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"Is That Right?"; Evidence of Problem Solving Thought Within a One-On-One Intervention

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"IS THAT RIGHT?": EVIDENCE OF PROBLEM SOLVING THOUGHT WITHIN A ONE-ON-ONE INTERVENTION

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THESIS ACCEPTANCE STATEMENT

One behalf of the Graduate Committee for Debra Lewis Hogate, I affirm that this manuscript is the final and accepted dissertation. Signatures of all committee members are on file with the Graduate School at the University of Maine, 42 Stodder Hall, Orono, Maine.

Susan Bennett-Armistead, April 26, 2016

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DEDICATION

This paper is dedicated to my first teachers - my parents

Alan and Chalmer Lewis.

Their lessons in love, family and hard work

are my foundation

And

To Jon – whose love helped me build on that foundation.

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I have heard the doctoral program described as a transformative process; I suspect it is the combination of coursework, research and writing that is responsible for the transformation from student to scholar. But it is the human relationships that sustained me through the long hours, frustration, and challenging life events of the journey. And the joys, celebrations and relief of 'ah haa' moments are all the sweeter because they were shared with the important people in my life. I would not be where I am today without these relationships.

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CHAPTER ONE

EGOCENTRIC SPEECH AS VERBAL SELF-COACHING

"Comed, comed, no, that ain't right." Billy murmured as he moved his finger back to the beginning of the page. "It's not comed, No c. W, w, w, went!" Billy was not talking to his teacher; he never looked up to appeal for help. He never took his eyes off the page. Billy was involved in egocentric speech, a phenomenon I have labeled *verbal self-coaching*, that bridges the gap between direct instruction and independent problem solving. Billy, a six year old first grader, is a Reading Recovery® student and he is using private speech to problem solve or coach himself based on his own literacy knowledge as he works to independently problem solve text. The language he uses as a mediating tool and the symbols he has learned, have been modeled by his teacher with explicit instruction for the use and benefits of using the first letter and sound of a word as a problem solving strategy. This verbal self-coaching Billy demonstrates supports his thinking as he moves towards in-the-head, independent problem solving in reading. This intracognitive (Lyons, 2003, p. 52) or in-the-head move, works to further Billy's cognitive development and independent problem solving skills. In the nineteen years since my initial training in Reading Recovery, a one-on-one intervention, I have learned to build upon students' oral language to support their reading and writing development. Along the way, each student's oral language often becomes more grammatically correct, comprehension usually improves, and most students become more independent first grade readers and writers (Clay, 1991, 2001, 2005a, 2005b, 2013; Clay & Cazden, 1990; Dorn & Soffos, 2001; Forbes & Briggs, 2003 Lyons, 2003; Klein, & Swartz, 1996; Zull, 2002, 2011).

I have observed egocentric speech while working with previous students, both boys and girls. While it is impossible to say if every student though the years has exhibited the verbal self-coaching of egocentric speech during the course of the intervention, conversations with other educators has confirmed they have noticed this behavior and usually dismissed it as childish talk. A few adults have confessed to talking to themselves while in a new and stressful situation like following directions while driving to a new place or learning to knit. But the adults were quick to point out that they don't talk to themselves any more.

I find this behavior fascinating. It is right here, when problem solving goes silent, is internalized and is accomplished within the student's head that fascinates me. Why does it appear only to disappear? What purpose does it serve in reading and writing for early literacy learners? What makes the difference for a student who is able to use the tool of egocentric speech on one text for problem solving and not another? What is known about egocentric speech already? There is a jolt of energy here able to fuel student learning and support independence in reading and writing. What is the key to accessing this fuel for all learners, and should we? What is the key to helping teachers become aware of the power of egocentric speech? I believe it is vital to collect examples of egocentric speech in order to better understand the role it plays in student problem solving in reading and writing.

1.1.Vygotsky's Theory to Clay's Practice

The theoretical underpinnings and day-to-day practices of Reading Recovery are taught during a year long, graduate level course where teachers learn how to accelerate these at risk students. The powerful engine driving the success of the program is the

annual continued professional development. It was during one of these sessions that I was first introduced to Vygotsky's social constructivist theory of learning, where language serves as a tool for teaching culturally valued skills such as reading and writing. One of the concepts within the social constructivist theory is the Zone of Proximal Development (ZPD). Vygotsky (1978) defined the ZPD as the distance between what a student is able to accomplish independently (Zone of Actual Development) and what the student is able to accomplish with help from an adult or more skilled peer (p. 86).

Vygotsky recognized social speech, or instructional language between the teacher and student, as a tool (1978, p. 87) to model learning. The modeling of the behavior by the teacher combined with opportunities for the student to practice the new behavior or learning, along with social speech, support the student in the transition from needing support from the teacher to the student's use of private or egocentric speech. Egocentric speech is the student's verbalization of the teacher's language used by the student to regulate behavior. When the student is heard verbalizing thinking to problem-solve a task, the student is working within the ZPD. Billy, in the example above, is using egocentric speech as a form of verbal self-coaching to regulate his behavior to the demands found within the text. In what ways do students use egocentric speech to regulate their behavior? Is egocentric speech observable in reading and writing problem solving during Reading Recovery instruction? A study examining egocentric speech is needed in order to answer these questions.

Clay's design for acceleration (Clay, 2005a, p. 22) of the literacy skills of the lowest performing first graders simultaneously develops the student's ability to use egocentric speech while reading and writing. Clay (2005a, 2005b, 2013) states the

Reading Recovery teacher acts as the more skilled other to provide explicit instruction, using language as a tool to tap into the student's motivation to learn the culturally valued skills of reading and writing. The ZPD is the cutting edge between what the student is able to do independently and what he is able to do with support from the teacher with language as a mediating tool. Clay defines a prompt as "a call to action" (2005a, p. 39) provided by the teacher to encourage the student to use some kind of information to problem solve. The procedures and explicit language used to instruct students couched within the prompts work as the social speech identified by Vygotsky that supports the student's learning. Verbal prompts used by the teacher can become the egocentric speech the student uses and eventually shifts to inner speech when independently problem solving text.

Billy's teacher, providing adult guidance, has used clear and explicit language to model problem solving behavior. The teacher's instruction has demonstrated that reading makes sense, that the first letter of a word makes a specific sound, and that sound must match the printed word. She is working to support his effort to mediate or resolve his conflict by providing problem solving language and opportunities to problem solve. The teacher is acting as the more skilled other as Billy is trying to make the first letter of the printed word (went) match his anticipated word (comed). He is working within his ZPD and displaying an example of Vygotsky's concept of egocentric speech.

Whatever speech Billy's teacher used to model the phonics skill of using the first letter and the corresponding sound to begin problem solving an unknown word provides explicit language for Billy to use during independent problem solving. Billy's teacher uses social speech to provide the explicit phonics instruction that he later uses to solve

the word ‘went’. Billy applies the instruction and uses egocentric speech, to monitor and self-correct his error. Once he internalizes the problem solving, he is able to mediate his learning with inner speech demonstrating an inner capacity for independent, in-the-head problem solving. Language has supported his learning within the ZPD towards independence with the skill of using the first letter of a word to predict text. He is now able to cycle back within the recursive loop of the ZPD to start the learning process on a more sophisticated skill. With the assistance of his teacher, his new learning in place and the resource of language as a tool, Billy’s cognitive development in reading is elevated.

