect, or comparison text structures, 2) explanation of vocabulary words that would impede comprehension, 3) model generating a main idea using main idea sentence stems for

problem and solution, cause and effect, or comparison text structures (i.e., The problem is __ and the solution is __.), 4) discuss main idea questions in multiple-choice format while identifying the components of the main idea in each answer choice, 5) model extending the main idea to a summary by adding important details, 6) discuss summary in multiple-choice format, 7) practice inference questions related to the text structure, and 8) evaluate the presence of additional comprehension strategies that could cause confusion for students and suggest intrusions on the part of the teacher (i.e. First, Next, Then, Last; Beginning, Middle, End; Somebody Wanted But So Then; Hudson et al. 2021b).

Two observations were conducted during the academic school year. Each KAT lesson was recorded for transcription purposes. The first observation took place at the beginning of the spring semester, and the second observation occurred in late spring.

It is important to identify subjectivities that may play a role in this research. Having been a part of the KAT PBPD for many trainings on the reading comprehension strategy and the lead researcher in both districts using the KAT framework, I am knowledgeable of the specific components that should be covered in a prescribed order during each lesson. Language used by the teachers (i.e., certain phrases or ways of interacting), use of class time to teach using the KAT framework, and engagement of the students are areas that must be recorded when observing a teacher's presentation of literacy topics. I have taught for a total of 22 years in an elementary setting with teaching experience in grades 1, 2, 3, and as a reading interventionist in grades K-5. I am a white, English-speaking female living in an upper middle-class area, and I am employed by an R1 research university in the southwest United States.

4.3.3. Data Collection

The purpose of this study was to investigate teachers' classroom talk at MBPD (i.e., Ms. Reed and Ms. Story) and YBPD (i.e., Ms. Causey) to evaluate any differences in implementation of the KAT Framework. In order to answer the research questions, several events transpired. First, teachers at MBPD were asked to complete the pre-test (i.e., TKRC) prior to attending the KAT PD in Fall 2022. Ms. Causey completed the pre-test at the end of their first year using the KAT strategy (i.e., Spring 2021). The pre-test was completed when teachers logged into their individual accounts on the Massively Open Online Virtual (MOOV) platform at https://it.literacy.io. The MOOV platform provides a secure user interface for data collection and is used for KAT PD registration, to house PD modules completed synchronously and asynchronously and over 2,500 researcher-created KAT materials (e.g., lesson guides, PowerPoint presentations, student videos, KAT posters and bookmarks, and research done by the KAT team) for teachers to use following PD, and is the site where students log in to participate in the Intelligent Tutor for the Structure Strategy (i.e., ITSS).

Next, observations were audio-recorded for privacy of the students, and I compiled field notes throughout the observations. Round one observations were conducted through in-person classroom visits and with recorded lessons on separate days early in the spring semester. Each observation lasted approximately 40-50 minutes, and a transcription of each observation was completed by either me or Amazon Web Services and edited for errors in the transcription. Round two observations were conducted late in the spring semester through in-person observations which were audio recorded. Field notes were collected throughout each observation and used for constant comparison throughout the analysis. Transcripts of each observation and interview were uploaded into the MAXQDA platform for coding and analysis.

After completing both observations, teachers were interviewed using a premade set of questions (see Appendix I). Some questions were added during the interview as I felt necessary or in the event that more probing on a certain topic was relevant to the inquiry. Other data sources collected include written communication between the teachers and me. In addition, daily class schedules were supplied by the classroom teachers.

At the conclusion of the study in both school districts in Spring 2023, all three teachers were asked to log into the Massively Open Online Virtual (MOOV) platform at https://it.literacy.io to complete the post-test of the TKRC (Hudson, 2021).

In an effort to prevent ethical issues related to participants' confidentiality, teachers' names were not used in the manuscript. In addition, teachers were informed about the nature of the study and willingly volunteered with written consent for participation in the study.

4.3.4. Data analysis

Consideration was given to ensure the teachers delivered the lesson to include the essential components of the KAT strategy as prescribed by the PBPD. Required elements include an introduction, vocabulary, reading of the text, identification of signal words, main idea composition using the provided stem correlated to the chosen text structure, summary using the main idea, and inference generation. I affirmed this through classroom observations and interviews with each teacher.

Using the observation transcripts, interview transcripts, and field notes, I determined codes for the data using MAXQDA 2022 to facilitate the coding process. Transcriptions were uploaded into the MAXQDA 2022 platform for a more detailed analysis of the data. In a first pass-through of the data, the author used in vivo coding for instances that had anything to do with direct instruction of the reading comprehension strategy, specific elements of the text

structure, student responses, teacher talk, reading of the text, and non-related language (e.g.,
getting started, repeated phrases by teachers, students asking unrelated questions). In the second
pass of the data, I highlighted the items that seemed notable or significant such as direct
instruction by the teacher. In a third analysis, categories emerged that were related to the KAT
strategy (e.g., student engagement, consistency of implementation, and teacher language related
to the reading comprehension strategy). These categories were consolidated under major themes
related to text structure elements (i.e., KAT Framework), classroom talk, and consistency of
implementation/student engagement.

In order to investigate teachers' ZPD, a pretest (i.e., TKRC) was given for teachers at
MBPD prior to PD. The teacher at YBPD was given the pretest at the end of the first year of the
study after the TKRC measure was developed. Following the completion of the study in both
districts, teachers were given the TKRC measure again as a posttest (Hudson, 2021). As a
requirement of qualification for participation in this study, each teacher must have a pre-test and
post-test score on the TKRC. To that end, there was a fourth teacher included in this study, but
she didn't meet the study criteria because she did not have a pre-test score recorded. Thus, this
teacher was removed from the study. In order to evaluate differences from pretest to posttest,
scores were summed for each individual at pretest and posttest. Results can be found within each
participant's case and will be further discussed in the findings.

4.3.4.1. Trustworthiness of the Data

I conducted interviews and observations, including field notes for each observation.
Following transcription of the data, participating teachers were provided transcripts for member
checks. All teachers were asked to sign off or offer corrections to transcriptions in writing on the
member checks.

Triangulation was achieved through multiple types of data collection in the form of interviews, observations, field notes, and written communication between the participants and myself. Furthermore, throughout data analysis, constant comparison of the data was conducted using all data sources (i.e., observation and interview transcripts, field notes, daily schedules). Each teacher's daily schedule was obtained to confirm the length of time devoted to the KAT instruction and through analysis and comparison among sources.

4.4. Findings

Following participation in the two-day KAT PBPD, the three teachers in this study were interviewed using the survey questions in Appendix I. The interviews were conducted prior to the observations shared in this study.

4.4.1. Prior Experiences with PD and Reading Comprehension Strategies

When asked about reading comprehension strategies used in their instruction prior to learning the KAT framework, teachers shared that they used a variety of strategies to teach reading comprehension. MBPD T1, Ms. Reed, said, "I can't think of anything specific I've used prior to attending the KAT PD. I have just always searched for ways to teach different skills and hoped they would work for my students." When asked to share reading comprehension strategies she used before attending the KAT PBPD, MBPD T2, Ms. Story, responded, "I didn't really have a strategy except pulling out the big ideas and details, but that was never effective." YBPD T1, Ms. Causey, stated that she used teacher resource books available on her campus, Google search, and anything she was told to try by her school district's curriculum leaders.

For the MBPD teachers, one teacher reported that beyond KAT she had not attended other PDs to improve reading comprehension. When asked to share about other PD events during their careers, Ms. Reed stated that she could not remember the names of any specific training or

any reading strategies she'd been taught through a literacy-related PD. She mentioned that most of the trainings she has attended are all the "sit and get" style where most of the information is presented through slides and teachers are expected to absorb the information without an opportunity to practice. She mentioned that she felt empowered by the KAT PBPD because she was provided an opportunity to practice and was given feedback from a trainer. This made her feel prepared to go back into the classroom and deliver the strategy to her students. Ms. Story attended KAT and a training for her district's current literacy adoption. She reported that she is always able to "walk away with something new to take back to the classroom." MBPD teachers also reported that they did not have an explicit strategy for teaching main idea and summary prior to attending the KAT PD.

Ms. Causey indicated that she had attended many literacy-related PD events during her 14-year career. These trainings included the state-mandated reading academy, phonics trainings, writing trainings, word study trainings, Comprehension Toolkit PD, and Lead4Ward sessions prior to implementation of KAT into her classroom instruction.

During the interviews, I asked each of the teachers to share with me what they had noticed in their reading instruction this year after learning the KAT strategy compared to previous years of reading comprehension instruction. Ms. Reed said, "I have absolutely seen a difference. I was never comfortable explaining and teaching main idea and summary so I shied away from it or did not teach it with fidelity. Now, knowing there is a step-by-step process that leads you to the main idea, it allows me to teach this tough skill confidently and then instill that confidence in my students. Honestly, KAT has transformed their knowledge and allowed them to master a really difficult standard." Ms. Story responded, "Yes! Before learning KAT, I felt like I was struggling to give my students a solid strategy to support them. This gives me something

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that I feel like is a clear-cut process for them to use. And, I have seen the most growth with my struggling students. With a tool like this, they don't have to wonder what to write. It's been really helpful." Because Ms. Causey was in her third year of implementation, I was very interested in hearing about her experience and any changes she'd seen over time with students that had learned the strategy in previous years. She said, "Yes! I love that I have a set routine for how I teach reading, and my students have become familiar with how they should be on the lookout for the text structure as we read. The systematic approach to analyzing and answering multiple choice questions has been extremely beneficial to both my students and myself. I never had a great to explain why one answer choice wasn't correct before now." All teachers reported that they found KAT to be very effective.

4.4.2. Categories Used in Interpreting Cases

As a result of transcript analysis of interviews and classroom observations, these case studies were explored through three categories which broadly compose what the three teachers discussed in the interviews related to the original research questions. Instruction and implementation of the KAT strategy elements with fidelity to the professional development fell under the first category, *Focus on KAT Instruction and Text Structure Elements* (see Appendix E). There are five required checkpoints teachers are directed to cover on the KAT Reading Comprehension Lesson Guide (see Appendix D). Evidence of each checkpoint is noted during each observation and field notes were produced. The accounts of classroom observations of teachers at MBPD and YBPD help to illustrate the KAT instruction which took place in each teacher's classroom, and these findings are discussed with the context of the case studies. Second, items related to teacher's language, questioning, and consistency of implementation were categorized under *Teacher Talk*. Goodwin et al. (2021) found that there are three types of

classroom talk that aid reading comprehension. Teacher questioning, teacher explaining, and encouragement of student talk were discovered to promote effective reading comprehension for students. An analysis of the transcripts was conducted to code for the presence of these specific elements of classroom talk.

Finally, codes related to the KAT framework and KAT lesson components covered during one observation fell under an overarching third category called *Consistency of Implementation*. The data were coded for implementation fidelity and student engagement throughout each of the observations. In order to evaluate implementation fidelity, I used the KAT Classroom Observation Fidelity Form (see Appendix E). Teachers received a "0" if the KAT lesson component was not featured in the lesson and a "1" if the KAT component was used in instruction or assigned to students independently.

4.4.3. Case 1: Teacher at Months Beyond PD – Ms. Reed

The teacher in this case study had been using the KAT framework in her 4th grade classroom for seven months at the time of the first observation. Months Beyond Professional Development (MBPD) Teacher 1, Ms. Reed, stated in her interview that "this has been the most beneficial training and strategy that I have ever used in my entire teaching career. It has transformed the way I teach language arts." Based on the schedule provided by this teacher, it is evident that she is using the KAT framework to inform many of the instructional decisions she is making, as her lessons appear to be centered around the KAT framework. She shared that she used KAT in her whole class reading instruction five days a week, small group instruction, and students were given a task in literacy stations related to KAT.

During both observations in Ms. Reed's classroom, there were interruptions by students walking into class late, phone calls to the classroom, and students leaving for pictures. Even with

those disruptions, Ms. Reed maintained her students' level of engagement, and students were on task throughout both lessons.

4.4.3.1. Focus on KAT Instruction and Text Structure Elements

4.4.3.1.1. Observation One

During my first observation in Ms. Reed's classroom, I observed the students and teacher as they worked together through each component of the KAT Reading Comprehension Lesson Guide components. During this 38-minute lesson, students were introduced to the readers' theatre they would be reading, explicitly taught the vocabulary words that could hinder comprehension prior to reading the text, followed along as Ms. Reed read the text, identified the text structure using a decision tree (see Appendix F), students wrote a main idea statement independently, answered a main idea multiple choice question, wrote a summary using the main idea statement they'd written, answered a summary multiple choice question, and worked independently to answer several inference questions. A more detailed account of the lesson follows.

Four minutes into lesson one Ms. Reed began discussing the KAT framework elements by pre-teaching the vocabulary. Ms. Reed presented the vocabulary words in just three minutes by sharing the definition, a short discussion with an example of the word in the context of a sentence, and synonyms of each vocabulary word. She stated, "Now, look up at the board right here. Look at some of these words: suspiciously, overhear, distressed, and assume. Is there a word you've never heard before?" A student responded by saying he didn't know what distressed meant. Ms. Reed responded with, "Okay, so let's look at the meaning for distressed. Distressed means suffering from anxiety, sorrow, or pain. Remember when the exotic animals came to school, and the lady told us we would need to be quiet because it would cause the animals to feel

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distressed? Now, what's a synonym for distressed?" Students answered with responses such as feeling anxiety and being stressed. The teacher continued in this way as she explained the remaining three words: assume, overhear, and suspiciously. At this point in the lesson, the teacher reviewed the elements of drama. She told the class that even a readers' theatre has a text structure, and they should listen for clues to identify the text structure while they are reading the text. Additionally, she reminded them to think about the decision tree by listening to find out if there is a problem in the drama. reading the text aloud to her students as they followed along with their own copy. Reading the text aloud took her approximately seven minutes.

After reading the text aloud while the students followed along on their own copy, Ms. Reed announced, "Some of you can already do this in your mind, can't you? We're getting so good at this. I'm not even going to ask you the leading questions. I want you to look down independently and think about the text structure of what we read. You can go step by step. Remember our text structures – problem and solution, cause, problem, and solution, cause and effect, and comparison. Remember, the key question to ask yourself is if there is a problem? So, do you think we have a problem?" Most students respond by saying yes to her question. "So, which text structure can we eliminate right away?" asked Ms. Reed. The class responded with a resounding, "Comparison!" "Yes, if we have a problem, it's not going to be comparison. What is the problem?" the teacher inquired. Students continued to answer questions about the text and were able to effortlessly state that the text structure was cause, problem, and solution. At this point in the lesson, Ms. Reed directed the students to begin writing their main idea on a sticky note. Students appeared to be eager to share their main idea statements aloud. One student revealed, "I think the problem is Nelson lost his book. The solution is he found the book in his backpack." Ms. Reed was quick to praise the short, concise, and to-the-point main idea he had

written. Another student presented her main idea by asserting that she believed there was a cause to Nelson's problem. She stated, "The cause is he has a rip in his backpack. The problem is he can't find his book. The solution is he found his book in his backpack."

Three minutes later, all students had written their main idea statement using the sentence stems (i.e., The cause of the problem is ____. The problem is ____. The solution is ____.) and were prepared to answer a main idea multiple choice question. Ms. Reed said, "This is a main idea question. Look at me. Don't get overwhelmed. You already have your main idea written. What have I asked you to do when you are reading a text, no matter what?" "Write a main idea!" came from several students seated on the classroom couch. "Yes, write the main idea. But, what if there is no main idea question? I don't care. Write the main idea no matter what. Now, let's take a look at the first question. What if the words in the answer choice don't match those?" probed Ms. Reed. A student was quick to respond that they should find the one that is closest to what they wrote. Students began reading and selected the main idea multiple choice question independently. Next, they were told to put their main idea sticky note on the question page and prepare to write a summary.