Kozulin wrote in the forward of the 2012 edition of Vygotsky’s *Thought and Language,* “When the task is too easy or too difficult for a child, the amount of private speech is low. However, when the task is within the child’s ZPD the amount of private speech is high.” (p.xvii). Kozulin’s link between the appropriate use of private speech, another name for egocentric speech, as a mediator to a learning task serves as a reminder to teachers about the power of instruction within a student’s ZPD. This instruction provides the student with the culturally valued means to benefit from (a) instruction and modeling by more skilled others using social speech - the what to think, (b) culturally valued skills with a societal context, and (c) how to think using egocentric speech and ultimately inner speech where the self-coaching becomes inner verbal thought.

1.2. Research Interest

My research interest in egocentric speech stems from daily work with Reading Recovery students in my rural Maine district. Assessment data identifies first grade students most at risk for school failure with the Reading Recovery teacher always working with the lowest students. Beginning first graders identified as the lowest

achieving students are most at risk for school failure and begin Reading Recovery lessons with a limited number of literacy skills.

I learned about the power of starting with what a student can do well and building upon the student's foundation to teach the student strategic processing of text during my Reading Recovery training. All students come to school with oral language, even if it is grammatically incorrect and comprised of sentence fragments. I have learned in the eighteen years since my training to build upon a student's oral language to support their reading and writing development. In my experience, with customized instruction each student's oral language becomes more grammatically correct, comprehension improves, and the student becomes an independent first grade reader and writer. Inner speech, the silent in-the-head problem solving that signals inner verbal thought, supports this independence.

Part of the process of becoming an independent reader and writer is for the student to begin to independently problem solve while reading. The beginning of this process is where the student will mimic the teaching prompts the teacher has been providing to support the student's independence. Where the teacher has been providing the problem solving ideas, the student begins to verbalize the same prompts in a verbal self-coaching experience. As the student is talking through the problem in an attempt to keep reading, the student is engaged in Vygotsky's concept of egocentric speech. While engaged in egocentric speech the student is not looking for help, but rather trying to activate all known problem solving skills and keep reading. Comprehension is high or the student would not know a problem existed. The student is tapping into oral language to search for the answer that makes sense and maintains comprehension. Other types of

speech the student may engage in during the lesson could be directed to the teacher or person within proximity and provide a negative case (Creswell, 1998; Lincoln & Guba, 1985) or non-example of egocentric speech. Some examples of this include when the student appeals for help, makes a comment about the plot, or asks the teacher a question.

It is the egocentric speech however, that builds the bridge from what the student can almost accomplish independently to what the student will soon be able to do. As the student's oral language becomes more sophisticated, the student is able to read increasingly more difficult text. Comprehension and vocabulary grow with the volume of books the student reads and motivation increases to fuel the reading process. The student's writing improves as a result of reading, thinking, and talking about interesting topics; a reader and writer emerges. This point in the reading acquisition process is crucial in the development of the student's literacy skills. I am interested in students' egocentric speech development. As Vygotsky (1986, p. 57) explained, aspects of "egocentric speech turn 'inward' to become the basis of inner speech" signaling the student is now able to problem solve on his own. Once the student has internalized the teacher prompts, or calls to action and is able to solve unknown words in his head while maintaining comprehension, he becomes an independent problem solver. The verbalized self-coaching of egocentric speech signals the student's developing independence with problem solving in reading and writing.

The student's egocentric speech demonstrates Vygotsky's ZPD and how language enabled him to solve his problem. Billy does not appeal for help, he is using his new found language, modeled by his teacher during the three previous weeks of daily lessons to prompt or coach himself at point of difficulty. Billy demonstrates an ability to work

within his ZPD to apply the social speech he and his teacher have constructed to private or egocentric speech as he works to internalize the skill. Once internalized, the skill becomes part of the Zone of Actual Development (ZAD) with other strategic activities Billy can already use independently. Typically, Billy applies egocentric speech to his reading and writing, verbalizing his thinking for a short period of time. And then his egocentric speech disappears. Where did it go? Why was it here? What role did it play in his literacy development? In a pilot study I began to explore these questions.

1.3. Pilot Study

I used a qualitative case study design to collect examples of egocentric speech during the regular course of one student's Reading Recovery lessons from February 27, 2014 to April 11, 2014. All lessons were audiotaped, de-identified, and transcribed. The standard procedures and paperwork were used during the pilot study including the Lesson Record sheet that serves as a daily lesson plan and provides a place to record student problem solving behavior. The Running Record form is used daily to record the student's oral reading of a book introduced and read once at the end of the previous day's lesson.

The bounded system of Reading Recovery allowed me to record observational field notes on the Lesson Record and Running Record forms used within the program. All utterances of egocentric speech were charted using the categories of *new text*, *familiar text* and examples collected during the *writing* component of the lesson. One example of the data collected during the reading of a new text illustrates the student's use of egocentric speech as a form of verbal self-coaching as the student works to problem solve the word 'keep',

k – p like see/keep/keeps
keeps

In this case the student used an analogy of the double /e/ in ‘see’ to problem solve ‘keeps’ and provided the egocentric speech of “like see” to support the solving.

A second example from the pilot study demonstrates faster problem solving and succinct egocentric speech,

I will get No! go and get the milk.
go

The efficient and instantaneous self-monitoring and subsequent self-correction did not interrupt the reading of the text and did not disrupt fluent reading.

One finding from this pilot study was that six examples of egocentric speech were collected from the reading of familiar text and no examples were collected from the student reading a new text. Familiar text have been read at least twice before, resulting in familiarity with the text structures, theme, and word challenges. A new text is read for the first time after a brief teacher introduction. It appears from analysis of the pilot study data that egocentric speech is more apt to occur during the reading of a familiar text than from the reading of a new text.

The success of a Reading Recovery student is measured by the development of a self-extending system. A self-extending system is dependent upon lessons specifically crafted to support each student in literacy development while keeping the instruction within the ZPD each day. This customized instruction in fact requires a teacher to design a curriculum for each student based on individual strengths and weaknesses (Jones, 2000). The acceleration of each student is dependent on how artfully the teacher customized each lesson component to support the first reading of the new text. Could the teacher’s skill at designing lessons be an explanation for why some students develop self-

extending systems and successfully discontinue from Reading Recovery and some do not? If so, how does one know just where that sweet spot is for each student, each day within the fast paced lesson?

At the conclusion of the six week pilot study, the student's egocentric speech appeared to wane. Examples were not presenting with dependable frequency as in the beginning of the study and problem solving was becoming faster and less laborious. Self-regulation of problem solving within the reading and writing components of the lessons appeared imminent and I still had questions. Why were there no examples of egocentric speech within the new text component of the lesson? Would that same pattern emerge with more students? Did I miss signals of problem solving behavior? If I videotaped the lessons would additional data be revealed? A further study was called for to answer these questions.

1.4. Research Questions

Therefore, the main research question for this study examines how independent problem solving may be revealed in the egocentric speech of a student receiving a one-on-one intervention in literacy. To answer this question the following sub questions are: 1) *In what ways, if any, is independent problem solving on familiar text revealed in the egocentric speech of a student receiving a reading intervention?* 2) *In what ways, if any, is independent problem solving on running record text revealed in the egocentric speech of a student receiving a reading intervention?* 3) *In what ways, if any, is independent problem solving in the new text revealed in the egocentric speech of a student receiving a reading intervention?*, and 4) *In what ways, if any, is independent problem solving while writing revealed in the egocentric speech of a student receiving a reading intervention?*

1.5. Roadmap of Chapters

This series of chapters addresses the proposed research questions. Chapter One includes the introduction of the study, the problem statement and research questions, the pilot study, and a glossary of terms. The conceptual framework is found in Chapter Two and reviews the literature on (a) oral language development, (b) egocentric speech, and (c) problem solving during reading and writing. The research study designs are described in Chapter Three, including data collection and analysis. A synthesis of the results focusing on the major findings of the study and implications for further research are suggested in the fourth and fifth chapters.

1.6. Glossary of Terms

This glossary provides the conventionally used definition for the terms used within this study.

Familiar Text

This book has been read two or more times and is well within the student's level of control. It is used at the beginning of the lesson to encourage phrasing and fluency.

High Frequency Word

This term refers to words a student is able to read or write independently and quickly. Words such as "the", "said" and "come" appear in text frequently. A student's command of high frequency words in reading may or may not be the same words as in writing.

Lesson Record Sheet

The official Reading Recovery lesson plan used by all Reading Recovery teachers to record observed student behaviors during the current lesson and as the springboard for planning the next day's lesson.

Meaning (M)

This term refers to the semantic information readers and writers use to access and maintain meaning while reading and writing.

New Text

This is the last component of a Reading Recovery lesson where the teacher introduces a book which the student reads for the first time. The teacher takes a running record the next day from the student's reading of the book.

An Observation Survey of Early Literacy Achievement

An assessment tool comprised of six authentic reading and writing tasks, used to collect evidence of what a student knows and can do on text; also used to identify the lowest performing first grade students for Reading Recovery selection.

Problem Solving

This term refers to a system of in-the-head cognitive acts where a student (a) picks up information, (b) works on it, (c) tries out strategic responses and (d) evaluates the response. Success is confirmed by the solving of the problem.

Physical Behaviors

Any observable behavior exhibited by the student while reading or writing to include turning or looking toward the teacher as if to appeal for help, turning away from the teacher, or any stress associated behaviors including thumb or finger sucking,

Reading Recovery

An early intervention designed by Marie Clay for first grade students who are the lowest readers and writers in their school as identified by *An Observation Survey of Early Literacy Achievement (2013)*. The goal of the program is for students to learn strategies for problem solving while reading and writing to accelerate their literacy skill to meet the average of their class.

Running Record Sheet

A specific form used to record and analyze a student's behaviors when reading a text.

Second Reading of the Text

The book used to provide an assessment of text reading. It is the previous day's new text and serves as a formative assessment through analysis of accuracy, fluency, and strategic processing. The assessment is recorded on the Running Record Sheet.

Self-monitoring

This behavior demonstrates the student is checking for accuracy while reading and writing.

Self-regulation

This term refers to the student's independent control of problem solving behavior.

Self-extending System

A feed-forward process whereby readers and writers become better through continued reading and writing.

Strategic Activity

This term refers to mental operations initiated by readers to get meaning from text. This includes self-monitoring and self-correcting using meaning, structure, or visual information.

Structure (S)

This includes personal grammar, and sentence structure cues used in reading and writing.

Told

This is when the teacher tells the student a word in reading.

Teacher Unavailable

This term is used to designate the teacher missed a lesson with a student even though the teacher is working. This is not a teacher absence even though a lesson is missed.

Visual (V)

This term refers to the visual information readers and writers use when reading and writing. This term includes the ability to distinguish one letter from another and apply phonics information to read and write.

Writing component

This lesson component includes the daily composing and recording of a unique message during the lesson. The assembly of a cut up sentence made by the teacher from the student's unique message is included in the daily writing component of the intervention.

CHAPTER TWO

REVIEW OF THE LITERATURE

The purpose of this chapter is to review the literature related to oral language development and independent, or in-the-head problem solving. All students come to school with oral language, even if it is grammatically incorrect and comprised of sentence fragments (Clay, 1991, 2005a, 2005b, 2013; Lindfors, 2008) based on the language, conversations, and expectations from the home (Bronfenbrenner, 1986; Cazden, 2001; Heath, 1983; Lareau, 2003; Moll & Greenberg, 1990; Purcell-Gates, 1997). Students bring variations in language development reflecting their differing economic backgrounds (Freire, 1970; Hart & Risley, 2005) contributing to the need for a variety of educational methods (Lareau, 2003; McLoyd, 1998; Purcell-Gates, 1997).

Researchers concur; instruction designed to support a student's reading and writing development will improve their cognitive functioning, resulting in increased learning (Berk, 1994; Cazden, 2001; Chomsky, 1972; Clay, 1991; 2001, 2005a, 2005b; Forbes & Briggs, 2003; Glassman, 2001; Heath, 1983; Klein, & Swartz, 1996; Lindfors, 2008; McCarthy, 2004; Purcell-Gates, 1997; Rogoff, 1991 Roth, Speece, & Cooper, 2002; Vygotsky, 1978, 2012; Wertsch, 1979, 1991; Zivin, 1979).

Part of the process of becoming an independent reader and writer is for the student to begin to problem solve while reading (Cazden, 2001; Chomsky, 1972; Clay, 1991; 2001; 2005a, 2005b; Clay & Cazden, 1999; Cole, 1999; Diaz, Neal, & Amaya-Williams, 1999; Lyons, 2003; Wells, 1986). The beginning of this process is where the student will mimic the prompts the teacher has been providing to support the student's independence (Bakhtin, 1986; Clay 1991 2005a, 2005b, 2014; Clay & Cazden, 1999;

Lyons, 2003; Rogoff, 1991; Zull, 2011). Where the teacher has been providing the problem solving strategies, the student begins to verbalize the same prompts in a verbal self-coaching experience (Bakhtin, 1986; Clay, 1991; Vygotsky, 1986, 2012). As the student is talking in an attempt to keep reading, the student is engaged in Vygotsky's egocentric speech. The student is not looking for help, but trying to activate all known problem solving strategies in order to keep reading. Comprehension is high or the student would not know there is a problem. Tapping into oral language the student is able to search for the answer that makes sense and maintains comprehension.

The student's oral language becomes more sophisticated as he is able to read increasingly more difficult text, his comprehension and vocabulary grow with the volume of books he is reading and his motivation increases to fuel the entire process. Scarborough (2001) stated "Children who have strong oral-language skills often have strong reading and writing skills. In contrast, children with oral-language problems are at higher risk of reading and writing difficulties" (p.45). The student's writing improves because he is reading, thinking, and talking about interesting topics; an active reader and writer emerges. The reciprocity of what the student learns about letters and sounds in writing aids in visual discrimination in reading and vice versa (Clay, 2005a; Dorn & Soffos, 2001).

This point where oral language, reading, and writing converge in the reading acquisition process is crucial to becoming a successful reader and writer. Vygotsky wrote that egocentric speech goes 'underground' and becomes inner speech signaling the student is now able to problem solve on his own (Berk & Landau, 1993; Wertsch, 1988). Once the student has internalized the teacher prompts and solves unknown words in his

head while maintaining comprehension he becomes an independent problem solver. The verbal self-coaching of egocentric speech signals the beginning of the student's engagement in independent problem solving in reading and writing.