With another sticky note in hand, students began writing a summary. "Remember to use your main idea to write the summary on this new sticky note," announced Ms. Reed. Minimal directions were given about writing the summary, but it was apparent that the students knew the next step in the KAT framework as many began writing right away. The teacher monitored students' summaries by walking around and asking them to read their summary to her. "I'm going to challenge you now. You are going to write the summary and answer the summary multiple choice question on your own. You know what to do."

After 34 minutes of instruction, the students began working independently to write and answer the summary question for the remaining 16 minutes before leaving the classroom for lunch. After the students wrote the summary and answered the multiple-choice summary question, they opened their Chromebooks and answered three inference questions about the text. The lesson concluded at 50 minutes, and I left the classroom.

4.4.3.1.2. Observation Two

During observation two later in the spring, students were preparing for an upcoming state assessment in reading. Ms. Reed's classroom was decorated like a rock and roll concert to appear as if they had a backstage pass to the test. Students were seated on the carpet in front of her and on the classroom couch. Ms. Reed explained, "So, today, we are going to do our KAT lesson on main idea and summary for this poem, Stage Fright, because we should be really good at that. I want to show you that even poems have text structures and main ideas even though they are super short. Then, you are going to have an activity having to do with vocabulary and a short-constructed response."

The teacher spent about two minutes intentionally introducing the vocabulary (i.e., stage fright) prior to reading the poem by asking her students to discuss the feelings associated with having stage fright. Students described feeling pressure and that it is nerve wracking. Through a short discussion of stage fright, the teacher shared the definition and prepared students to listen for the text structure of the poem.

After reading the poem aloud once, Ms. Reed stated that they were going to listen to the poem again followed by using the KAT decision tree to identify the text structure. The teacher said, "Look at our KAT decision tree. Our first question is always what?" Students respond quickly with, "Is there a problem?" A mixed chorus of yes and no bellowed from the students

after Ms. Reed asked what they thought about a possible problem. Ms. Reed said, "Okay, I hear yes and no. Remember, a problem is a conflict or situation a character is facing." A student raised their hand to say, "The problem is that the person is scared on stage and forgot their part." Ms. Reed responded with "Okay, I think Andrew is dabbling in the cause here. The cause is he's scared." This conversation continued for a couple of minutes while the teacher encouraged students to think through the text structure elements in the short poem. She asked again, "So, is there a problem?" This time, the class responded with a resounding YES! At this point in the lesson, students were asked to share what they believed the text structure might be for the poem and their main idea statement. After a minute of thinking, several hands raised in the air to share their work. One student stated, "The problem is they forgot their lines. The cause is stage fright, and the solution is the lines suddenly popped back into their head." The teacher instructed her students to begin writing the main idea using the sentence stems (i.e., The cause is ___. The problem is ___. The solution is ___.). A student asked, "Can I switch the stems around? I want it to say the problem first and then the cause," and Ms. Reed explained that the order of the stems doesn't matter because we may see the solution presented first in a main idea multiple choice question. She reminded them that as long as they have made those logical connections between events in the story, they've discovered the main idea. After just two minutes of writing time, students began sharing their main idea statements aloud. The first student called on said, "The cause is umm. I forgot." The teacher told that student that is was no problem because they could think through it together. She suggested that he start with the problem and told him that she often likes to start with the problem. Through Ms. Reed's intentionality with regards to questioning the student about the events in the poem, the student was able to confidently state the main idea. Several students volunteered to share their main idea statements, and the teacher stopped and

announced, "Wow! I'm impressed. You all came up with very similar main ideas because you were able to use the text structure to organize it in your brain. So, why is it important to identify the text structure and write the main idea of every passage you read on our upcoming test even if there is not a main idea question?" A student responded, "Well, because you might have a question that just asks you about the problem. If you have your main idea written, you'll be able to answer." A huge smile erupted on Ms. Reed's face as she exclaimed, "Yes! When you are working on the reading test, you should have a sticky note with the main idea for every single passage. We've talked about that. That is a non-negotiable." From there, students were prompted to use their written main idea to answer a main idea multiple-choice question. Ms. Reed asked, "Is the wording going to be exactly the same as your main idea? How can we look for the main idea and find the correct answer?" Several students responded. One student reminded the class that they have to look for the text structure by stating, "If the text structure is cause, problem, and solution, we are going to look for the best answer that has the text structure included. Sometimes, I've noticed that my text structure might be cause, problem, and solution, but there is only an answer choice with problem and solution. I know that is the best main idea because it's the only one with the problem and solution." Ms. Reed exclaimed, "That makes me so happy! Now, let's take a look at these answer choices." The class read through each answer choice and worked to identify the correct answer by eliminating one answer choice that was only cause and effect, one that was the problem with details, and one that is just the definition of stage fright. "Remember," claimed the teacher, "these test writers know that you love details. They are going to give you answer choices with lots of details. Do not let that confuse you. You know to look for the text structure of the poem or passage." The teacher talked through a couple more questions with the

class before telling them that they should write the summary of the poem and use that summary to answer the summary multiple choice question.

Ms. Reed concluded the lesson by directing students to work around the room on the other Reading Rock Star activities related to the poem. As students began quietly moving to find a comfortable spot to work, the teacher asked four students to meet her at her teacher table. As I listened in on conversations around the room, I noticed students writing and thinking. I stopped at a few students' work spaces and asked them to explain to me why they chose an answer or how they know which vocabulary word would make sense in the context clues question. Proudly, each student responded with an answer to defend their thinking which left me with the realization of the power of the KAT framework in its ability to promote such confidence in all students.

I spent 57 minutes in Ms. Reed's classroom for observation two.

4.4.3.2. Teacher Talk

4.4.3.2.1. Observation One

During observation one, Ms. Reed used inference questions to promote critical thinking among her students. While reading the readers' theatre aloud, she stopped to ask, "Why does Nelson look concerned?" A student answered with "I think he's surprised to see his book in his backpack and feels bad that he blamed Lucia." Ms. Reed affirmed the student's response by reiterating what had been said. "Yes, he assumed Lucia took it, but she really didn't," stated the teacher.

4.4.3.2.2. Observation Two

It seemed that Ms. Reed was comfortable with in-the-moment conversations about what had been read. In this observation, the teacher encouraged her students to take a look at the photo

included in the poem by saying, "So, let's look at the photo up here. What does that picture remind you of? Is this similar to something that has happened in your own life?" Students were eager to share as many raised their hands. One student connected the photo to a play they'd recently performed about the Alamo. Another student stated that being up to bat in baseball reminded him of having stage fright like the person in the picture. Ms. Reed affirmed these comments by saying, "Oh, so you felt pressure. Okay, pressure."

4.4.3.3. Consistency of Implementation

4.4.3.3.1. Observation One.

During Observation One for MBPD T1, Ms. Reed scored seven out of seven possible points for fidelity to the KAT framework. During this observation of MBPD T1, I witnessed how efficiently Ms. Reed used the KAT framework to intentionally teach her comprehension lesson as she introduced the passage, shared vocabulary words that may hinder comprehension, used the decision tree to identify the text structure, led her students through writing the main idea with sentence stems, asked students to build their summary statements, and promoted inferring skills related to the main idea. She shared with me that the KAT strategy "transformed" the way she teaches reading comprehension. She claimed to have never felt comfortable explaining and teaching the main idea and summary before so she was less likely to try. She knew her students needed to be taught main idea and summary, but she lacked confidence. She was excited to reveal that "Now, knowing there is a step-by-step process that leads you to the main idea allows me to teach what I used to think was a tough skill, confidently."

4.4.3.3.2. Observation Two.

During Observation Two, Ms. Reed scored seven out of seven possible points for fidelity to the KAT framework. During this observation, I noted that students were tasked with

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generating a main idea, summary, and making inferences independently. It was evident that students had grown in their confidence and ability to logically process the text. Based on transcripts of the interview conducted with Ms. Reed, she stated, "I just never knew how easy this could be, and I see it in our conversations and in the work they are turning in to me. I'd say one of the things that has been the most exciting for me is that my students are eager to talk and discuss what we've read in a much more focused way. They are listening for the text structure as I am reading and are always anxious to tell their prediction of the text structure and the main idea."

4.4.3.4. Teacher's Zone of Proximal Development

Ms. Reed was asked to complete the Teacher Knowledge of Reading Comprehension measure (Hudson, 2021) prior to attending the KAT PBPD. She attended the KAT training through a partnership with the school district where she was teaching at the time. Following her first year of KAT implementation, it was requested that she complete the TKRC as a post testing measure to evaluate changes in teacher knowledge related to reading comprehension. During this year of KAT implementation, Ms. Reed was provided with several opportunities to learn more about the importance of using evidence-based practices such as the KAT framework in her classroom instruction. Just weeks after Ms. Reed attended the two-day PBPD, I modeled a lesson in her classroom using the KAT framework. We discussed the students' engagement in the lesson, and she shared that she had been using KAT a little but really appreciated an opportunity to see it in action with her students. After my initial observation in her classroom, I offered coaching and shared feedback on the lesson. We met during a PLC meeting to discuss the implementation process where I offered her the chance to ask any clarifying questions about the strategy as well as to show her how to use the teacher resource library available. When Ms. Reed

witnessed the ease of implementation and the impact KAT was having on her students' confidence in reading, she began planning lesson guides on her own to use with the stories she planned daily. We created a shared folder where I could offer feedback on her lesson guides, and she was able to share any slide decks she created for her KAT instruction. Based on the results in Table 4.5 on the TKRC Pretest and Posttest, it is evident that her knowledge of reading comprehension concepts has grown during this year of KAT implementation.

In considering Wu's (2004) research on the importance of individualized support for teachers during and following professional development to enhance inter-psychological function, and based on the changes in Ms. Reed's TKRC posttest score, she moved from TZPD Zone 2 (i.e., Learning with inter-psychological function) to Zone 3 (i.e., Learning in intra-psychological function). This movement from one zone to another is based on the TKRC posttest results and the coaching and collaboration documented and received from an MKO related the KAT framework.

4.4.4. Case 2: Teacher at Months Beyond PD 2 – Ms. Story

The teacher in this case study had been using the KAT framework in her 5th grade classroom for seven months at the time of the first observation. Ms. Story stated in her interview that she "didn't really have a strategy that was effective for teaching main idea, and I definitely didn't know how to teach summary. I just told my students to pull out the big ideas." Because she is using KAT primarily through her read aloud, I observed that she was less likely to use all of the components on the KAT Reading Comprehension Lesson Guide. In both of the observations, the teacher read a chapter aloud to her students while they sat on the carpet in front of the Newline projector. Ms. Story is a very expressive and engaging reader, and her students appeared to enjoy the chapters she read to them. I observed that there were three students with an

instructional aide in the class. They sat a table near the carpet during the lessons. There were minimal distractions or disruptions, and the class was on task.

4.4.4.1. Focus on KAT Instruction and Text Structure Elements

4.4.4.1.1. Observation One

Ms. Story introduced the chapter by explaining two vocabulary words they would encounter in the reading. To begin, she said, "Let's look at a couple of words before we start reading today. They are genuine and ambling. Everyone say genuine. Genuine means it is truly what something is meant to be. A synonym for genuine is authentic. An antonym for genuine is fake. The other word I want everyone to look at is ambling. Ambling is when you walk or move slowly. You may amble out of bed in the morning. A synonym is relaxed, and an antonym is tense." Her explanation of the vocabulary words took one minute and 17 seconds.

Ms. Story began reading the chapter aloud. While reading, she stopped and asked her students what they could infer about Melody based on the lines she'd just read. This short discussion lasted for two minutes as students raised their hands and shared their inferences about Melody. The teacher continued reading and stopped again three minutes later. Ms. Story paused and said, "Alright, I want you to stop and think for a minute. Melody is asked what she would do if she could fly. Melody types that she would fly away. She points to her sister and says, 'Freedom.' What can we infer about Melody based on these lines? When you are ready, turn and talk to your neighbor with this statement: What I can infer about Melody is ___ based on the evidence." The conversations continued for four minutes as Ms. Story walked around and chatted briefly with several groups. The teacher announced, "Okay, will you please share the connection you made?" Several students shared their inferences and connections to the text before Ms. Story resumed reading for another two minutes.

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After reading the chapter aloud, Ms. Story stated, "Main idea statement. Here we go. You are going to answer these questions in your head. Is there a problem? Was there a problem in this chapter?" Students responded with "Yes!" Ms. Story asked if there was a solution to the problem, and students paused to think before answering that there was no solution. The teacher said, "Okay, so if there wasn't a solution to the problem, was there some cause and effect happening?" A student answered, "Yes. I think it's cause and effect." Ms. Story reminded them to use their choice tree (i.e., decision tree) to help with identifying the text structure. She reminded them that they were only talking about the chapter they just read, not the entire book. "Once you've thought through your choice tree, I want you to use the sentence stems and write the main idea. I'll know you are done with your main idea statement when you give me a thumbs up," instructed the teacher. "Now, for my friends that have the main idea statement ready, I'm going to give you a multiple-choice summary question. Use your main idea statement to help you answer your summary question."

The observation ended at 44 minutes.

4.4.4.1.2. Observation Two

When I returned to Ms. Story's class for the next observation, the class was reading the same chapter book. The teacher started the lesson by saying, "In my opinion, things begin to get going in our next chapter. This is probably my favorite part of the story. So, before we get going, I want to bring your attention to one of our words. It is alternate. Everyone say that. So, if you are an alternate, you are a person who acts as a substitute or stands in for another person. A synonym is substitute. Okay, let's get started. Y'all ready?" This introduction and explanation of the vocabulary word took three minutes.

Ms. Story reminded her students that she had the decision tree up on the projector so they could think about the text structure as they read. In today's read aloud, the teacher did not stop to ask inference questions. She finished reading the chapter and questioned her students by saying, "What did y'all think of this chapter? We only have 10 more chapters. Okay, so today, we are going to write a main idea statement on your sticky note for chapter 23. I want you to pass the sticky notes to me instead of putting them on the parking lot. You are going to put your name on the back. Then, you're going to sit back down, and we will see how our main ideas compare. Remember to look at your choice tree (i.e., decision tree). If you say yes to the first question, follow your yes. If you say no, follow your no. Then, think about the next questions asked to identify the text structure." During the next six minutes, students worked independently writing their main idea statements. Several students were still writing when she called them back to the carpet, so another two minutes of writing time was given to the class. After eight minutes writing the main idea, Ms. Story stated that she saw the chapter as a cause and effect. She asserted, "I said to myself, yeah, I think there is some cause and effect happening. Then, I wondered did something happen because of something else? I kept thinking about how Melody was feeling leading up to meeting Paul and after she met him. So, I think the text structure is cause and effect. My main idea is: The cause is today is the competition. The effect is Melody gets to the TV studio early, and she feels ready to start. Thumbs up if yours was close or pretty similar. Thumbs down if yours is really different, and thumbs to the side if one part of the text structure is the same, but not the whole thing." During the next four minutes, several students share their main idea statements. One student stated, "So, mine was cause, problem, and solution. The cause was it is competition day. The problem was she was feeling nervous. The solution was Paul helped her, and he reassured her that she was ready." Ms. Story affirmed the student by saying,

"It's interesting that both of us came up with different text structures, but we actually came up with the same overall main idea. I like it. I do think that something we have to really focus on is that when we are doing these main ideas. We have to think about what was the most important thing happening in the chapter. We heard lots of things in the chapter, but was the primary thing that happened? Great job analyzing."