In the sections that follow I will discuss the research on egocentric speech, and problem solving within the context of one-on-one interventions. First, I will examine oral language development within the ZPD. Secondly, I will review the concept of metacognition and its role in supporting the development of self-regulation. Thirdly, I will review the development of self-regulation within the development of executive function in literacy learning. Finally, I will examine the research surrounding student use of egocentric speech within problem solving behaviors as a signal of self-regulation and independent problem solving.

2.1. Egocentric Speech

Egocentric speech is a form of speech observed in children ages 3-8; it is speech not addressed to anyone in particular and observed most often when children are engaged in an activity (Bivens & Berk, 1990; Clay, 1991; Ehrich, 2006; Lee & Smagorinsky, 2011; Leisure, 1961; Purcell-Gates, 1995; Rogoff, 1991, 2003; Roth, Speece, & Cooper, 2002; Russell, 1993; Vygotsky, 1987, 2012).

2.1.1. Foundational Researchers

Piaget (1929), the Swiss psychologist, is originally credited with the term egocentric speech and claimed it was a sign of a preschool child's inability to take someone else's perspective, an autistic behavior that most often would fade away and be replaced with social speech (Bivens & Berk, 1990; Russell, 1993; Leisure, 1961). Autistic, in this setting, does not refer to the disability of Autism, but instead to a time of

life when consciousness is totally centered on the self, with no awareness or interest in the events of the outside world (Leisure, 1961). Egocentric speech in Piaget's theory is a non-social act that has no cognitive function in a child's development (Bivens & Berk, 1990; Russell, 1993).

Vygotsky, a Russian psychologist known for his theoretical work and the impact it had on future researchers (Daniels, 2008), regarded egocentric speech as a social act. He stated "language is the main tool that promotes thinking, develops reasoning, and supports cultural activities like reading and writing" (Vygotsky, 1986, p. 102). Vygotsky viewed a tool as an object oriented outward toward the physical and social reality such as pencils, books and paper. In contrast, signs are oriented inward toward the self-regulation of behavior. Examples of signs include language, works of art and maps. Language and writing are signs and at the same time work as psychological tools used to organize thinking.

Vygotsky founded the Laboratory of Psychology for Abnormal Childhood in Moscow later known as the Experimental-Defectological Institute. Vygotsky and collaborators at the institute focused on the experimental-developmental method or the experimental-genetic studies, a term shared with Werner (Vygotsky, 1978). In this approach the researchers examined the process of development. This method was markedly different from the analysis of objects found in the stimulus-response framework associated with Pavlov (p. 59). The three principles within the experimental-genetic method include (a) analyzing process and not objects, (b) an explanatory or genotypic analysis of the phenomenon as opposed to a description of the observations, and (c) a developmental analysis focused on the process versus the fossilized or repeated response

(pp. 61-75). One focus at the Institute was the study of child development and in particular children with multiple disabilities. Studies conducted there resulted in findings connected to current special education practices (Gindis, 1995). Vygotsky rarely conducted research himself, but concentrated on creating the institute and lecturing (Wertsch, 1985).

Critics of Vygotsky's theory and research have argued that (a) he ignored the role of the individual, (b) he assumed his theory to be applicable to all cultures and abilities, and (c) his theory is incomplete (Lui & Matthews, 2005). These points could possibly be attributed to his poor health and eventual death at 37 years old. Wertsch (1985), wrote that Vygotsky's later interpretation of tools and signs, or the language that mediates the relationship between the individual and society serves as Vygotsky's most dynamic theme.

Researchers have documented Vygotsky's attention to the individual and cultures. (Fraser & Yasnitsky, 2015; Lui & Chen, 2010; Rey, 2011; Wertsch, 1985). Concerns that Vygotsky's theory ignored the role of the individual and all cultures was addressed by Lui & Chen (2010); the researchers wrote that the constructivist theory is about the thinking process and learning of an individual based on the individual's reality. The scholars argued that Vygotsky's theory involved "constructing, creating, inventing, and developing one's own knowledge and meaning" (p. 65), a direct reference to the individual's learning and attention to reality or culture of the individual.

Rey (2011) addressed the argument that Vygotsky was not able to fully mature his work by highlighting not only his early death, but his contradictory and unfinished ideas (p. 258), a point supported by Yvon, Chaiguerova & Newnham (2013). Rey concludes

that ‘Vygotsky’s main legacy is an unconcluded work full of brilliant ideas’ (p. 273). This legacy was carried on by the Institute, his collaborators and family members (Fraser & Yasnitsky, 2015; Rey, 2011). There is scholarly evidence that contemporary researchers continue to examine his brilliant ideas (Fraser & Yasnitsky, 2015; Lui & Chen, 2010; Rey, 2011; Yvon, Chaiguerova & Newnham. 2013).

2.1.2. How Language Works

Language is used to formulate one of three types of speech found within the sociocultural theory (Bivens & Berk, 1990; Ehrich, 2006; Lyons, 2003) where language acts as a “psychological tool and that the usage of this tool invariably led to a series of inner or mental transformations such as the development of higher thought and concept development” (Ehrich, p. 13). Cox, Fang, & Schmitt (1998) found that the use of language as a tool is a universal phenomenon used by young children “where thought and language unite to exert control over behavior” (p. 57) and is not unique to any culture. Vygotsky (1978) suggested that within the sociocultural learning theory humans use language as the core of learning and as a tool to solve problems. He wrote “Learning awakens a variety of internal developmental processes that are able to cooperate only when the child is interacting with peers in his environment and in cooperation with peers.” (p. 90). Language is the tool that allows the child to cooperate with peers, organize thinking and therefore learn. The only way to learn language is to use it, by engaging with others in a social context.

Bedrova and Leong (1996) explain how language works as a mental tool and mediator for humans and facilitates the solving of complex or abstract problems. “Higher mental functions first exist in shared activity between two people.” (p.23). Humans use

language as a tool supported by the social interaction between teacher and learner to develop thinking, learning, and problem solving. These scholars concur, it is the shared activity, also known as interaction with peers that fosters the higher mental functions or learning. Language is the mediating tool for learning.

The three types of speech found within Vygotsky's sociocultural theory are located within the ZPD, the cutting edge between what the student is able to do independently and what he is able to do with support from the teacher, where language is a tool used on emerging skills (Vygotsky, 1978, 2012). Vygotsky explained about the importance of instruction within the ZPD by saying "the only good kind of instruction is that which marches ahead of development and leads it; it must be aimed not so much at the ripe as at the ripening function" (Clay & Cazden, 1999, p. 220). Vygotsky felt this space is where productive instruction takes place (or where the buds begin to mature 1978, p. 86) on the first of two planes.

Once the learning has matured and resides in the student's ZAD, Vygotsky (1978) believed the learning had shifted to a second plane. Matured learning resides there, inside the student as knowledge or an independent skill. The ripened fruits of development complete a learning cycle and signal the goal of instruction and matured learning.