This observation ended after 46 minutes.

4.4.4.2. Teacher Talk

4.4.4.2.1. Observation One

Goodwin et al. (2021) research on teacher talk posited the notion that there are three types of "classroom talk that have been identified as supporting reading comprehension" (p. 29). Those are teacher questioning, teacher explaining, and encouragement of student talk. During observation one, Ms. Story used several elements of Goodwin et al.'s suggested types of talk in both observations. For example, she began the lesson by questioning students about the chapter read the day before when she said, "What is Melody getting ready to tryout for?" Students became engaged right away in a conversation about what the main character is preparing for and respond with "The Whiz Kid Team." As the teacher continued questioning them about the previous chapter, their eagerness to read the next chapter was evident. When Ms. Story asked students to remind her about what happened that made it seem like things weren't going very well for Melody, a student answered, "Basically, another classmate was calling her dumb, and it made her feel worthless, depressed, petulant, and overwhelmed." "Exactly, she's feeling pretty down, but what happens when she gets home? Does Ms. V. let her feel sad for long?" asked Ms. Story. A student raised her hand but didn't appear ready to answer. Ms. Story waited patiently and offered the student think time. After 14 seconds of wait time, the student responded to the

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question before Ms. Story began reading the current chapter. After reading a few pages, the teacher paused the reading to use responsive instruction to ensure her students were making the connection between the main character and her after school babysitter. She probed them by asking, "How would you describe Melody and Ms. V.'s relationship? Why has Melody always loved Ms. V.? What is she doing in the moment that really made her feel so happy?"

4.4.4.2.2. Observation Two

In considering the teacher talk used in Ms. Story's second observation, I recorded several elements of Goodwin et al.'s proposed types of talk. To begin reading the current chapter, Ms. Story asked, "So, do you remember how Melody had been studying for Whiz Kids? There's been this recurring theme of loneliness for Melody. In the last chapter, we saw that again. Who can remind me? What was happening?" Through this teacher questioning, students are able to share their perspectives about the main character's situation. One student commented, "The were really practicing and answering questions." Another student replied, "They were a group, but she didn't feel like she was part of the group." The teacher affirmed the students' statements before she continued, "Yes, and that'd kind of the feeling Melody has had all along. Then, someone's parent brought pizza to the practice. How that affect Melody?" Again, students were posed a reflective question and given time to respond. Students agreed that this caused the main character to feel left out again. To end this questioning prior to reading the current chapter, Ms. Story asked, "Well then, how do you think she felt going home that day? Why did she want to go home instead of going to Pizza Hut like her mom suggested?" After two students shared their inferences about the main character, Ms. Story shared that she felt like they were going to really enjoy today's reading because it was her favorite part of the story. I observed that students became more engaged when they were told their teacher loved this part of the book. Ms. Story

read the chapter for six minutes before stopping to use teacher explaining and teacher questioning (Goodwin et al., 2021) by stating, "This is a moment for Melody. Why does Melody like this guy right away? I want you to think about that for just a second, and I want you to generate a real good answer. I think Melody likes this guy right away because____. Then, please share it with your shoulder partner." The teacher clapped, students clapped, and they began discussing their thinking with partners. While students discussed the question posed by Ms. Story, she walked around and crouched down to talk to different partner groups. After five minutes, the teacher redirected the students' attention back to her and asked for them to share a few responses before moving on. After each student responded, Ms. Story affirmed their thinking through an acknowledgement of their ideas as well as a similar connection she felt. As the teacher read the remainder of the chapter for the next seven minutes, she paused again to question her students by saying, "Okay, I want to ask you a question. What do you think Melody means by, 'They don't have to have something special. They have me.'" The teacher's questioning appeared to give the kids pause because they weren't sure. This prompted the teacher to explain what made the character special, and she asked for students to speculate based on the text they'd already read. After several students responded with their inferences about the statement, a student shared, "All of the other schools are doing special things to stand out like wear matching sweaters, and her school doesn't have to do that because they have Melody. I think at the beginning of the chapter she might have seen it as a bad thing, but then when she met the director, and he spoke to her, she is now thinking this is a good thing." Through encouraging student talk, Ms. Story was able to elevate the critical thinking among her students. She responded by saying, "Wow! That is a great inference. They don't know that she genius-level

smart. I love that you are making that connection throughout the chapter. Muy bien! Kiss your brain!"

4.4.4.3. Consistency of Implementation

4.4.4.3.1. Observation One

During Observation One, Ms. Story scored five out of seven on the KAT Classroom Observation Fidelity Form. I did not hear her introduce the chapter by hinting at the text structure as is taught to teachers during the KAT PBPD. She discussed vocabulary terms, used the decision tree to identify the text structure with her students, modeled the thinking involved in writing a main idea using the KAT sentence stems before allowing her students to write their own main idea, and used intentional questioning strategies to stimulate her students' critical thinking (e.g., answering inference questions).

4.4.4.3.2. Observation Two

During Ms. Story's second observation later in the spring, she scored five out of seven on the KAT Observation Fidelity Form. She introduced the chapter with a review of the previous chapter and invited her students to listen carefully for the events of the current chapter in order to identify the text structure. After sharing two vocabulary words within just a few minutes, prompted students to utilize the decision tree to identify the text structure, reinforced writing the main idea using sentence stems, and asked higher order questions throughout the lesson. Unlike the first observation, Ms. Story asked students to bring their reading response folders to the carpet prior to her read aloud. She instructed them to go to a "fresh page and put Ch. 19 at the top." This folder was used during the lesson when the teacher paused and asked her students to respond to an inference question. When interviewing the teacher following her observation, I asked her the reason she stopped throughout the lesson to have students respond in their folders.

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She told me that found it increased their engagement with the read aloud when she gave them short tasks to do independently. Because she was the only one with a copy of the book, she felt that this was an effective way to use questioning and to encourage meaningful student talk. She mentioned to me that on a previous benchmark assessment, her students scored poorly on inference skills, particularly theme, so she made sure to include a discussion about theme with each chapter she read.

4.4.4.4. Teacher's Zone of Proximal Development

Ms. Story was asked to complete the Teacher Knowledge of Reading Comprehension measure (Hudson, 2021) prior to attending the KAT PBPD. She attended the KAT training through a partnership with the school district where she was teaching at the time. Following her first year of KAT implementation, it was requested that she complete the TKRC as a post testing measure to evaluate changes in teacher knowledge related to reading comprehension. See Table 4.6 for results on the pretest and post-test. During her year of KAT implementation, Ms. Story was provided with several opportunities to learn more about the importance of using evidence-based practices such as the KAT framework in her classroom instruction. Just weeks after Ms. Story attended the two-day PBPD, I modeled a lesson in her classroom using the KAT framework. We discussed the students' engagement in the lesson, and she shared that she had been using KAT a little but it was hard to fit it into her schedule. I reassured her that KAT wasn't meant to be another thing to do but an intentional way to talk about every text read. After my initial observation in her classroom, I offered coaching and shared feedback on the lesson. We met during a PLC meeting to discuss the implementation process where I offered her the chance to ask any clarifying questions about the strategy as well as to show her how to use the teacher resource library available. She was curious about using KAT with science, so I emailed

her with many science resources available which were created to incorporate the KAT framework. This collaboration continued through the spring semester as I helped Ms. Story prepare for the upcoming state assessment. Based on the results in Table 4.6 on the TKRC Pretest and Posttest, it is evident that her knowledge of reading comprehension concepts has grown during this year of KAT implementation.

In considering Wu's (2004) research on the importance of individualized support for teachers during and following professional development to enhance inter-psychological function, and based on the changes in Ms. Story's TKRC posttest score, she moved from TZPD Zone 2 (i.e., Learning with inter-psychological function) to Zone 3 (i.e., Learning in intra-psychological function). This movement from one zone to another is based on the TKRC posttest results and the coaching and collaboration documented and received from an MKO related the KAT framework.

4.4.5. Case 3: Teacher at Years Beyond PD 1 – Ms. Causey

The teacher in this case study has been using the KAT framework in her classroom for three years in grades 2, 3, and 4. Each year, she has moved to a different grade level, but one thing remained constant: her use of the KAT framework. Ms. Causey stated in her interview that she loves having a "set routine" for how she teaches reading. She shared that her students are very familiar with the process and are eager to discover the text structure. Following her first year of implementation, this teacher was asked to serve as Teacher Ambassador for the KAT PBPD events offered in the summer. Her expertise and experience using the comprehension strategy were showcased as an example of how the implementation of the KAT framework looks in a classroom setting.

4.4.5.1. Focus on KAT Instruction and Text Structure Elements

4.4.5.1.1. Observation One

In early spring, I observed Ms. Causey's 4th grade classroom during her 35-minute reading mini-lesson. The instruction began as I was entering the room. "Today, our story we are going to be reading today is called On Sea Patrol. At each table, you have your student handout (See Appendix G) that you are going to be filling out as we go through our story, okay? Remember, whenever we are doing our reading lessons, we are going to be focusing on trying to find the text structure, okay?" said Ms. Causey as she prepared students for today's lesson. She continued, "Did you know that sea turtles have been in danger of going extinct. Well, today, we will read about a young boy named Callie and his grandmother, who are sea turtle volunteers. Let us read to find out what problems sea turtles face and how Callie, his grandmother, and some volunteers help one turtle survive. Okay. Before we start our lesson, we always look at our what?" The class responded with "Vocabulary!" "Exactly. Here are three words you are going to come across in our story. The first word is obsessed. Say obsessed," stated Ms. Causey. As the direction instruction related to the three vocabulary words continued, students were directed to write down a synonym and antonym for each word on their student sheets. In just three minutes, Ms. Causey and her students discussed the vocabulary words and were primed to begin reading. Once more, she reminded her students to be on the lookout for any signaling words that can help us identify the text structure in order to write the main idea. The students listened attentively to the story as it was read aloud. After reading, Ms. Causey said, "Okay, so, I want you to think about all of the events that happened in the story, and let's see if we can determine the text structure. Umm, there are some signaling words I heard that I want you to think about. Okay, sea turtle volunteer day, turtles can be disoriented, lose her way, confused, can't find the ocean, best

sea turtle volunteer day. Now, use your decision tree that's at your table, and you and your table are going to whisper to determine what the text structure may be in our story. When your table has decided on the text structure, give me a thumbs up." Immediately following the teacher's directions, students began to quietly discuss the text structure amongst themselves. After one or two minutes, Ms. Causey called for her students' attention and inquired, "Okay, what are y'all thinking?" One student from each table shared, and the majority of students reported that the text structure was cause, problem, and solution. The teacher praised their thinking and reminded them to circle their selected text structure on the student handout. "Okay, so we all decided the text structure was problem and solution, but we had to think a little deeper to figure out what the cause was, right?" asked Ms. Causey. One student responded, "Well, now that I thought about it, I know there was a cause." "You got it? Awesome! Okay, on your student handout, turn to the next page so we can write our main idea. You do have your sentence stems at your table to help you. Turn to the purple section of your KAT bookmark (see Appendix H). You and your table are going to work together to write your main idea. When you finish, we will compare yours to mine," stated Ms. Causey. As students begin working in table groups, the teacher walked around and checked in with the tables as they discussed. The teacher said, "So, I hear a lot of discussion. Here's how my brain works. I have to think about the problem first. If you want to write the problem first, you can do that." Students continued writing their main idea statements on the handout while Ms. Causey walked around the room conversing with her students. She stopped at a student's desk and asked her to read her main idea aloud to her. The student responded, "Well, the cause is the sea turtle got out of the ocean. The problem is the sea turtle couldn't find its way back to the ocean. The solution is the sea turtle patrol helped the sea turtle get back into the ocean." Ms. Causey applauded her efforts by saying, "Beautiful! And y'all did this together,

right? I'm impressed. It sounds like you are ready to begin the summary. Can you explain to me how we do the summary?" One student answered, "You're going to get details about the cause, problem, and the solution. You're going to put two details for the cause, two details for the problem, and two details for the solution. That's how we create a summary. Oh, and we have to go back to the book to find the details." Ms. Causey patted the student on the back and walked to another group. She took a look at a few more groups' work during the next three minutes before calling attention to the class. Ms. Causey shared her main idea with the class and asked them to compare theirs to hers. She asked students to give her a thumbs up or down if their main idea was similar to hers and reminded them that they didn't have to be exactly the same as long as they contained the most important parts of the text structure. Students began working on their summaries and continued for six minutes in partner groups. Next, the teacher presented main idea and summary multiple choice questions to her students while they were seated on the carpet. Using the previously written main idea and summary, the students were able to direct Ms. Causey to the correct answer. This 32-minute lesson closed when students were instructed to answer an inference question (e.g., How would you have saved the turtle that day?) as their exit ticket.

4.4.5.1.2. Observation Two

When I entered the classroom for my second observation, I noticed a stack of six boxes on Ms. Causey's teacher table (see Figure 4.1). I was intrigued and asked her what she had planned for today. She said, "Well, we are getting close to state assessment time, so I thought the kids might enjoy working to unlock these boxes. They're sort of like an escape room."

Soon after, she turned to the class and announced, "So, we are going to be doing a little bit of a different activity today. Y'all are going to be using your text structure comprehension

strategies: main idea, summary, and inferences to unlock the boxes on my table. There are two locks on each box, and you'll have to unlock both of them to open the box. You're going to have to work together to unlock the boxes." Based on the squeals and clapping, it was apparent that the students were visibly excited about this activity. "Alright, so let's take a look at a couple of vocabulary words before you get started today. These are two words you are going to see in your article, Dolphins on Duty. I need everybody's attention up here. I know you are excited. The first word is adapt. Adapt means to adjust to new conditions. Where have you heard that word before?" Students responded in chorus, "Science!" "Yes, science. So, our synonyms for adapt are adjust, conform, and acclimate. Our antonym for adapt is misadjust. Our second word is detect," said Ms. Causey as she continued to share the definition of detect, synonyms, and antonyms for the word. She spent just under a minute discussing the two words.

For the next four minutes, Ms. Causey gave explicit directions about her expectations for the group work they'd be doing to unlock the boxes. She said, "You'll find the article in Google Classroom. You're going to read the article on your own. Think about the signaling words you hear to help you identify the text structure. I want you to think about how the author organized this text. You're going to go through the slides and answer eight questions. After you read, I want you to talk with your group and decide the text structure of the article. Everybody got that? I want you to notice something. Out beside the answers, it's not A, B, C, or D, is it? No, it's numbers. Each number is combination on the lock. So, what you are going to want to do is after you figure out the answer, you will put that number in the lock. You'll continue through until you've answered all of the questions. Here's the trick: if you answer one wrong, the lock won't open. Then, you and your table will need to figure out what was wrong. Remember, at this point in the year, I expect for you to prove your answer with an explanation and text evidence. You

need to explain your thinking in your own words out beside the question. Once you rock the locks, you will find some treats inside. Are you ready?" The class exclaimed, "Yes!" The engagement level was high throughout this activity, but what I heard that caught my attention was the collective participation among groups. They were talking through the text structure, writing a main idea together, and helping one another justify their responses on a main idea multiple choice question, a summary question, a vocabulary question, and two inference questions. This collaborative effort continued for 30 minutes until each table group had opened their locked box.