The types of speech include *social speech* as an adult instructs or models the new learning to the student. This speech contains high teacher support or outside regulation for the new skill or activity. Tharp & Gallimore (1988) labeled this Stage I in the chart below (Figure 1) where assistance by the more skilled other - an adult or peer - supports the student learning until the need declines because of an increasing student ability. This increased ability moves the student from the *intermental* or social plane towards the

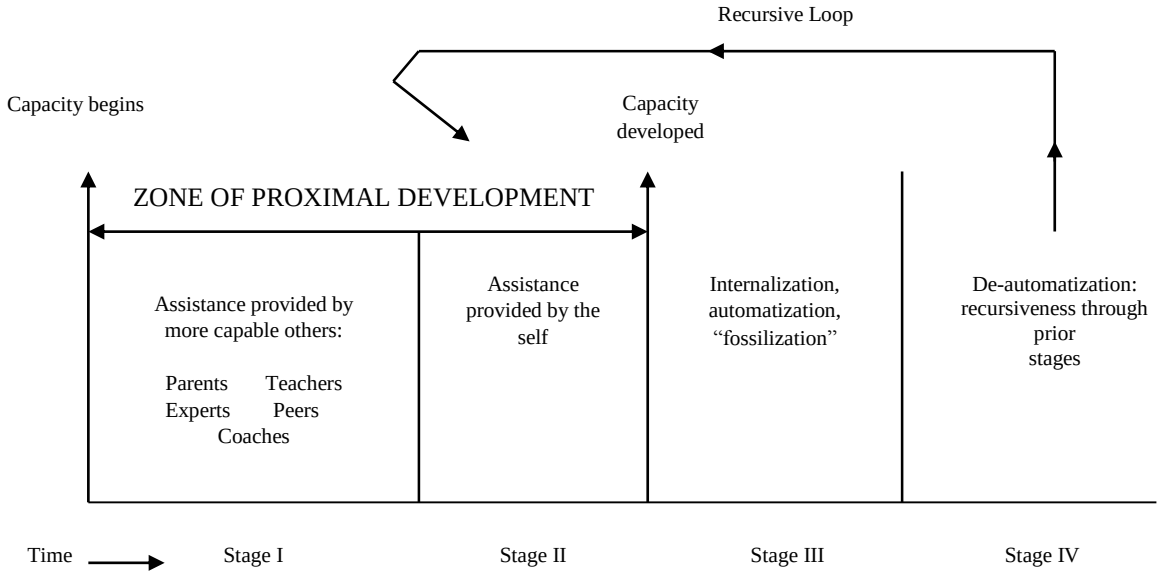
intramental, or psychological plane (Gallimore & Tharp, 1990, p. 184) characteristic of Stage II. As the adult's role wanes the student's egocentric speech works to regulate the new behavior even though the new skill is not fully developed. *Egocentric speech* is demonstrated in Stage II. Vygotsky and Luria marked this step as an important one in a student's progression through the ZPD It signals an ability for the child to guide and direct behavior that leads to self-regulation, or independent problem solving instead of the socially mediated problem solving used in social speech. Thus egocentric speech works as a psychological tool for problem solving.

The next two stages reside outside the ZPD and create the recursive loop life-long learners experience as they master new skills and knowledge. Self-regulation, or Stage III is demonstrated by the student's use of independent *inner speech*; the silent in-the-head, dialogue key to internalization and independent use as the student engages in learning a new task or activity and problem solving behavior (Vygotsky, 1978). Automaticity is developed and the "fruits" of development reside. Vygotsky also talked about fossilized and internalized learning to describe the student's ability at this stage.

Tharp & Gallimore (1988, p. 35) included Stage IV to signal the reoccurring cycle of other-assisted learning to self-assisted learning demonstrated by life-long learners. Furthermore the de-automatization and recursion loop may signal a need for help as the student is not able to do what was once mastered. People who have experienced an inability to complete a task once mastered have experienced de-automatization (Tharp & Gallimore, 1988, p. 39) and the need to cycle back to social or egocentric speech to restore the skill.

This is not to imply that a student is only able to learn one skill at a time. The synergy of the recursive loop is difficult to record in a chart, but observable with a student. Once the student's private speech becomes internalized, the student is able to return to learning at a higher level and is able to take on a more sophisticated skill. The learning starts once again with the student's new cutting edge of knowledge. The explicit instructions provided through social speech, as the student works to internalize the new learning, supports the student's mastery of the next skill.

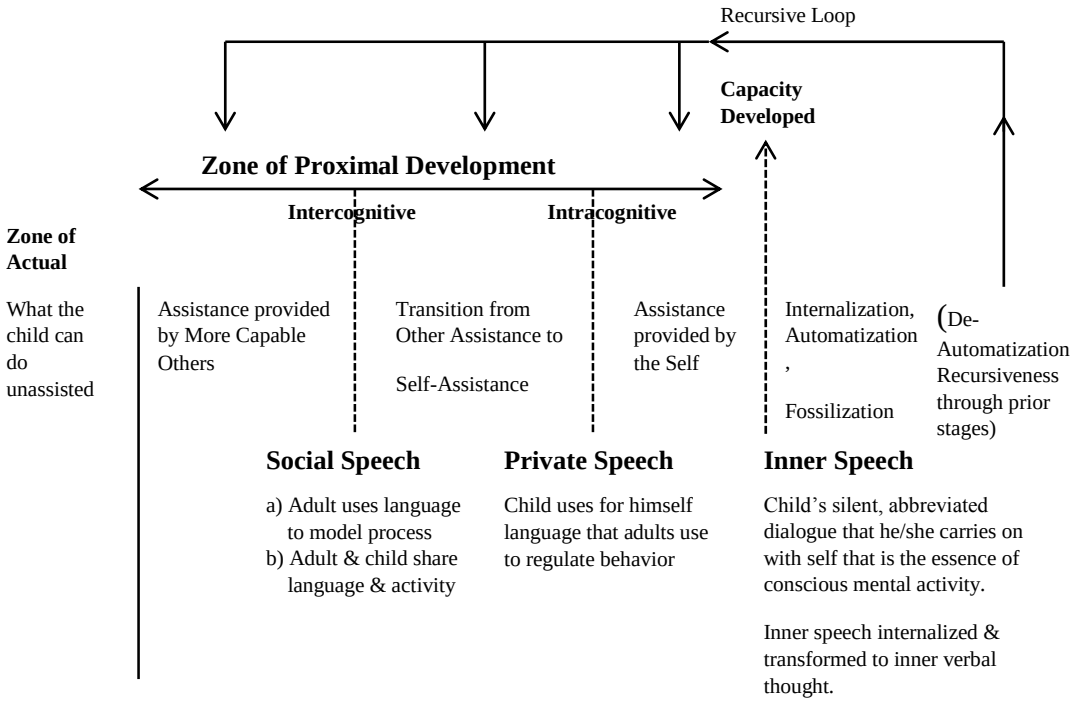
Figure 1. The Recursive Loop Within The Zone of Proximal Development. This figure illustrates the recursive loop and how it supports learning within the Zone of Proximal Development.



Lyons (2003) combined the role of social, egocentric and inner speech with Tharp & Gallimore's (1988) ZPD recursive loop. Her graphic (Figure 2) demonstrates how

instruction takes place using (a) social speech between the adult and child, (b) egocentric speech as the child works independently, vocalizing as necessary in order to regulate the new behavior; and (c) inner speech is the silent in-the-head dialogue, key to the child's independence. The recursive nature of the loop brings the child back to social speech and instruction on a more sophisticated skill with each new learning experience.

Figure 2. The Role of Speech in Supporting Learning within the Zone of Proximal Development and the Zone of Actual Development. This figure illustrates where social, private or egocentric, and inner speech are located within the Zone of Proximal Development and Zone of Actual Development.