During the last ten minutes of the lesson, Ms. Causey called students' attention back to the front of the room to review the questions. "So, what did you get for the text structure?" asked Ms. Causey. "I heard some of you say cause and effect and other say cause, problem, and solution. I was proud of how you respectfully discussed your different opinions. So, what did you decide it was?" One group raised their hands immediately and answered, "Well, we thought it was cause and effect at first, but then we realized there was actually a solution to the problem, so we decided it was cause, problem, and solution." "Yes, that's exactly what I did first, too. I saw it as cause and effect until I started thinking about how the problem was that the military couldn't reach certain places underwater to help people. Then, I thought, okay, were they able to solve that problem with the marine animals? Yes, they trained marine animals to use their skills to help protect people from underwater threats. Now, what did y'all come up with for the cause in this case?" A few students shared their ideas about the cause while others listened. The teacher applauded their efforts today and said, "Nice work today. Make sure you have answered all of your questions. Also, be sure you have your explanations; especially on your main idea and

summary questions. Once you are finished, submit your assignment. Remember, you need to have two lessons completed on ITSS before Friday."

The lesson concluded after 51 minutes.

4.4.5.2. Teacher Talk

4.4.5.2.1. Observation One

Goodwin et al. (2021) found that teacher talk is of significant importance for upper elementary students, and this was evident during the classroom observations in Ms. Causey's 4th grade classroom. The use of teacher questioning, teacher explaining, and encouragement of student talk were noted during various segments of the observation. During observation one, Ms. Causey masterfully used each of the three types of teacher talk proposed by Goodwin et al. (2021). She started the lesson with an introduction of the story they would be reading, followed by an explanation of the vocabulary words, and a mixture of teacher questioning and student talk as they worked through the story and KAT lesson components. Ms. Causey leaned on her experience with the KAT framework to support and refine the conversations in the classroom. While encouraging student talk during each observation, I found that the students were comfortable with the language of comprehension related to the KAT framework. A classmate stepped in and assisted a new student. I overheard her say, "This part is easy. We just try to figure out what the author was doing with their writing. Were they writing like a cause and effect or if there was a solution, was it problem and solution? Sometimes, we might even read about things that are compared. After we decide what it is, we just write a main idea. I'll show you."

4.4.5.2.2. Observation Two

During my second visit to Ms. Causey's classroom and prior to the upcoming state reading assessment, I observed the teacher encourage intentional and meaningful student talk

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among students. After students completed the lock box activities, Ms. Causey used teacher explaining to share her thinking about the article and teacher questioning when she asked students to tell her why they thought it was cause, problem, and solution. The way students were empowered to think and respond in this classroom was inspiring.

4.4.5.3. Consistency of Implementation

4.4.5.3.1. Observation One

During Observation One, Ms. Causey scored seven out of seven possible points for fidelity to the KAT framework. During this observation, I witnessed how efficiently Ms. Causey used the KAT framework to intentionally teach her comprehension lesson as she introduced the passage, shared vocabulary words which may hinder comprehension, used signal words and the decision tree to identify the text structure, led her students through writing the main idea with sentence stems, asked students to build their summary statements based on the main idea, and promoted inferring skills related to the main idea. She shared with me that "using the student handouts in every lesson has made teaching with KAT very easy. I create a student handout for each story we read from our textbook, and my students know what to expect. I teach using this framework at least four days every week."

4.4.5.3.2. Observation Two

During Observation Two, Ms. Causey scored 7 out of 7 possible points for fidelity to the KAT framework. During this observation, I noted that students were tasked with identifying the text structure together, generating a main idea as a group, writing a summary and using it to answer a multiple-choice question, and making inferences in order to open the lock box. While this lesson differed in style from observation one (i.e. direct instruction vs. cooperative work at tables), it was evident that the language of reading comprehension was used daily.

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4.4.5.4. Teacher's Zone of Proximal Development

Ms. Causey attended the KAT training through a partnership with her school district in the spring of 2020 during the COVID-19 pandemic. Because of this unique situation, the KAT PBPD and all subsequent meetings and observations were conducted over Zoom during 2020-2021 school year. We met monthly over Zoom when her grade level team planned reading instruction and corresponded weekly through email. I created a shared folder with instructional resources (e.g., KAT lesson guides, PowerPoints, Nearpod activities, etc.) for Ms. Causey and her colleagues. Additionally, I modeled KAT instruction for her and her colleagues during team planning and "joined" the class over Zoom to present a KAT lesson using the district's adopted textbook. I observed her virtually at three different time points (i.e., October, February, and April) and shared feedback after each observation. Following the first year of implementation, Ms. Causey was invited to join our research team as a Teacher Ambassador. She presented to other teachers new to the strategy and offered her perspective and success. Further, Ms. Causey was asked to model KAT lessons during the monthly check-ins (i.e., First Thursday) and has continued serving in this capacity for three years.

Ms. Causey was asked to complete the Teacher Knowledge of Reading Comprehension measure (Hudson, 2021) following her first year of KAT implementation. Following her third year of KAT implementation, it was requested that she complete the TKRC as a post testing measure to evaluate changes in teacher knowledge related to reading comprehension. See Table 4.7 for results on the pretest and post-test. Based on the results in Table 4.7, it is evident that her knowledge of reading comprehension concepts has been maintained.

Research (Wu, 2004) has shown the importance of individualized support for teachers during and following professional development to enhance inter-psychological function, and

based on the stability of Ms. Causey's TKRC scores, she appears to thrive when working with MKOs, leading as the MKO (i.e., KAT PBPD Trainer), and continuing to develop her pedagogical content knowledge.

4.5. Discussion

As a part of a grant from the Department of Education Institute of Education Sciences focused on promoting improvements in teacher quality through the Massively Open Online Virtual (MOOV) platform, teachers were required by their districts to attend a PBPD on text structures for reading comprehension. Elements from Desimone's (2009) and Ball and Cohen's (1999) professional development framework were implemented in a two-day web-based synchronous PBPD focused on text structures for reading comprehension. The two-day PBPD provided teachers with an opportunity for collective planning and presentation of a lesson. Additionally, each participant received constructive feedback from the trainer on two occasions. Following the PBPD, teachers were provided with access to a teacher resource library containing sample lessons, planning guides, and videos to be used in implementation of the strategy within their classrooms.

This multiple case study offered a detailed view into three classroom environments utilizing the KAT framework. Through classroom observations and teacher interviews, this study aimed to investigate three teachers' implementation of the KAT framework following a two-day PBPD to examine the length of time it takes for teachers to fully adopt a new comprehension strategy and feel confident in their instructional delivery. Moreover, this study focused on each teacher's zone of proximal development (TZPD) as a means of investigating how collaboration, learning with and from more knowledgeable others, and the use of self-reflection can be utilized

as a means of professional growth. Finally, classroom talk (Goodwin et al., 2021) was investigated as an indicator of content learned during the PBPD.

4.5.1. Category One: Focus on KAT Instruction and Text Structure Elements

Prior research has suggested that as students master the KAT strategy, the organization of ideas becomes more structured allowing a shift in the cognitive load toward the ability to consider the most important ideas while removing miscellaneous information from working memory (Lipson & Wixson, 1986; Pearson & Cervetti, 2015); the same can be said for teachers. When they act as learners in this process and master this powerful comprehension strategy, they are able to foster this knowledge transformation for their students. As most theories focus on the mental processes of readers, Pearson and Cervetti (2015) maintain that reading comprehension involves a dynamic transaction between readers, texts, and instructional activities (i.e., context) where the intersection of the three represent proficient comprehension. Each of the teachers in this case study demonstrated this dynamic transaction between themselves and their students, the texts, and the instructional activities.

The three participating teachers consistently incorporated the KAT framework into their classrooms as part of their reading comprehension instruction. One interesting finding related to teachers' use of instructional time and comfort with the strategy seemed to shift over time related to the distance between the attendance of the PBPD and time of observation. MBPD T1, Ms. Reed, grew in her confidence in delivery of text structure lesson components from observation one to observation two and seemed more comfortable answering in-the-moment questions from her students related to the text structure. MBPD T2, Ms. Story, demonstrated confidence with the introduction, vocabulary, identification of the text structure, generation of a main idea, and guiding students through inference questions. While I did not observe Ms. Story teaching

students to summarize using the main idea, I did ask her if students were tasked with writing a summary outside of the read aloud time. She mentioned that although it was difficult for students to identify details to extend the main idea, she had incorporated it into independent reading response time once or twice a week. She preferred writing the main idea for each chapter during the block of time she had in her schedule for read aloud. Because Ms. Story is early in her career (i.e., year two), it would be beneficial to continue working with her to build her confidence and knowledge related to writing a concise summary to incorporate all features of the strategy into one instructional block. A distinct difference from MBPD teachers and the YBPD teacher, Ms. Causey, was the pace at which she led KAT instruction. While MBPD T1 maintained 100% fidelity to KAT components during both observations, her lessons averaged 53 minutes. MBPD T2 taught for an average of 45 minutes and did not complete all components of the KAT framework in either observation. Ms. Causey was able to lead students through each element of the KAT lesson in an average of 42 minutes. Whereas observation one was just 32 minutes and was primarily led by the teacher, observation two was a little longer because the students were engaged in the escape room box activity, and some students had to go back and correct answers when their locks would not open. Another distinct difference between teachers at MBPD and YBPD was the way Ms. Causey took that strategy and made it her own. She created student materials for each lesson and even went so far as to create an escape room activity while still maintaining adherence to the KAT framework. She shared with me that she had been creating activities such as the escape box for a while now because she knew her students were confident with the strategy, and she wanted to keep them engaged.

4.5.2. Category Two: Teacher Talk

Teacher talk is central to literacy outcomes in numerous ways and plays a significant role in the delivery of classroom instruction (Connor et al., 2014). Goodwin et al. (2021) found that teacher talk is of significant importance for upper elementary students. Specific types of classroom talk have been identified as supporting reading comprehension: teacher questioning, teacher explaining, and fostering student talk (Goodwin et al., 2021). Teacher explanations and teacher questioning showed evidence of improving reading comprehension and performance (Michener et al., 2018; Nystrand et al., 2003). The teacher's role, as well as talk used during instruction, is essential for making meaning to promote the generation of coherent memory of what was read (Goodwin et al., 2021). There is a critical relationship between classroom talk and student achievement on reading-related outcomes (Connor et al., 2014). Additionally, the regularity of vocabulary instruction combined with a focus on inferencing is said to be a predictor of improved reading outcomes (NICHD, 2000; Ahmed et al., 2016).

The frequency of certain instructional practices (e.g., teaching definitions and inferential comprehension strategies) have been shown to be a predictor of improved reading comprehension outcomes for students (Goodwin et al., 2021). Goodwin et al. (2021) suggested that "classroom talk matters to reading achievement and its connections to student outcomes" (p. 43). Through the opportunities provided during PBPD, teachers learn how to explicitly use the specific language provided in the KAT framework to encourage productive classroom talk regarding reading comprehension.

All of the teachers in this study exhibited each method of teacher talk per Goodwin et al's (2021) recommendation. Ms. Reed began each lesson with an introduction of the poem or play they were going to read, an explanation of the vocabulary words, and a reminder to listen for

hints of the text structure. She used questioning to promote critical thinking among her students. As Ms. Reed became more comfortable with the strategy, I noticed an increase in her encouragement of student talk which led to peer-to-peer conversations in which students shared their thoughts regarding the text structure and main idea of the play they'd read. Ms. Story was intentional in her use of questioning while reading to maintain engagement among her students. As this type of thinking seemed commonplace in this classroom, students were comfortable with turning and talking to peers and defending their ideas with evidence. I observed that Ms. Story used the IRF method of questioning (i.e., Initiation-Response-Follow-up; Goodwin et al., 2021) in which she probed her students, waited for a response, and followed up by affirming the response or posing an additional question. In fact, so much of the read aloud centered around answering inference questions as a class that it often meant the class ran out of time to work on the additional elements of the KAT framework (e.g., main idea multiple choice, summary, summary multiple choice). Although this was Ms. Causey's third year of KAT implementation, I noticed that she did less direct instruction as the year progressed and encouraged her students to do much of the talking. In turn, I heard students asking each other questions and rationalizing their ideas in order to answer text-related questions. This transfer of control from the teacher to the students was a powerful thing to observe. They were empowered to think and were acutely aware of how to make the logical connections between events in the text without Ms. Causey's assistance.

4.5.3. Category Three: Consistency of Implementation

Implementation research is "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice" (Eccles & Mittman, 2006, p.1). Braithwaite et al. (2018) put forth the notion that the application of research

was traditionally thought to function as a linear pipeline in which new research would naturally trickle down to practitioners in the field. It was assumed that research would advance in a logical, sequential order on its way to improving practice (Braithwaite et al. 2018). However, Lanham and colleagues (2013) emphasized that the implementation process is a dynamic venture which must account for multiple variables. Lyon et al. (2018) stated that "even when high-quality implementation strategies are in place to facilitate change, implementation outcomes are highly variable" (p. 2). That is why I was interested in the consistency of implementation when using the KAT framework.

The teachers in this study have included text structure instruction (i.e, KAT framework) in their schedules at least four days a week. The time allotted for implementation and use of the strategy varied in each classroom. While I believe it is beneficial to use the KAT framework to discuss texts read to students during a read aloud time, I observed that the time set aside for a read aloud is not long enough to guide students through the important processes involved in improving comprehension. In the teachers' classrooms where KAT was embedded in their reading lesson, I saw a difference in students' comfortability level when discussing how to identify the text structure, write a main idea and summary, and use the summary as a guide to deeper comprehension.

4.5.3.1. Teacher ZPD

While Vygotsky's research into ZPD was focused on the malleable, growing minds of children, it is plausible that adult learners bring with them a neural network with less plasticity due to life experiences and an array of formal operations (Warford, 2011). This less flexible neural network of assets may become a liability for in-service teachers confronted with new instructional practices and the complexities of teaching and learning. Warford (2011) posited that

it is essential to connect teachers' actual development to the larger picture of research regarding teaching and learning (e.g., sociocultural history) in such a way that "weaves expert and experiential knowledge" (p. 253) into one that becomes part of a teacher's personal narrative.

Understanding the framework of ZPD offers the opportunity to dig deeper into the development of personal narratives of in-service teachers as a way to more fully understand the factors at play within a teacher's zone of proximal development. Previous research has suggested that individuals have the greatest likelihood of learning when working together with more skilled others during collaboration to learn and internalize new information and skills (Elhusain & Khojah, 2020; Fani et al., 2011; Kuusisaari, 2014; McCullagh, 2012; Murphy et al., 2015; Shabani et al., 2010; Warford, 2011; Wennergren, 2016; Wu, 2004). Vygotsky put forth the idea that any higher mental function goes through an external social stage in its development before becoming an internal, truly cognitive function (Vygotsky, 1962). Warford (2011) posited that it is essential to connect teachers' actual development to the larger picture of research regarding teaching and learning (e.g., sociocultural history) in such a way that "weaves expert and experiential knowledge" (p. 253) into one that becomes part of a teacher's personal narrative. Murphy et al. (2015) suggested that TZPD should be used as an approach in professional development in order to create programs in which educators reflect on their teaching as a way to stimulate the evolution and transformation of teachers' knowledge.