Lyons (2003) explained how learning is activated and then identified the supports needed in the transition from social speech to egocentric speech. Thought spoken out

loud works as "an externalized self-monitoring system, that plans, directs and controls behavior" (Bivens & Berk 1990, p. 444) or higher mental functions. Lyons applied Vygotsky's terms *intercognitive*, or between people and *intracognitive*, or inside the learner and part of the learner's independent developmental achievement (Lyons, 1993) Once the student is able to successfully bring action under the control of self-directed verbalizations or the beginning of self-regulated behavior, this overt intercognitive speech goes 'underground' turning into inner speech which reflects inner verbal thought or intracognitive mental functions where problem solving occurs in-the-head. The automaticity inner verbal thought supports works to shift the independent action or problem solving into the student's ZAD.

In *Mind and Society* (1978), Vygotsky outlined the steps to internalization, which include:

- an operation that initially represents an external activity is reconstructed and begins to occur internally as outlined in Stage II;
- an interpersonal process is transformed into an intrapersonal one, Stage III; and
- the transformation is the result of a long series of developmental events, Stage IV (p. 57).

Kosulin, in the Forward to the 2012 edition of *Thought and Language*, wrote how Vygotsky interpreted egocentric speech as an "important developmental tool leading a child toward self-regulation and voiceless verbal thinking." The egocentric speech provides verbal self-coaching, a tool for learning that supports the student's metacognitive thought as a step towards the acquisition of self-regulated problem solving

behavior. Once the student has internalized the learning, inner speech mediates the learning until it becomes automatized or fossilized and foundational for later learning.

Gaffney & Anderson (1991) discussed this space or width within the ZPD as an implicit metaphor for scaffolding. Other scholars have described an estimated length or distance within each student's ZPD (Hobsbaum, Peters & Sylva, 1996). While Gallimore & Tharp (1990), described a subzone between each stage of the progression through the ZPD. For the purpose of this study the existence of a space or width within the ZPD is foundational to the research and analysis.

2.2. Metacognition

The metacognitive process involves thinking and planning (Martin & Kragler, 2011). It encompasses self-talk (Clay, 2001), egocentric speech (Cox, Fang, & Schmitt, 1998; Schmitt, 2003, Wertsch, 1991; Vygotsky, 1987, 2012), self-coaching (Neuman, & Wright, 2010), in order to complete the task (Bender, 2004). A self-evaluation phase to monitor appropriate completion of the task (Clay, 2001; Stahl & Nagy, 2006) is also necessary. A reader who is metacognitive is not only "thinking about thinking," the reader reflects on the appropriateness of the end results in comparison to the desired outcome (Perry, Nordby, & VanderKamp, (2003).

Beginning readers often lack the reflective processes required by metacognition as they work to comprehend texts (Clay, 2001; Martin & Kragler, 2011). There are relatively few studies that examine primary-grade readers' use of strategies to understand texts (Duke & Carlisle, 2011; Martin & Kragler, 2011). Those who have researched this topic have found that primary student's ability to think about and use reading strategies while engaged in the task of learning to read is a complex process (Clay, 2001; Schmitt,

2003). The ability to use strategies to problem solve on text requires the reader to make deliberate decisions and plans, to monitor comprehension and think about effective problem solving strategies demonstrating a capacity to think about thinking (Gersten, Fuchs, Williams, & Baker, 2001; Kragler & Martin, 2009; Schmitt, 2003). The metacognitive process and self-regulation converge here. Instruction that fosters the development of this complexity must be modeled and explicitly taught (Neuman & Wright, 2010).

The instructional model that supports explicit literacy instruction is published in *Reading To, With, and By Children*, (Mooney, 1990) with descending teacher support as the student's developing skills support independence and allows the student to assume more of the responsibility. The teacher starts by providing the most support by reading to the student, modeling and instructing effective reading and problem solving behavior. As the student's reading skills emerge the teacher shifts to sharing the reading responsibility in a shared 'with' experience as the student is able to take on more of the reading. Since no skill can be "learned, used, or evaluated in isolation" (Mooney, 1990, p. 15) students are able to refine while engaged in authentic reading. Automaticity signals the 'by' stage of learning as the student engages in the cyclical or recursive nature of learning and the development of independence in reading. While this example demonstrates reading acquisition a similar learning cycle supports oral language development and writing.

2.3. Self-Regulation

One form of metacognitive thinking is self-regulation (Horner & O'Connor, 2007), which includes the application of strategic problem solving and an intrinsic motivation to read (Dorn & Soffos, 2001; Perry, Norby, & VandeKamp, 2011). A gradual

release of responsibility complete with guided practice results in the students' ability to read increasingly more complex texts (Pearson & Gallagher, 1983). When classrooms provide complex, open-ended reading and writing activities, guided support for students to acquire conceptual and strategic knowledge on challenging tasks, and nonthreatening evaluation practices which support personal learning, students develop attitudes and behaviors linked with self-regulation (Perry et al, 2011).

Self-regulation is not an observable behavior, it is a process (Diaz, Neal, and Amaya-Williams, 1999; Dorn & Soffos, 2001; Zimmerman, 1999). It is a move to problem solve text that accomplished readers perform while reading, and beginning readers must learn in order to problem solve text (Clay, 2001; Dorn & Soffos, 2001). Primary students are able to develop the abilities of reflection, monitoring, and regulation while learning to read, but explicit instruction is needed to support the development of these processes (Clay, 1991, 2001, 2005a, 2005b; Clay & Cazden, 1999; Dorn & Soffos, 2001; Martin & Kragler, 2011; Neuman & Wright, 2010; Schmitt, 2003).

Dorn & Soffos (2001, p. 4) applied the traditional apprenticeship learning model, where a novice studied with a master craftsman to learn a skill or trade to literacy learning. In particular Dorn's cognitive apprenticeship approach parallels Mooney's 'to-with-and by' (1990, p. 12) instructional model whereby the teacher provides instruction to the student, then works with the student until the task is taken on by the student. This mirrors the cyclical learning with four overlapping elements of a traditional apprenticeship: modeling, coaching, scaffolding, and fading. The elements are seen as overlapping because of the active nature of learning and the necessity to transfer learning from one text to another and one piece of writing to another. "Transfer implies

understanding – not only of *what* to do but *when* to do it." (Dorn & Soffos, 2001, p. 9). The student's ability to transfer knowledge demonstrates the ability to monitor the circumstances and apply the necessary skill or strategy needed. The student is demonstrating self-regulatory behavior. The first of four elements of the cognitive apprenticeship learning theory is modeling.

The modeling element is where the teacher provides purposeful models of the task; this element is similar in design and intent with Mooney's (1999) "to" phase as the teacher provides a clear demonstration or instruction of the task. The second element is coaching where the teacher uses language and support to keep the student engaged in the teacher led phase of guided practice while the third element - scaffolding - is student led with the teacher providing supportive language only as the student demonstrates a need for support. As the student takes on more independence egocentric speech can be observed working to provide necessary verbal self-coaching based on the teacher's past instruction. Mooney's "with" phase captures the coaching and scaffolding elements outlined by Dorn & Soffos (2001) to provide opportunities for the student to receive guided practice under teacher supervision with the new task.

Fading is the final element of the cognitive apprenticeship model and corresponds to the 'by' phase of Mooney's (1999) cycle and Wood & Wood's (1996) theory of contingent teaching. Contingent teaching is the subtle act of deliberate teaching where teachers provide help when needed and then fade out support. Effective contingent teaching is followed by independent practice as the teacher pulls back, or fades away from direct support. Egocentric speech may be observed during independent practice while the student moves towards abbreviated speech and ultimately inner speech.

Inner speech signals a developed capacity with movement towards inner thought and fossilized, or self-regulated behavior (Lyons, 2003). The recursive loop initiated by inner speech marks a self-regulated student with a skill, strategy and process, or a way in which to work on things that supports the student in knowing when and how to apply the skill to novel situations. Because self-regulation appears as one of the processes within the multidimensional qualities of executive function to include (a) prioritizing and sequencing behavior, (b) a working memory, (c) inhibiting familiar behaviors, and (d) handling novel information (Banich, 2009; Gailliot, 2008), a self-regulated reader is working towards independence. It is the verbal self-coaching of egocentric speech that modifies problem solving behavior and supports students as they prioritize problem solving strategies, access their working memory, inhibit familiar or habituated ineffective problem solving behaviors as they handle novel information in reading and writing. Students are able to modify their behavior as they become self-regulated and it is this very ability that connects self-regulation to executive function (Clay, 2001).

Oral language is foundational to learning (Bakhtin, 1986; Clay, 1991; Scarborough, 2001; Vygotsky, 1986, 2012). The cognitive apprenticeship model demonstrates a gradual release of responsibility from teacher to student (Dorn & Soffos, 2001). And it is the student's use of egocentric speech, the use of verbal self-coaching, that assists the student in becoming a self-regulated reader and writer exhibiting qualities of executive functioning (Banich, 2009; Bivens & Berk, 1990; Clay, 1991; 2001, 2005a, 2005b; Diaz, Neal, & Amaya-Williams, 1999; Schmitt, 2003; Vygotsky, 1987, 2012; Wells, 1986).

2.4. Executive Function

Executive function, or the multidimensional behavior (Lehto, Juujarvi, Kooistra & Pulkkinen, 2003) of higher order thinking processes is foundational to flexible goal-directed behavior (Blankson, O'Brien, Leerkes, Calkins & Marcovitch, 2015; Cartwright, 2012). These processes include attentional focusing, temporal organization, cognitive inhibitory control, and working memory (Biederman, Monuteaux, Doyle, Seidman, Wilens, Ferrero, Morgan & Faraone, 2004; Blankson, O'Brien, Leerkes, Calkins & Marcovitch, 2015; Cartwright, 2012 Lehto et al, 2003). The development of executive function is believed to be located in the prefrontal area or frontal lobe of the brain (Alvares & Emory, 2006). Evidence of executive functioning has been documented in adults with emerging behaviors observed in preschool age children (Castellanos, Sonuga-Barke, Milham, & Tannock, 2006).

Attentional focusing refers to the ability to focus and shift one's attention based on change while temporal organization refers to organizing with reference to time. Cognitive inhibitory control reflects the ability to curb dominant information in favor of subdominant information. Working memory refers to the ability to hold and manipulate multiple pieces of information. While executive functioning is usually analyzed into autonomous processes, these are best thought of as a whole, especially in the preschool years (Shing, Lindenberger, Diamond, Li & Davidson, 2010; Wiebe, Sheffield, Nelson, Clark, Chevalier, & Espy, 2011).

The "high level cognitive mechanism" known as executive functioning (Kaplan & Berman, 2010) is a set of processes that support flexible goal-directed management of oneself and resources for the management of cognitive processes (Cartwright, 2012;

Duff, Schoenberg, Scott & Adams, 2005). A list of processes commonly included in executive function is provided with a summarized definitions of each process as outlined by Cartwright (2012, p. 28)

- Attentional control-the ability to focus on a particular task;
- Cognitive flexibility-the ability to consider multiple bits of information;
- Inhibition-the ability to restrain one's normal response;
- Initiation-the ability to begin a task;
- Metacognition-the ability to reflect on thoughts and mental processes to assess effectiveness;
- Organization-the ability to impose order for managing information;
- Planning-the ability to decide which tasks are necessary to complete a goal;
- Response to feedback-the ability to adjust one's behavior when given new information;
- Self-regulation-the ability to control one's behavior in order to achieve a goal;
- Switching or shifting-the ability to change one's focus to a new one; and
- Working memory-the ability to hold information in order to complete a task.

Cartwright described structural changes in the brain linked to the development of executive function and the ability to manage complex cognitive processes. The complexity of reading and the requisite skills which support reading comprehension requires the coordination of multiple processes.

2.5. Problem Solving

Early intervention teachers recognize that reading and writing are complex problem-solving processes (Cazden, 2001; Clay, 2001, 2005a, 2005b, 2014; Clay &

Cazden, 1999; Dorn & Soffos, 2001; Forbes & Briggs, 2003; Lyons, 2003; Klein, & Swartz, 1996). Different disciplines define problem solving in different ways. For purposes of this study problem solving is defined as the identification and correction of miscues while reading; problem solving is a system of in-the-head cognitive acts where a student (a) picks up information, (b) works on it, (c) tries out strategic responses and (d) evaluates the response. Success is confirmed by the solving of the problem and confirms the strategies used as well as the decisions made. It is *self-congratulatory* system, meaning success is confirmed by the solving of the problem (Clay, 2001).

Dorn explains Clay's view of the teacher's role in developing problem-solving opportunities during instruction "Through the wisdom and guidance of Marie Clay, we've learned to look for the external signs of knowledge and to create problem solving interactions with children that are based on what they already know." (Dorn & Soffos, 2001, p. xiii). The problem solving interactions are the result of the teacher's explicit instruction, where specific problem solving language is used (Clay, 2005b) to provide a problem solving tool (Vygotsky, 1987, 2012). The student takes on the instructional language for problem solving and can be observed engaged in verbal self-coaching (Clay, 2001; Clay & Cazden, 1999; Dorn & Soffos, 2001; Forbes, Briggs, Klein, & Swartz, 2003; Vygotsky, 1987, 2012) through his problem solving. While the solving can be successful or unsuccessful, the verbal self-coaching is egocentric speech in action.

Clay (2001, p. 305) relays the thinking of a student working to self-correct the word 'after' in the sentence 'Look after Timothy.'

-- *It wouldn't be 'at' , it's too long.*

-- *It wouldn't be 'hats' (*which was semantically appropriate but linguistically awkward).

-- *It wouldn't be 'are,' look, it's too long.*

The problem was unresolved and the student left it. Three pages further on the word was read correctly without effort.

Without naming it, Clay has shared an example of the verbal self-coaching of egocentric speech in action. It is the student's dissatisfaction with his attempts that fueled his continued efforts until he abandoned the problem only to read it easily when it appeared later in the text. This success is positive reinforcement for the strategic problem solving and is "self-congratulatory. Success will be confirmed by the solving of the problem, the strategies will be reinforced" (Clay, 2001, p.204). A feed forward system of reading acquisition, where success provides motivation for continued problem solving. Egocentric speech can play an important role in the cognitive development of students as they learn to problem solve text in reading and record a message in writing. Verbal self-coaching egocentric speech helps students move towards independence and self-regulation.

Gaffney & Anderson (1991) discussed a space or width within the ZPD as an implicit metaphor for scaffolding. For the purpose of this study the existence of a space or width within the ZPD is foundational to the research and analysis.

2.5.1 Language Leads Action

Scholars of social problem solving (Dinwiddie 1994; Elias & Clabby 1992; Lindblom & Cohen, 1979; Siu & Shek, 2010) and the related concept of friendship coaching (Kostelnik & Stein, 1998) examined how language can be used to support or coach students. Through a multi-step language based process students are provided the

strategies and language to modify their behaviors, try out the strategy and evaluate the outcome in order to solve social problems (Kostelnik & Stein, 1998).