It is worth noting that the two teachers at MBPD showed more significant growth in their teacher knowledge scores than the YBPD teacher did. I believe there are several factors to consider. For one, MBPD T1 shared in her interview that she had never attended a professional development where she learned something worth teaching in her classroom prior to attending the KAT PBPD. This powerful statement from her could be a key factor in why she was so engaged

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in the strategy and was excited to create and share lesson guides she wrote on her own. Thus, her knowledge and confidence grew. MBPD T2 was in her second year of teaching at the time of this study, and she was eager to learn and grow because she had not had the opportunity to attend many trainings centered around reading comprehension before KAT was introduced in her school district. Therefore, it is plausible that she was primed and ready to learn. Her TKRC scores showed the most growth from pretest to post-test. When I was reviewing the YBPD teacher's TKRC scores, I found it interesting that she did not show as much growth as the two teachers at MBPD. After all, she has masterfully incorporated KAT into her instruction. However, in looking at her interview transcripts, I had the thought that she may not have shown as much growth because not only did she begin at a higher knowledge level than the teachers at MBPD, she reported that she has attended over 20 literacy-related professional development events during her tenure.   It is possible that while Ms. Causey is aware of the impact KAT has made on her students, she also has a pretty full "teacher toolbox." Future research should investigate teachers who have attended a multitude of literacy-related PD events to better understand the impact of interferences (e.g., non-evidence-based strategies, conflicting strategies, multiple district-wide initiatives at one time) on specialized content knowledge (Ball et al., 2008).

4.5.4. Limitations

This study should be interpreted with consideration of its limitations. Each teacher was only observed twice during the spring semester. Follow-up observations should be conducted to ensure that the KAT instruction continues to be delivered consistently with fidelity and language that is refined for efficient, effective instruction. In addition, subsequent interviews would be helpful to document ways teachers have modified their instruction to meet the challenges of

implementation to better inform future collaborations with teachers. Difficulties with consistency of implementation was only observed in one classroom, and it is most likely because this teacher uses KAT to support her read aloud each day. Thus, students are typically writing a main idea of each chapter after identifying the text structure and answering inference questions about the chapter. Finally, observing other teachers who engage in this PBPD at various points in their assimilation of the strategy instruction will offer further areas of improvement in not only the professional development itself but ways to support teachers as they integrate this strategy into their classrooms.

Due to limited research regarding factors contributing to movement from one TZPD to the next, the educational field would be better informed with additional mixed methods research related to the impact of collaboration, coaching, and feedback from MKOs. In consideration of the measurement of TZPD, future research should expand Wu's (2004) work to evaluate a myriad of factors related to teacher growth (e.g., collaboration with an MKO, elements of feedback, use of self-reflection, teacher knowledge, etc.).

Additionally, because this study only investigated three teachers' journeys from KAT PBPD through implementation of months and years, these results should be applied to contexts with similar teacher profiles and students.

4.6. Conclusion

Classroom teachers face a complex set of daily challenges to not only differentiate for students but also improve reading outcomes for each. To ultimately inform practice, we must continue to examine these complexities in context to provide examples of best ways to implement evidence-based instruction into real-world situations. Change is necessary to the teaching process to improve student outcomes (Samaranayake et al., 2018), and professional

development is considered the primary route for teacher improvement (Cohen and Hill, 2000; Guskey, 2002; Samaranayake et al., 2018). The present study sought to meet this need and attempted to promote the importance of the intersection between readers, texts, and instructional activities (i.e., context) that ultimately promotes proficient comprehension for all students.

It is through sustained support and ongoing coaching and feedback provided to teachers that productive changes are made for the better. Just as a 4th grade student in the class I mentioned at the outset said, "Man, I wish I had known about this strategy when I was younger. I finally understand what my teacher meant last year when she asked me to write a main idea!"

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Table 4.1. The relationship between TZPD and development of teachers' knowledge.

Level	TZPD	Teachers' Knowledge
1	Zone 1: Learning *without* inter-psychological function.	a) Teachers' knowledge development is limited in content areas. b) Teachers' knowledge may be inadequate. c)TKRC score is less than or equal to 25.
2	Zone 2: Learning *with* inter-psychological function.	a) Teachers' knowledge is developed when acquired with and guided by MKOs. b) Teachers' content and pedagogical knowledge are developed. c) TKRC score is between 26 and 32.
3	Zone 3: Learning in intra-psychological function.	a) Teachers' knowledge is continually developed when acquired with and guided by MKOs. b) Teachers reflect and apply new learning in teaching and gradually reach their potential. c)Pedagogical content knowledge continues to develop. d) TKRC score is greater than equal to 33.

Note. This table was replicated based on Wu (2004) research. An addition of TKRC scores were used to identify individual teachers' TZPD.

Table 4.2. A Typical Day in the ELAR Classroom for MBPD T1.

Time	Daily Reading Block
90	Direct Instruction - KAT Strategies used daily during whole group mini lessons with daily passages, or story books. Their response will vary. At times it will be on the carpet as a group with sticky notes and worksheet template on main idea & summary with STAAR like questions. Sometimes it will be independent with the same activities for a quick check. We will use our text structure and main idea to respond to the text in a short-constructed response at least 3 times a week for writing practice.
45	Intervention Time – ITSS is used during this intervention time.

Table 4.3. A Typical Day in the ELAR Classroom for MBPD T2.

Time	Daily Reading Block
15	Reading Warm-up and Focus Poetry
30	Read Aloud with KAT Main Idea/Summary/Skill Focus
15	Independent Reading
30	Independent Reading with KAT and Skill Focus (Teacher conferences with students during this time.)
5	Grammar
15	Writing Mini-Lesson
35	Writer's Workshop (Teacher conference with students during this time.)

Table 4.4. A Typical Day in the ELAR Classroom for YBPD Teacher.

Time	Daily Reading Block
10	Word Study: Phonics/Word Wall Words
10	Grammar/Handwriting
15	Independent Reading
55	Guided Reading (Teacher conferences with students during this time.)
35	Reading Mini Lesson – KAT Instruction
30	Writing Mini-Lesson & Writer's Workshop

Table 4.5. Teacher Knowledge of Reading Comprehension Measure Results for MBPD T1.

Time Point	Total Answers Correct	Percentage Correct
Pretest (September 2022)	29 out of 39	74%
Posttest (April 2023)	34 out of 39	87%

Table 4.6. Teacher Knowledge of Reading Comprehension Measure Results for MBPD T2.

Time Point	Total Answers Correct	Percentage Correct
Pretest (September 2022)	29 out of 39	74%
Posttest (April 2023)	36 out of 39	92%

Table 4.7. Teacher Knowledge of Reading Comprehension Measure Results for YBPD Teacher.

Time Point	Total Answers Correct	Percentage Correct
Pretest (July 2021)	32 out of 39	82%
Posttest (April 2023)	33 out of 39	85%

Figure 4.1. KAT Escape Room Boxes.

5. CONCLUSION

Reading comprehension is important to child development as both a literacy and a life skill. It involves the ability to understand and interpret written text, which is essential for success in academics, professional settings, and everyday life. The National Reading Panel (NRP; 2000), established by the National Institute of Child Health and Human Development, identified five essential reading skills, of which reading comprehension was one. This recognition highlights the significance of reading comprehension in the broader development of literacy. Furthermore, the International Literacy Association (ILA) emphasized the "right to read" as a fundamental right of human development, underscoring the importance of promoting reading skills and access to reading materials for individual worldwide.

Despite the recognition and emphasis placed on reading comprehension, there have been concerning trends in reading achievement among students. Results from state and national reading assessments indicate a decline in reading proficiency among fourth and eighth-grade students over the past few decades. The consequences of inadequate reading comprehension can extend beyond the elementary years, and the negative effects of not providing explicit instruction in reading comprehension can persist into later years of education and affect students' overall academic performance (Ness, 2011; Shanahan, 2020). Thus, it is crucial to prioritize explicit instruction in reading comprehension.

Effective reading comprehension instruction often requires explicit teaching of strategies, such as identify the main ideas and summarization skills, helping students develop deep comprehension skills and prevent future reading difficulties (ILA, 2018; NRP, 2000; Shanahan et al., 2010; Wijekumar et al., 2019; Williams et al., 2016). Given that teachers play a vital role in providing beneficial instruction in reading comprehension, effective professional development

(PD) is needed to help them in their teaching practices (Desimone et al., 2005; Desimone et al., 2007).

Research shows that many PD initiatives, however, fail to bring about changes in teachers' practices (Darling-Hammond et al., 2017). To understand why, it is important to consider what happens before, during, and after PD that influences teachers' openness to pedagogical change. A teacher's mindset and self-perception of their abilities to teach reading comprehension, attitudes and beliefs, feelings about pedagogical change, the influence of teacher talk on instructional outcomes, and the impact on a teacher's zone of proximal development (TZPD) are all factors that can affect teachers' adoption of new strategies. These factors were explored in the three articles presented in this dissertation study, highlighting their importance in shaping a teacher's willingness to embrace new pedagogical approaches.

Practice-based professional development (PBPD) is a form of professional development that focuses on deepening teachers' understanding of effective instructional practices. It differs from traditional PD by emphasizing opportunities for practice and reflection rather than solely delivering information (Ball & Cohen, 1999; Harris et al., 2012: McKeown et al., 2014). In PBPD, teachers reflect on their own teaching practices and observe others before implementing new strategies in their classrooms.

Wijekumar and colleagues have utilized PBPD as the structure for their professional development when introducing the Knowledge Acquisition and Transformation (KAT) framework to teachers (Wijekumar et al., 2014, 2017, 2018). The KAT framework is grounded in Meyer's Text Structure Strategy (1975), which focuses on how readers extract information from texts in order to uncover relationships between sentences, integrate prior knowledge, and construct meaning from the text (Wijekumar et al., 2021). The KAT framework provides explicit

instruction in text structure-based reading comprehension, guiding students to identify the main idea, summarize the text, and make inferences based on the top-level structure of the text.

5.1. Findings of This Dissertation

My dissertation consisted of three studies that provided an in-depth understanding of the factors influencing the implementation of the KAT framework for reading comprehension. These studies examined the potential influence of Vygotsky's ZPD as well as other factors including mindset, self-perception, beliefs, attitudes, and pedagogical change. Additionally, one of the studies investigated the impact of classroom talk on instructional outcomes. It explored how the nature and quality of classroom discourse contributed to the effectiveness of implementing the KAT framework. By investigating these factors from different angles, my dissertation sought to contribute to a deeper understanding of the complex dynamics involved in implementing a reading comprehension strategy and its implications for instructional outcomes.

5.1.1. Study #1

The first study in my dissertation focused on investigating Vygotsky's Zone of Proximal Development (ZPD) and its implications for both preservice and in-service teachers. This concept was extended to Teachers' Zone of Proximal Development (TZPD; Warford, 2011); however, limited research was found specifically related to TZPD in the context of reading instruction and reading comprehension. Therefore, a systematic review was conducted to explore approaches used in research to impact teacher ZPD and identify factors that influenced TZPD. The review included nine primarily qualitative studies published between 1996 and 2020. Notably, no quantitative studies evaluating ZPD or TZPD were found. Various methods were employed in the studies, such as pre- and post-surveys, video-supported reflection, co-planning,

interviews, observations, shadowing, and collaborative journals; however, none of these methods yielded quantifiable actions that could be utilized in future studies.

Considering the diverse needs of teachers attending professional development events, I suggested future research should explore TZPD through an initial assessment of teachers' knowledge and skills related to specific reading comprehension concepts. This pre-assessment could help create knowledge groups based on different levels of proficiency (e.g., poor knowledge, fair knowledge, good knowledge, excellent knowledge) in which PD creators could tailor the learning experiences to more effectively meet the needs of in-service teachers. At the conclusion of implementation, teachers would be administered a content knowledge assessment, or post-test, to evaluate potentially bridging from one ZPD level to the next independent level of understanding.

5.1.2. Study #2

The second study investigated the mindset of elementary teachers and its influence on their ability and willingness to implement ideas acquired at a reading comprehension PD. This study utilized a non-experimental, correlational design to explore the relationships between teacher mindset, self-perception, beliefs, attitudes, and feelings about pedagogical change.

While most mindset research has focused on students, it is crucial to consider how teachers' fixed or growth mindsets impact student outcomes. Rattan et al. (2012) suggested that instruction is more effective when delivered by a teacher with a growth mindset, characterized by the belief in students and their potential for growth. Teachers with high expectations for themselves and their students tend to employ different instructional practices compared to those with low expectations (Rubie-Davies, 2007).

I created a self-efficacy survey called the T-MACSP (**T**eacher-**M**indset, **A**ttitudes and Beliefs, **C**hange, **S**elf-**P**erceptions) Self-Efficacy Survey and conducted an exploratory factor analysis. Revisions were made to the Teacher Beliefs and Attitudes and Teacher Change Constructs which led to the reorganization of constructs into Teacher Beliefs, Teacher Attitudes, Openness to Pedagogical Change, and Reluctance to Pedagogical Change; however, it is important to note that the results of the exploratory factor analysis could benefit from a larger sample size to enhance its strength. Future research should consider evaluating the psychometric properties (e.g., reliability, item discrimination, factor analysis) of the T-MACSP with a broader population of teachers to replicate the findings presented in this study.

Contrary to previous literature that examined the relationship between teachers' mindsets and years of experience (Strosher, 2003; Gleason, 2016; Rattan et al., 2012), the present study found that years of experience did not have a statistically significant impact on mindset. For example, among teachers with over 21 years of experience, only one participant (0.5% of the total sample) displayed a fixed mindset. The findings regarding mindset and years of experience contradict previous research. Additionally, novice teachers (i.e., 0-1 years of experience) exhibited interesting results, with two displaying fixed mindset and three demonstrating near-fixed mindset scores. Future research could benefit from in-depth investigations using interviews and observations to gather interviews about the mindsets of veteran teachers.

Additionally, when investigating the relationship between teachers' mindsets and self-perceptions of their ability to teach reading comprehension concepts, simple linear regression showed no statistical significance. Interestingly, teachers rated themselves lowest in their ability to teacher reading comprehension to below-average readers but scored themselves as having high levels of self-perception in teaching main idea and student-friendly definitions. Unlike self-

perception scores, teacher beliefs and teacher attitudes significantly predicted teacher mindset scores. T-MACSP survey results also revealed that each of the predictor variable associated with pedagogical change (e.g., openness and reluctance to change) had a significant correlation with Mindset Theory Scale score. Specifically, openness to pedagogical change significantly predicted teacher mindset, indicating that teachers who are more open to embracing pedagogical changes tend have a more favorable mindset. Similarly, reluctance to pedagogical change significantly predicted teacher mindset scores, suggesting that teachers who are resistant or hesitant towards pedagogical changes may have a less favorable mindset. These findings highlight the importance of considering teachers' attitudes towards change when implementing new instructional strategies.

In summary, understanding teachers' mindsets in relation to their self-perceptions, beliefs, attitudes, and openness or reluctance to change can contribute to strengthening the field. This awareness provides valuable insights for PD leaders and instructional support staff, who have a crucial role in fostering growth and serving as transformational leaders. The results of the T-MACSP Teacher Self-Efficacy Survey highlighted that many teachers rely on instructional coaches and district level experts for evidence-based practices in lieu of peer-reviewed journals or sites like the What Works Clearinghouse. Therefore, it is essential for instructional leaders to receive adequate training and preparation in best practices to effectively support teachers in their professional development.

5.1.3. Study #3

The final study in my dissertation was a multiple case study that offered a detailed view into three classroom environments using the KAT framework. This study contributed to the existing literature by providing a detailed examination of teachers at months beyond PD (MBPD)

and years beyond PD (YBPD). Classroom observations and teacher interviews were employed to investigate how these teachers implemented the KAT framework following a two-day PD. I was interested in exploring the duration of time it took for teachers to fully adopt a new comprehension strategy and develop confidence in their instructional delivery. Additionally, the study focused on each teacher's ZPD to understand how collaboration, learning from more knowledgeable others, and self-reflection contributed to professional growth. Lastly, the study examined classroom talk as an indicator of the content learned during the PD, drawing on the concept of classroom talk posited by Goodwin et al. (2021).

The observations of the three participating teachers provided valuable insights into their implementation of the KAT framework. One interesting finding was the shift in teachers' use of instructional time and their comfort level with the strategy over time. Ms. Reed, one of the teachers at MBPD, demonstrated growth in her confidence in delivering text structure lessons. She became more at ease when responding to students' in-the-moment questions related to the text structure. Ms. Story, another teacher at MBPD, showed confidence in various components of the KAT framework. In contrast to the MBPD teachers, Ms. Causey, who was at YBPD, had a different pace in leading KAT instruction. She successfully covered all components of the KAT framework in an average of 42 minutes, whereas the teachers at MBPD took about 10 minutes longer and did not always show 100% fidelity to the strategy. Another notable difference between the MBPD and YBPD teachers was the way Ms. Causey personalized the strategy and made it her own. She created materials for each lesson, including an escape room activity, while still maintaining fidelity to the KAT framework. Ms. Causey shared that she had been creating such activities for a while because she knew her students were confident with the strategy, and she wanted to keep them engaged. These findings highlight the variations in implementation

approaches and the importance of ongoing support and professional development tailed to each teacher's needs and classroom context.

In this study, all teachers demonstrated various methods of teacher talk as recommended by Goodwin et al. (2021). The classroom observations highlighted the different approaches to teacher talk and the evolving dynamics of classroom interactions as teachers gain confidence in implementing the KAT framework. The students' increased participation and independent thinking demonstrate the effectiveness of the instructional strategies employed by the teachers.

Indeed, utilizing Vygotsky's ZPD and TZPD as an approach in PD can be highly beneficial for educators. TZPD suggested that individuals can enhance their learning and development by engaging in activities that are just beyond their current level of competence, but can be achieved with guidance and support from more knowledgeable others. In the context of PD, incorporating the concept of TZPD means designing programs that provide teachers with opportunities to reflect on their teaching practice and engage in learning experiences that challenge and stretch their current knowledge and skills. By identifying the areas where teachers have the potential for growth and providing targeted support and guidance, PD can stimulate the evolution and transformation of teachers' knowledge.

The findings suggest that the two teachers at MBPD experienced more significant growth in their teacher knowledge scores compared to the YBPD teacher. Several factors could contribute to this difference. One MBPD teacher expressed that she had never attended a PD where she learned something applicable to her classroom prior to the KAT PBPD. This statement highlights her engagement and excitement about the strategy, leading to increased knowledge and confidence. Similarly, the other MBPD teacher had limited opportunities for training in reading comprehension before KAT was introduced in her school district. Her eagerness to learn

and grow likely contributed to her substantial growth in teacher knowledge scores. In contrast, the YBPD teacher, despite masterfully incorporating KAT into her instruction, did not show as much growth in teacher knowledge. It's possible that her extensive exposure to over 20 PD events related to reading resulted in a full strategy repertoire. Future research could explore the impact of multiple PD events on specialized content knowledge and the potential interferences that may arise from conflicting strategies, as well as the challenges of implementing multiple district-wide initiatives simultaneously.

The objectives of this dissertation encompassed both theoretical and practical aspects. The theoretical contribution involved building upon existing research on reading comprehension, PD, mindset, teacher's ZPD, and other potential factors influencing teachers during and after PD. From a practical perspective, this dissertation aimed to investigate teachers' mindsets and attitudes during a reading comprehension PD while observing classroom practices of teachers at different stages beyond the PD. Understanding these factors can inform the planning and design of future PD events for educators, ultimately enhancing their effectiveness.

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TEACHER – MINDSET, ATTITUDES AND BELIEFS, CHANGE, AND SELF-PERCEPTION

SELF-EFFICACY SURVEY (T-MACSP ORIGINAL VERISON) – 51 QUESTIONS

Mindset Theory Scale

1. I believe my intelligence level will not change. (fixed)
2. I force myself to do and learn new things. (growth)
3. I can do some things differently, but I don't think I can change many of my primary characteristics. (fixed)
4. I feel threatened when doing a task. (fixed)
5. I think that people's intelligence is one characteristic they cannot change. (fixed)
6. It's in my hands to develop my intelligence. (growth)
7. I avoid trying new things because it stresses me out. (fixed)
8. I try to learn lessons from my mistakes. (growth)
9. I can learn new things, but I don't think I can change my intelligence level. (fixed)
10. I believe that even an intelligent person can improve their intelligence. (growth)
11. I think that striving for higher intelligence is useless. (fixed)
12. I try to learn new things from the achievements of the people around me. (growth)
13. I can increase my intelligence level significantly. (growth)

Likert-scale responses: 1 = Strongly Agree 2=Agree 3=Somewhat Agree 4=Somewhat Disagree 5=Disagree 6= Strongly Disagree

Teacher Self-Perception Items

1. How would you rate your ability to teach vocabulary?
2. How would you rate your ability to teach prefixes, suffixes, and root words?
3. How would you rate your ability to provide student-friendly definitions?
4. How would you rate your ability to teach reading comprehension?
5. How would you rate your ability to teach reading comprehension to typically developing readers?
6. How would you rate your ability to teach reading comprehension to below-average readers?
7. How would you rate your ability to teach reading comprehension to above-average readers?
8. How would you rate your ability to teach text structures as a reading comprehension strategy?
9. How would you rate your ability to teach main idea?
10. How would you rate your ability to teach summarization?
11. How would you rate your ability to teach inferencing?
12. How would you rate your ability to teach multiple standards during the same lesson?

13. How would you rate your ability to discern between an effective or ineffective reading comprehension strategy?
14. Where do you locate evidence-based practices? (short answer)

Teacher Beliefs and Attitudes

1. I believe attending many reading-related professional development events is important for learning new ideas.
2. I believe students need to know many strategies for reading comprehension (e.g., making predictions, activating prior knowledge, using context clues, monitoring comprehension, questioning, writing the main idea, and writing a summary).
3. I believe that working with an instructional coach or someone more knowledgeable than me is a beneficial way to become a better reading teacher.
4. I believe it is important to learn and use evidence-based reading comprehension strategies in my instruction.
5. I believe it is important to follow the reading textbook and materials given to me by my school district.
6. When a reading skill or strategy is hard to teach, it discourages me.
7. When a reading skill or strategy is hard to teach, it motivates me to work on it more.
8. When my students struggle with reading, I am more inclined to look for new strategies and techniques to help them.
9. When I work hard to teach a particular concept in reading and my students struggle, I feel like I'm not a good teacher.
10. My students are all expected to reach a common high standard in reading, but they are given different levels of support and time to accomplish it.
11. I enjoy learning new, effective strategies for teaching reading comprehension.

Likert-scale responses: 1 = Strongly Agree 2=Agree 3=Somewhat Agree 4=Somewhat Disagree 5=Disagree 6= Strongly Disagree

12. How long do you try a new reading comprehension strategy with your students before discarding it and looking for something new to try in your instruction?
Possible responses: A = 2 weeks B = 6 weeks C = 9 weeks D = a semester E = a full school year

13. What indicators do you use to decide if a strategy is effective or not and should continue to be used in your instruction? (short answer)

Teacher Change

1. I am open to learning new strategies about how to teach reading comprehension.
2. I am inclined to express my opinion when a new reading comprehension strategy is introduced that may cause me to change how I have previously taught reading comprehension.
3. It takes a lot of convincing for me to incorporate a new reading comprehension strategy into my instruction.
4. When I learn a new strategy for teaching reading comprehension, I like to talk it over with my colleagues.
5. When I learn a new strategy for reading comprehension, I like to practice it with my colleagues.
6. I enjoy using new knowledge and skills learned in a reading professional development to improve my instruction.
7. I am more inclined to change my teaching practices when I have support from colleagues and administration.
8. Too many pedagogical changes create "a mess" in my instruction.
9. I do not appreciate having new strategies and expectations forced upon me by my school district.
10. I appreciate constructive feedback from someone more knowledgeable than me.

   Likert-scale responses: 1 = Strongly Agree 2=Agree 3=Somewhat Agree 4=Somewhat Disagree 5=Disagree 6= Strongly Disagree

11. How do you respond to constructive or critical feedback? Check all that apply.
    Possible responses: a. Appreciative b. Supported c. Open-minded d. Motivated e. Valued f. Grateful g. Unaffected h. Ashamed i. Discouraged j. Overwhelmed k. Worried l. Anxious m. Offended

February 28, 2023

Dear Friend of Literacy,

Thank you for attending our professional development event for the Knowledge Acquisition and Transformation Framework. Our team continues to hear about the great success teachers are achieving using the KAT strategy with their students. We are dedicated to continuously improving the work we are doing in schools. In an effort to wrap up our collection of information for the federal grant which has supported our work in many schools over the last four years, we would like to learn a little more about you.

Please login to your account at https://it.literacy.io. On your Teacher Dashboard, you will find the **Teacher Self-Efficacy Survey - Reading**. This survey was created to learn about your self-perceptions related to teaching reading comprehension, your beliefs regarding professional development and teaching practices, your feelings about pedagogical changes, and the frequency with which you use reading comprehension in your instruction. The information you share will help our team create an even more meaningful professional learning experience.
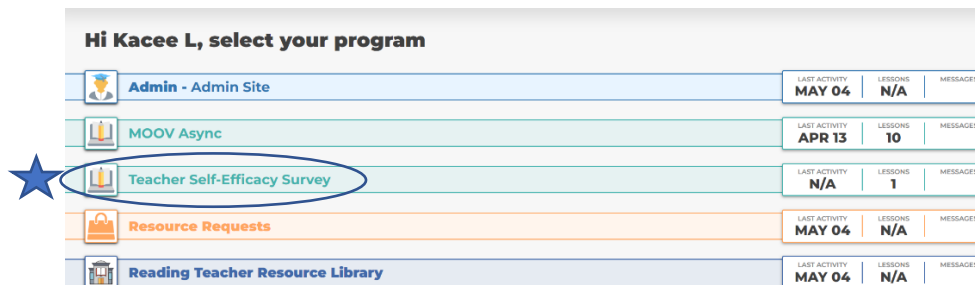
This survey should take between 10-15 minutes to complete, and we would appreciate it if you would take the time to finish the survey before March 31, 2023. We are excited to share that for those of you that complete the survey, your name will be entered into a drawing for one of fifteen $50 Amazon gift cards. The winner of the gift cards will be notified in late March.

If you do not remember your username or password for it.literacy.io, click Forgot Password on the login page. Please reach out to Kacee Lambright at kacee331@tamu.edu should you have any questions regarding the Teacher Self-Efficacy Survey.

Thank you for your help!

Kacee Lambright &
The Literacy.IO Team

it.literacy.io Teacher Dashboard:

Please note: Your dashboard may not have all of the same options as this one. Please look for the tab: Teacher Self-Efficacy Survey. Click Teacher Self-Efficacy Survey, and you will be able begin the survey.

APPENDIX C

TEACHER - MINDSET, ATTITUDES AND BELIEFS, CHANGE, AND SELF-PERCEPTION

SELF-EFFICACY SURVEY (T-MACSP REVISED VERSION AFTER EXPLORATORY

FACTOR ANALYSIS) – 46 QUESTIONS

Mindset Theory Scale

1. I believe my intelligence level will not change. (fixed)
2. I force myself to do and learn new things. (growth)
3. I can do some things differently, but I don't think I can change many of my primary characteristics. (fixed)
4. I feel threatened when doing a task. (fixed)
5. I think that people's intelligence is one characteristic they cannot change. (fixed)
6. It's in my hands to develop my intelligence. (growth)
7. I avoid trying new things because it stresses me out. (fixed)
8. I try to learn lessons from my mistakes. (growth)
9. I can learn new things, but I don't think I can change my intelligence level. (fixed)
10. I believe that even an intelligent person can improve their intelligence. (growth)
11. I think that striving for higher intelligence is useless. (fixed)
12. I try to learn new things from the achievements of the people around me. (growth)
13. I can increase my intelligence level significantly. (growth)

Likert-scale responses: 1 = Strongly Agree 2=Agree 3=Somewhat Agree 4=Somewhat Disagree 5=Disagree 6= Strongly Disagree

Teacher Self-Perception Items

1. How would you rate your ability to teach vocabulary?
2. How would you rate your ability to teach prefixes, suffixes, and root words?
3. How would you rate your ability to provide student-friendly definitions?
4. How would you rate your ability to teach reading comprehension?
5. How would you rate your ability to teach reading comprehension to typically developing readers?
6. How would you rate your ability to teach reading comprehension to below-average readers?
7. How would you rate your ability to teach reading comprehension to above-average readers?
8. How would you rate your ability to teach text structures as a reading comprehension strategy?
9. How would you rate your ability to teach main idea?
10. How would you rate your ability to teach summarization?
11. How would you rate your ability to teach inferencing?

12. How would you rate your ability to teach multiple standards during the same lesson?
13. How would you rate your ability to discern between an effective or ineffective reading comprehension strategy?

Likert-scale: 1=Minimal 2=Moderate 3=Very good 4=Expert

14. Where do you locate evidence-based practices? (short answer)

Teacher Beliefs

1. I believe attending many reading-related professional development events is important for learning new ideas.
2. I believe that working with an instructional coach or someone more knowledgeable than me is a beneficial way to become a better reading teacher.
3. I believe it is important to learn and use evidence-based reading comprehension strategies in my instruction.
4. When my students struggle with reading, I am more inclined to look for new strategies and techniques to help them.
5. I enjoy learning new, effective strategies for teaching reading comprehension.

Likert-scale responses: 1 = Strongly Disagree 2=Disagree 3=Somewhat Disagree 4=Somewhat Agree 5=Agree 6= Strongly Agree

Teacher Attitudes

1. When a reading skill or strategy is hard to teach, it discourages me. (reverse coded)
2. When a reading skill or strategy is hard to teach, it motivates me to work on it more.
3. When I work hard to teach a particular concept in reading and my students struggle, I feel like I'm not a good teacher. (reverse coded)

Likert-scale responses: 1 = Strongly Agree 2=Agree 3=Somewhat Agree 4=Somewhat Disagree 5=Disagree 6= Strongly Disagree

4. How long do you try a new reading comprehension strategy with your students before discarding it and looking for something new to try in your instruction?

Possible responses: A = 2 weeks B = 6 weeks C = 9 weeks D = a semester E = a full school year

5. What indicators do you use to decide if a strategy is effective or not and should continue to be used in your instruction? (short answer)

Teacher Change - Openness

1. I am open to learning new strategies about how to teach reading comprehension.
2. When I learn a new strategy for teaching reading comprehension, I like to talk it over with my colleagues.
3. When I learn a new strategy for reading comprehension, I like to practice it with my colleagues.
4. I enjoy using new knowledge and skills learned in a reading professional development to improve my instruction.
5. I am more inclined to change my teaching practices when I have support from colleagues and administration.
6. I appreciate constructive feedback from someone more knowledgeable than me.

   Likert-scale responses: 1 = Strongly Disagree 2=Disagree 3=Somewhat Disagree 4=Somewhat Agree 5=Agree 6= Strongly Agree

Teacher Change – Reluctance

1. Too many pedagogical changes create "a mess" in my instruction.
2. I do not appreciate having new strategies and expectations forced upon me by my school district.

   Likert-scale responses: 1 = Strongly Disagree 2=Disagree 3=Somewhat Disagree 4=Somewhat Agree 5=Agree 6= Strongly Agree

3. How do you respond to constructive or critical feedback? Check all that apply.

   Possible responses: a. Appreciative b. Supported c. Open-minded d. Motivated e. Valued f. Grateful g. Unaffected h. Ashamed i. Discouraged j. Overwhelmed k. Worried l. Anxious m. Offended

APPENDIX D

KAT READING COMPREHENSION GUIDE

KAT READING COMPREHENSION INSTRUCTIONAL GUIDE©
This page must be completed for every text students read.

Story/Article/Chapter:
TEKS/CCSS: *{Please follow the links below to access the common TEKS/CCSS associated with the KAT strategy and copy and paste the standards to fit your grade level/lesson objectives.}*   Link to TEKS and Link to CCSS
Text Structure(s): *{Identify if cause and effect, problem and solution, and/or comparison text structures organize the text.}*
CHECKPOINT #1: INTRODUCTION   Make sure to introduce the text structure as you introduce the reading w/o explicitly stating text structure.
CHECKPOINT #2: VOCABULARY   Identify important, useful, or difficult words that are essential to comprehension.
Vocabulary Words: *{**Bold** the words you plan to teach BEFORE the lesson}*
*See end of guide for vocabulary chart to assist in planning when and how to teach vocabulary
Signaling Words : *{Identify words or phrases that clue the reader to the text structure and key ideas}*
CHECKPOINT #3: MAIN IDEA   Use the higher order sentence stems to generate a main idea statement.
OVERALL Main Idea/Key Idea/Central Idea for the whole passage: *{Use sentence stems: For example, for cause-and-effect use: The **cause** is _____ and the **effect** is _____}*
Multiple Choice Question Practice *{Create a multiple-choice question asking students to select the best main idea}* *[The correct answer is in **red**.]*   1.   A.   B.   C.   D.
Main Idea/Key Idea/Central Idea FOR A SECTION: *{Pick a section or paragraph(s) that are important to the text or has a different text structure than the overall text structure.}*   **This step is optional and should only be introduced AFTER identifying the overall main idea. Once students begin consistently utilizing the strategy then you can go back and focus identifying the main idea of ONE specific paragraph or section.*
CHECKPOINT #4: SUMMARY   *{Make sure to extend the main idea by including details supporting each part e.g., cause, problem, and solution. Write your added details in blue.}*
Summary for the whole selection:
Multiple Choice Question Practice *{Create a multiple-choice question asking students to select the best summary.}*   What is the BEST summary of the selection?

A.
B.
C.
D.

CHECKPOINT #5: INFERENCE
Create inference questions that ask the students to infer by examining the evidence to support their answer.

Inference Questions: {*Include both open-ended and m/c questions. Use the STAAR sample question stems if needed*}

Open-ended: {*e.g., What is most likely the reason the author included X; The author wrote the article mainly to X; Why did the author include X in the passage?*}

1.

Multiple choice: {*e.g., The reader can conclude from paragraph X that...; What is the most likely reason that X; Based on the selection, how do X most likely feel about X?*}

1.
A.
B.
C.
D.

Multiple Choice Vocabulary Inference: {*e.g., Which words in paragraph X help the reading understand the meaning of X? Which meaning of X is used in paragraph X*}

1.

KAT Vocabulary Chart
Plan your week.

Title of Passage:

Text Structure(s): {*Identify if cause and effect, problem and solution, and/or comparison text structures organize the text*}

Vocabulary Chart: {*Use the following chart to help pre-teach vocabulary effectively*}

Word				
Part of speech				
Definition				
root				
Affix(es)				
Synonym				
Antonym				
Spanish				
Activity* Teacher Choice				

*Remember: Definitions should be student friendly; Affix: state type, meaning, examples (i.e. prefix re- again: reread, rematch); Activity or connection: briefly state how you would teach the word (i.e., Frayer Model, KIMS strategy, brief connection with story or similar word)

This lesson planning page is part of three grant funded projects led by Dr. K. Wijekumar at Texas A&M University. The materials are designed to improve reading comprehension and to be used with the text structure strategy and writing instruction in language arts, science, social studies, special education, and bilingual classrooms. *Most importantly, this planning page ensures consistency of instruction horizontally and vertically aligned and overcomes contradicting instruction in textbooks.*

KAT CLASSROOM OBSERVATION FIDELITY FORM

Instructor: _____   **Completed by**: Kacee Lambright

**Total minutes of instruction**: _____   **Total Score**: _____

Text Structure Lesson Components	Score
Introduction: Teacher introduces lesson mentioning Problem/Solution, Cause/Effect or, Comparison text structures - 1 No introduction = 0	
Vocabulary: Teacher explains vocabulary items = 1 No vocabulary items = 0	
Signaling Words: Teacher uses signal words to help students identify text structure Yes = 1 No = 0	
Main Idea: Teacher models writing ***Main Idea*** using *Problem/Solution, Cause/Effect, or Comparison* (for observations in weeks 1 to 12 of academic year). If it is past 12 weeks of instruction, then does the teacher model for small groups that are struggling = 1 No Main idea language is demonstrated – 0 Teacher asks students to individually write ***main idea*** using Problem/Solution, Cause/Effect, or Comparison in their notebook or other document. *(If students wrote the main idea in small groups, please note that here.)* = 1 Students not directed to write main idea = 0	
Summary: Teacher uses appropriate academic language while modeling writing a ***summary*** by extending the main idea with details. Must still use the Problem/Solution, Cause/Effect, or Comparison text structures. = 1 Teacher does not use language for summary = 0	

|	
Inference: Teacher asks inference questions which are tied to the text structure. Yes = 1 No = 0	
Wait time: Teacher gave students **five to 15 seconds** to formulate a response to a question for which they should know the answer. Yes = 1 No = 0	
Questioning: Teacher's questions were related to the text structure of the story or were asked in order to elicit responses tied to the text structure. Yes = 1 No = 0	

APPENDIX F

KAT DECISION TREE
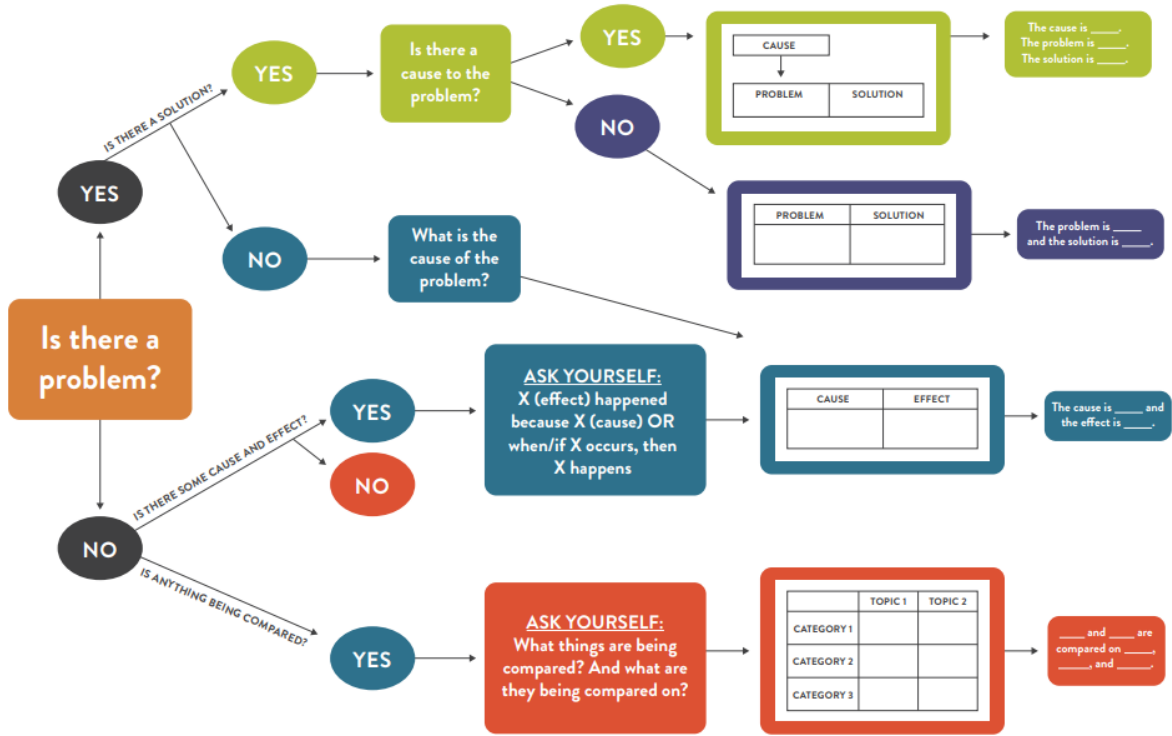
MS. CAUSEY'S KAT STUDENT HANDOUT

Name: _____   **Date:** _____

Did you know that sea turtles have been in danger of going extinct? Well, today we will read about a young boy named Callie and his Grandmother who are sea turtle volunteers. Let us read to find out what problems turtles face and how Callie, his Grandmother, and some volunteers help one turtle survive.
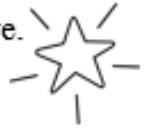
Focus Words

Vocab Word	Definition	Synonym	Antonym
obsessed	exhibiting enthusiasm or strong passion		
disoriented	having lost one's direction; confused		
blunt	having a thick edge or point; not sharp		

What is our Text Structure?

After thinking and discussion the text structure with your partner. What signal words did you use when discussing the text structure?

What is the text structure?

A. Cause and Effect
B. Problem and Solution
C. Cause, Problem, and Solution

Appendix G, Cont.

Name: _____ **Date:**

_____ # Main Idea

_____
_____
_____
_____
_____
_____
_____
_____
_____

Add details to your main idea to create a summary.

Appendix G, Cont.

Summary

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Inference Questions

1. The author wrote the article mainly to ...

_____
_____
_____

2. Look at the picture on page 246. Why did the author include this in the passage?

_____
_____
_____

3. Based on the information in the selection, what can the reader infer about why there aren't any outgoing tracks or crawl?

_____
_____
_____

KAT STUDENT BOOKMARK (FRONT AND BACK)

literacy.IO
BE A SUPER READER!

CAUSE AND EFFECT

1. Determine the text structure by thinking about how ideas are connected and looking for signaling/linking words.
2. Write a main idea.
   Main Idea Pattern (sentence stem):
   The cause is____ and the effect is____.
   Example: The causes were flat landscape, aging infrastructure, and heavy rain and the effect was flooding in Houston.
3. Extend the main idea to write a summary:
   The cause is_____. Details supporting the cause. The effect is_____. Details supporting the effect.
4. Answer inference questions about the text:
   Example: What other causes may there be for this effect?

SIGNALING/LINKING WORDS
cause, led to, bring about, originate, produce, make possible...

PROBLEM AND SOLUTION

1. Determine the text structure by thinking about how ideas are connected and looking for signaling/linking words.
2. Write a main idea.
   Main Idea Pattern (sentence stem):
   The problem is____ and the solution is____.
   Example: The problem is whales may become extinct and the solution is to create a whale sanctuary where hunting is not allowed.
3. Extend the main idea to write a summary:
   The problem is_____. Details supporting the problem. The solution is_____. Details supporting the solution.
4. Answer inference questions about the text:
   Example: What possible causes may have led to the problem? Based on the solution, what may have caused the problem?

SIGNALING/LINKING WORDS

PROBLEM	SOLUTION
problem, issue, question, puzzle, trouble...	to satisfy the problem, solution, reply...

CAUSE, PROBLEM AND SOLUTION

1. Determine the text structure by thinking about how ideas are connected and looking for signaling/linking words.
2. Write a main idea.
   Main Idea Pattern (sentence stem):
   The cause of the problem is_____.
   The problem is_____.
   and the solution is_____.
   Example: The causes of the problem are deforestation, hunting, and killing of the animals. The problem is that the orangutan population is declining. The solutions are to educate people about orangutans, decrease hunting of orangutans, and buying responsibly farmed palm oil products.
3. Extend the main idea to write a summary:
   The cause of the problem is_____. Details supporting the cause of the problem. The problem is_____. Details supporting the problem. The solution is_____. Details support the solution.
4. Answer inference questions about the text:
   Example: What additional problems may have resulted from the cause?

SIGNALING/LINKING WORDS
CAUSE: cause, led to, due to, because...; PROBLEM: problem, issue, trouble...; SOLUTION: solve, fix, solution, answer, ...

COMPARISON

1. Determine the text structure by thinking about how ideas are connected and looking for signaling/linking words.
2. Write a main idea.
   Main Idea Pattern (sentence stem):
   _____ and_____ were compared on_____, _____, and_____.
   Example: Marie Curie and Isaac Newton were compared on important discoveries, birthplace, and their area of study.
3. Extend the main idea to write a summary:
   _____ and_____ were compared on_____, _____, and_____. Details supporting the comparison.
4. Answer inference questions about the text:
   Example: What can the reader infer based on____ and____ having similar/different____?

SIGNALING/LINKING WORDS
instead, but, however, or, and, while, compare, in contrast...

SEMI-STRUCTURED INTERVIEW QUESTIONS

Description Questions
1. How long have you been a classroom teacher who specifically teaches reading?
2. What certifications do you hold?
3. What certifications do you have specifically related to reading?
4. What trainings have you attended specifically related to reading?
5. How much professional development have you received concerning reading or reading strategies in the course of your career?

Task-Related Grand Tour
6. Describe an effective professional development you have participated in.
7. Describe some professional developments that have been ineffective.
8. Describe some reading comprehension strategies you have tried that were not effective.

Description
9. What strategies have you used for comprehension prior to the KAT training?
10. How long have you taught using the KAT framework?
11. How do you feel about implementing the KAT framework in your instruction?
12. Have you noticed differences in your instruction while using KAT framework when compared to previous years of reading comprehension instruction? If so, please explain.

Grand Tour
13. What does KAT instruction look like in your classroom on a typical day?

Description
14. How many students were in your class this school year?
15. How many students were identified with dyslexia or a learning disability in reading?
16. If students were receiving instruction outside of the classroom, can you describe what type of intervention they were receiving?
17. How much time would you say is spent on comprehension during pullout instruction/intervention?

Mini-Grand Tour
18. How often are students receiving KAT instruction?
19. Where did you identify and locate reading material used during KAT instruction?
20. What assessments did you use to document their progress while using the KAT framework?
21. What did you notice about your struggling students' participation during the KAT instruction and practice?
22. How do you feel KAT instruction served your students identified with dyslexia or reading disabilities?

Appendix I, Cont.

23. How did the students make use of the anchor charts for signaling/linking words?
24. How did you notice the students using the anchor charts for main idea?

APPENDIX J

TEACHER KNOWLEDGE OF READING COMPREHENSION (HUDSON, 2021)

Correct answers indicated with <u>underline</u>. Each item is scored as either correct (1) or incorrect (0).

1. Which of the following statements best describes the relationship between children's oral vocabulary knowledge and their decoding skills?

   a) Accurate decoding is essential for the development of children's oral vocabulary knowledge.
   b) Children must have extensive oral vocabulary knowledge before they can learn basic decoding skills.
   c) Most struggling decoders have limited knowledge of oral vocabulary.
   d) <u>Children's oral vocabulary knowledge allows them to obtain meaning from words they have decoded.</u>
   e) I'm not sure.

2. Students may have a difficult time comprehending words that are not part of their:
   a) <u>Oral vocabulary</u>
   b) Listening vocabulary
   c) Writing vocabulary
   d) Reading vocabulary
   e) I'm not sure

3. The best words to select for explicit vocabulary instruction are:
   a) words that students learn in content areas, such as particle, climate, orbit
   b) words that students learn indirectly while reading, such as often, merely, afterward
   c) <u>words that cross academic disciplines, such as determine, illustrate, and average</u>
   d) words that are not commonly used or arcane, such as thine, facsimile, and terrace
   e) I'm not sure

4. A 4th grade teacher has noticed that her students have had difficulty understanding some of the vocabulary terms in the text they read. Which of the following is a recommended strategy that she should use to teach vocabulary?
   a) Rely solely on explicit vocabulary instruction to teach children new words
   b) Using dictionary definitions are most effective because they provide the most accurate definition of words
   c) <u>Teach words that are used across a range of academic domains</u>
   d) Pre-teaching vocabulary is discouraged because students should be taught to learn words using context clues to figure out meanings.
   e) I'm not sure.

5. Which of the following should you consider when teaching vocabulary?
   a) Focus on teaching students as many words as possible
   b) <u>Instruction about morphology should be a part of vocabulary instruction</u>
   c) The teaching of synonyms and antonyms should only be for academic or content area terms
   d) Morphology instruction should start after students have developed proficient decoding and fluency skills.
   e) I'm not sure

6. Which of the following is a recommended strategy/principle to consider when teaching vocabulary?

   a) It is more important to focus on breadth as compared to depth of vocabulary knowledge.
   b) Having students learn dictionary definitions is most effective in learning new words.
   c) Incorporating instruction in morphological knowledge in vocabulary teaching is confusing and should be avoided.
   d) <u>It is important to introduce/demonstrate how words are used in multiple contexts in teaching vocabulary.</u>
   e) I'm not sure

7. If you are introducing a new word, *essential*, the best way to define it for students is…
   a) "Discipline is essential in an army"
   b) "Pertaining to the essence of something"
   c) "Most important"
   d) "Pretty crucial"
   e) I'm not sure

8. Please list the prefix, root, and suffix for the word *Undoubtedly* (You may use a dash to represent "none." If two fall under one category, please list both.)

9. Please list the prefix, root, and suffix for the word *Disruption* (You may use a dash to represent "none." If two fall under one category, please list both.)

10. Please list the prefix, root, and suffix for the word *Beautifully* (You may use a dash to represent "none." If two fall under one category, please list both.)

11. If a teacher wanted to help children infer the meaning of the word scarlet from context, which of the following sentences would provide the best example for him to use?
    a) John's face turned scarlet with embarrassment when he realized his mistake.
    b) Mary loved the color scarlet and often bought clothes in that shade.
    c) A scarlet sports car sped along the highway, weaving in and out of traffic.
    d) The two children fought at length over the scarlet crayon, and then Billy decided to use the magenta one instead.
    e) I'm not sure

12. A 5th grade English teacher knows that incorporating morphology into his word study mini-lessons will help his students read and understand multisyllabic words. Therefore, he decides to teach:
    a) Denotations and connotations
    b) Affixes and root words
    c) Parts of speech
    d) Prosody
    e) I'm not sure

13. A fourth-grade science teacher is about to teach a unit on the digestive system. Which of the following types of vocabulary words would be most appropriate to pre-teach?

    a) Multisyllable words related to the topic
    b) Important content words related to the topic
    c) High frequency words
    d) Common phonetically irregular words
    e) I'm not sure.

14. A fifth-grade teacher notices that many of her students seem confused about the meaning of the word incomprehensible, which they have encountered while reading a novel aloud in class. If the teacher wants to help students learn the meaning of the word and extend their vocabulary knowledge to other words, which of the following should she do?

    a) Have students divide the word into syllables orally.
    b) Explain the meaning of the word and ask students to use it correctly in another sentence.
    c) Teach students about common roots and affixes and help them to infer the meaning of the word.
    d) Have the students look the word up independently in the dictionary.
    e) I'm not sure.

15. A 4th grade teacher realizes that her students have had difficulty understanding some of the vocabulary terms in the text they read. Which of the following strategies would be the best for her to use on a consistent basis to help her students learn and use vocabulary terms?
    a) Have students use a dictionary to record definitions of each vocabulary term in a student notebook
    b) Have students write the vocabulary term three times in a student notebook
    c) <u>Have students come up with a "student friendly" definition of each vocabulary term and record it in a student notebook</u>
    d) Have students highlight unknown vocabulary terms in their text
    e) I'm not sure

16. Reading comprehension can be defined as
    a) <u>Extracting and constructing meaning from text</u>
    b) Summarizing the text
    c) Describing the clear, logical sequence of events in a story
    d) Decoding the words in the text with accuracy and fluency
    e) I'm not sure

17. Which of the following statements is the best description of the relationship between children's ability to decode words and their reading comprehension
    a) Reading comprehension and decoding skills develop independently of each other in most children.
    b) Good reading comprehension is essential for the development of decoding skills.
    c) The ability to use context cues is more important to reading comprehension than are accurate decoding skills.
    d) <u>Accurate decoding skills provide a foundation for the development of reading comprehension.</u>
    e) I don't know.

18. Which of the following statements is the best description of the relationship between children's oral reading fluency and their reading comprehension?
    a) Fluent readers have more interest in reading texts than do other children.
    b) <u>Fluent readers can focus more of their attention and mental resources on comprehension.</u>
    c) Fluent readers have extensive background knowledge that enables them to understand the difficult vocabulary in texts.
    d) Fluent readers use context cues to help decode most words, which improves their comprehension of all types of texts.
    e) I don't know

19. Questions that combine background knowledge and text information to create a response describes which of the following:
    a) Inferential comprehension
    b) Literal comprehension
    c) Summarization
    d) Question generating
    e) I'm not sure

20. Students who read words accurately but cannot comprehend:
    a) Are in need of decoding instruction
    b) Have attention issues
    c) Are struggling with language comprehension
    d) All of the above
    e) I'm not sure

21. The signal words *because, resolved, result, so that,* and *consequently* are usually found in the following text structure
    a) Cause-effect
    b) Problem-solution
    c) Sequence
    d) Comparison
    e) I'm not sure

22. The purpose of activating students' prior knowledge is to:
    a) Help students find information quickly when answering questions after reading
    b) Enable students to draw from their own experiences
    c) Enable students to focus on concepts in the text
    d) Allow students to work together
    e) I'm not sure

23. Which of the following are research-based comprehension strategies found to improve students' reading comprehension? Check the seven that apply.
    a) Metacognition
    b) Notice and Note/Annotate the text
    c) Cooperative Learning
    d) Beginning-Middle-End
    e) Somebody-Wanted-But-So
    f) Graphic Organizers
    g) Story Structure/Text Structure
    h) Question Answering
    i) Independent Reading
    j) Question Generation
    k) Multiple-Choice Questions

      l)   Summarization

24. A fourth-grade teacher wants her students to compare and contrast different ideas in a text they have read to help them generate the main idea. Which of the following types of graphic organizers would probably be most useful for this purpose?
    a) An outline
    b) A matrix/t-chart
    c) A story map
    d) A time line
    e) I don't know

25. A fifth-grade student is able to retell the events of stories she has read and can usually answer questions about details in the stories correctly. However, she has a great deal of difficulty answering questions about characters' motivations and questions about the themes or morals of stories. Moreover, she has the same types of difficulties answering questions even when listening to stories read aloud by the teacher. This pattern of difficulties suggests that she has problems primarily with:
    a) Inferencing
    b) Metacognitive awareness
    c) Fluency
    d) Literal comprehension
    e) I don't know

26. Which activity could be used in activating a students' prior knowledge:
    a) Telling students the names of the characters in the story
    b) Asking students to draw a picture of the main character in the story
    c) Previewing a text with the students
    d) Modeling a comprehension strategy prior to reading
    e) I'm not sure

27. Which of the following strategies would be best to employ to promote metacognition?
    a) Word Analysis of new vocabulary words
    b) Think Aloud of strategies for finding the main idea
    c) Semantic Mapping to visually display the meaning-based connections between concepts
    d) Repeated Readings to build fluency
    e) I'm not sure

28. A fifth-grade teacher has many struggling comprehenders in her class, students who can decode adequately but have trouble understanding what they have read. The teacher wants to find a way to help the struggling comprehenders be successful in understanding a new text. Of the following activities, which would be best for this purpose?
    a) Have the students in the class construct a story map after they read each chapter, pairing stronger and weaker comprehenders
    b) Have the students in the class construct a story map after they read each chapter, with students working independently
    c) Before students start the book, encourage them to ask any questions they might have about the topic
    d) <u>Before students start the book, preview key vocabulary and build background knowledge needed for understanding the book</u>
    e) I don't know

29. Using the text structure helps students to:
    a) Find the relationship between key ideas in the text
    b) Mentally organize new information
    c) Understand the hierarchy of information from most important to least important
    d) All of the above
    e) I'm not sure

Use the following passage to answer the below questions:

<u>Elephant and Friends</u>

One day an elephant felt lonely. There were no other elephants where she lived. So she wandered into the forest to try to find new friends. She soon saw a monkey and proceeded to ask, 'Can we be friends, monkey?' The monkey quickly replied, 'You are big and can't swing on trees like I do, so I cannot be your friend.'

Defeated, the elephant continued to search when it stumbled across a rabbit. She proceeded to ask him, 'Can we be friends, rabbit?' The rabbit looked at the elephant and replied, "You are too big to fit inside my burrow. You cannot be my friend."

Then, the elephant continued until she met a frog. She asked, "Will you be my friend, frog?" The frog replied, "You are too big and heavy; you cannot jump like me. I am sorry, but you can't be my friend."

The elephant continued to ask the animals she met on her way, but always received the same reply. The following day, the elephant saw all the forest animals run in fear. She stopped a bear to ask what was happening and was told the tiger was attacking all the small animals. The elephant wanted to save the other animals, so she went to the tiger and said, "Please, sir, leave my friends alone. Do not eat them." The tiger didn't listen. He merely told the elephant to mind her own business.

Although he was reluctant at first, the Elephant saw no other way and made a trumpeting sound with her long trunk. Then she picked up the Tiger with her trunk and threw him into the air. When the Tiger landed, the elephant used her trunk to swat the Tiger on its back side. The frightened tiger ran for his life. Upon hearing of the brave tale, the other animals agreed, "You are just right to be our friend."

30. The genre of this passage is _____.

    a) Cause-Effect
    b) <u>Narrative</u>
    c) Informational
    d) Problem-solution
    e) I'm Not Sure

31. The text structure of this text is _____.
    a) Narrative
    b) <u>Problem-solution</u>
    c) Expository
    d) Comparison
    e) I'm not sure

32. Which question requires higher level reasoning?
    a) Who are the characters in this passage?
    b) What is the elephant's problem?
    c) <u>What would the Tiger do if he wasn't scared away by the Elephant?</u>
    d) Why did the elephant feel lonely?
    e) I'm not sure

33. A 3rd grade teacher wants to help his students answer the question "Why does Elephant throw Tiger into the air and swat him?". Which of the following comprehension skills should he provide explicit instruction on?

    a) Reading carefully
    b) Finding the main idea
    c) <u>Making an inference</u>
    d) Knowing word meanings
    e) I'm not sure

34. A 3rd grade teacher wants to help students build their vocabulary knowledge, which of the following words would most likely be the best choice to use for explicit vocabulary instruction?
    a) <u>Wandered</u>
    b) Heavy
    c) Burrow
    d) Problem
    e) I'm not sure

35. If you are introducing the word, *reluctant*, the best way to define it for students is…
   a) "Holding back, averse, or unwilling"
   b) "Not sure you want to do something"
   c) "Being hesitant about something"
   d) "Being ready to do something"
   e) I'm not sure

Use the following passage to answer the below questions:

Elephants

Elephants are the largest land animals on Earth, and they are one of the most unique-looking animals, too. There is no other animal with a similar physique with their characteristic long noses or trunks, large, floppy ears, and wide, thick legs. Elephants are social creatures and live in herds. According to the San Diego Zoo, herds are composed of primarily female family members and young calves and include 6 to 20 members, depending on the food supply. When the family gets too large, herds often split into smaller groups that stay within the same area. They are also considered an extremely intelligent species and have been observed showing advanced problem-solving skills and demonstrating empathy, mourning, and self-awareness.

Most experts recognize two species of elephant: the Asian elephant (Elephas maximus) and the African elephant (Loxodonta africana), who live on separate continents and have many unique features. According to National Geographic, African elephants live in sub-Saharan Africa, the rainforests of Central and West Africa, and the Sahel desert in Mali. Asian elephants live in Nepal, India, and Southeast Asia in scrub forests and rainforests.

African elephants are the larger of the two species. According to National Geographic, they grow to between 8.2 and 13 feet (2.5 and 4 meters) tall at the shoulder and weigh 5,000 to 14,000 lbs. (2,268 to 6,350 kilograms). Asian elephants are just a little smaller, growing between 6.6 and 9.8 feet (2 and 3 m) tall at the shoulder and weighing between 4,500 and 11,000 lbs. (2,041 and 4,990 kg). In the wild, African elephants can live up to 70 years, and Asian elephants up to 60 years.

African and Asian elephants also have a few different physical features. For example, the ears of African elephants are larger, weighing about 110 pounds each, and resemble the shape of the African continent, while Asian elephants have smaller, rounder ears. Both species eat all types of vegetation, including a variety of grasses, fruits, leaves, bark and roots. They spend about 16 hours eating, consuming anywhere from 165 to 330 lbs. (75 to 150 kg) of food per day.

36. The genre of this passage is _____.

   a)   Comparison
   b)   Narrative
   c)   Expository
   d)   Problem-solution

e)   I'm not sure

37. The text structure of this passage is _____.

   a) Narrative
   b) Problem-solution
   c) Expository
   d) <u>Comparison</u>
   e) I'm not sure

38. What is the best main idea of the passage, Elephants?

   a) Elephants are the largest land animals on Earth and eat all types of vegetation.
   b) African and Asian elephants are large land animals, live in herds, and eat all types of vegetation.
   c) <u>African and Asian elephants are large land animals; however they live on separate continents and have many unique features.</u>
   d) African elephants live in African and Asian elephants live in Asia. African elephants are heavier and live longer than Asian elephants.
   e) I'm not sure

39. What is the best summary of the passage?
   a) <u>African and Asian elephants are large land animals that live in herds of 6 to 20 members. African and Asian elephants live on separate continents. African elephants are the larger of the two species and live longer. Both species eat all types of vegetation, including a variety of grasses, fruits, leaves, bark and roots</u>

   b) Elephants are the largest land animals on Earth. African elephants grow up to 13 feet and Asian elephants grow up to 9.8 feet. Elephants can weigh between 4,500 to 14,000 pounds. African elephants' ears weigh about 110 pounds each.

   c) Elephants are the largest land animals on Earth. African elephants have ears that weigh about 110 pounds and are shaped like the African continent. Asian elephants have smaller ears. Both African and Asian elephants eat around 165 to 330 pounds of grasses, fruits, leaves, bark, and roots each day.

   d) African and Asian elephants are large land animals. They live in herds of primarily female members and young calves. A herd usually has 6 to 20 members. Elephants are also very smart and show empathy for one another.

   e) I'm not sure