In short, this appears to mirror the steps students use in problem solving. Barnes, as quoted in Cazden (2001, p. 2) stated "Speech unites the cognitive and the social …In order to learn, students must use what they already know socially so as to give meaning to what the teacher presents to them." What students already know socially unites the new to the known. The same steps of talking through possible solutions and choosing one to try and then evaluating the outcome of the social problem solving process are reflected in the cognitive apprenticeship instruction (Mooney, 1999 & Dorn & Soffas, 2002) and the one-on-one intervention (Clay, 2005a, 2005b, 2013). Teachers of the intervention use problem-solving language or prompts to instruct students in literacy problem solving strategies and support students' acquisition of egocentric speech. One illustration of this phenomenon is when students search for information, choose and apply a strategy then adopt the strategy (Clay, 2001, p. 125). Language accompanies problem solving activity and leads the action of applying knowledge to new situations, while also serving as an evaluation tool.

2.6. Research Question

While there have been extensive studies on one-on-one interventions and the effectiveness of the programs, and studies focused on the importance of self-regulation within problem solving, there is limited literature on collecting explicit examples of egocentric speech and the role it plays in signaling an attempt at independent problem solving. Based on this gap in the literature, there is a need to collect examples of egocentric speech within the reading and writing components of the one-on-one reading

intervention. Successful independent problem solving in reading and writing works to propel learning forward and results in a successful completion of the short-term intervention.

Therefore, the main research question for this study examines *how might independent problem solving be revealed in the egocentric speech of a student receiving a reading intervention**?*** To answer this question the following sub-questions are: 1) *In what ways, if any, might independent problem solving on familiar text be revealed in the egocentric speech of a student receiving a reading intervention?* 2) *In what ways, if any, might independent problem solving on running record text be revealed in the egocentric speech of a student receiving a reading intervention?* 3*) In what ways, if any, might independent problem solving in the new text be revealed in the egocentric speech of a student receiving a reading intervention?,* and 4) *In what ways, if any, might independent problem solving while writing be revealed in the egocentric speech of a student receiving a reading intervention?*

CHAPTER THREE

METHODS OF COLLECTING EXAMPLES OF EGOCENTRIC SPEECH

The purpose of this study was to record how independent problem solving may be revealed in the egocentric speech of student receiving a one-on-one literacy intervention focused on the lowest 20 percent of first graders as identified by *The Observation Survey of Literacy Achievement* (Clay, 2013). Specifically, I used a qualitative case study design to collect examples of egocentric speech during the regular course of students' lessons where the students and I created one case or an intrinsic case (McMillan & Schumacher, 2010, p. 345) and the focus remained on the case itself. For this study the collection of student egocentric speech within the intervention was the focus. The phenomenon within this bounded context (Miles, Huberman, & Saldana, 2014, p. 28) was created by a student-teacher dyad of ongoing interaction. Within the reading and writing components of the lesson, student use of egocentric speech signaled an attempt at independent problem solving; successful independent problem solving in reading and writing works to accelerate students' learning and results in successful completion of the short-term intervention.

This chapter explains the research design and methods used to examine the research questions. The first section outlines the research design including the pilot study, design of the study, and the procedures for selecting participants. The second section describes the data collection procedure while the third section reports the methods that were used to analyze the data.

3.1 Research Design

3.1.1 Pilot Study

This study built upon the pilot study I conducted in the spring of 2014 (Hogate, 2014). The pilot study evolved from daily work with students in a one-on-one intervention (Clay, 2005a, 2005b, 2013) and a curiosity about student egocentric speech exhibited during problem solving in reading and writing. Acting as the teacher-researcher, I provided direct instruction included as part of one-on-one lessons to support the students' effective problem solving behaviors. Examples of problem solving language during instruction included "Try that again and think about what would make sense and sound right," "Think about what would look right and make sense," and "Look at that first letter and get your mouth ready to make that sound." Teachers refer to these as prompts, or calls to action (Clay, 2005a) and the explicit language used as a model for students to adopt into their own egocentric problem solving language.

Purposeful sampling (Maxwell, 2013) was used to identify the lowest achieving student, based on The Observation Survey (Appendix A) results in the first grade when the pilot study took place. The student participant in this pilot study was the lowest achieving student of all first graders at one central Maine school when the study began. The selection of the lowest of students for the tutorial is a primary tenet of the intervention.

Analysis of data from the pilot study revealed examples of egocentric speech from all reading and writing lesson components except the first reading of the new text. This observation caused me to wonder about the lack of egocentric speech during the reading

of the new text and if it was unique to this student or due to some other reason. It is possible that the new text's difficulty placed it beyond the students ZPD.

3.1.2. Limitations of the Pilot Study

The pilot study lasted seven weeks and resulted in the collection of thirteen samples of egocentric speech. Evidence collected from the pilot study included audiotapes of all lessons, observational field notes recorded on the Lesson Record and Running Record forms, weekly analytic memos aimed at analyzing emerging themes and a research journal to document thoughts and reflections on case design and research activity. Analysis of the thirteen samples demonstrated egocentric speech was used in all components of the lessons outlined in the study except for the reading of the new text. Additionally, samples were collected during the second reading of the text and necessitated the creation of a new category for data and an additional code. Missing from this study was an accurate record of facial expressions and mannerisms associated with the problem solving behavior the student engaged in prior to and during the verbal self-coaching egocentric speech provides.

The participant size of one student called into question the validity of the observed participant samples. The participant size of the current study was expanded to include four students during the second round of the intervention, beginning in February, 2015. This enlarged pool of participants provided a richer data set and an increased number of samples for analysis. In addition I videotaped all lessons to enhance the validity and provided a record of the expressions and mannerisms exhibited during the problem solving that accompanied the egocentric speech and created a richer data pool for analysis.

Data gathered in the pilot study confirm the phenomenon of egocentric speech within the intervention. However lingering questions necessitate an additional study to document incidence of possible egocentric speech during the reading of the new text as well as facial expressions and mannerisms associated with the problem solving behavior the student engaged in prior to and during the verbal self-coaching egocentric speech provides.

While there are extensive theoretical studies of egocentric speech I have found no studies of egocentric speech gathered from a literacy intervention. Also lacking is research investigating the role egocentric speech plays in the reading and writing components of the one-on-one reading intervention. These holes in the literature create a need for a study to collect examples of egocentric speech within the reading and writing components of the intervention. The primary question posed in the study was: *How might independent problem solving be revealed in the egocentric speech of a student receiving a reading intervention**?***

3.2. Current Study

The purpose of this study was to collect examples of students' egocentric speech during the regular course of four students' one-on-one instruction. Egocentric speech within the reading and writing components of the lesson signals an attempt by the student at independent problem solving. Successful independent problem solving in reading and writing works to accelerate students' learning and results in a successful completion of the short-term intervention known as discontinuation. A student discontinues from the intervention when reading and writing at the average skill level of the class.

The primary question examined: *How might independent problem solving be revealed in the egocentric speech of a student receiving a reading intervention***?** I have constructed the following sub questions to help me answer this question. First, *in what ways, if any, might independent problem solving behavior on familiar text be revealed in the egocentric speech of a student receiving a reading intervention*? This sub-question addressed the student-participants potential use of egocentric speech during the re-reading of a familiar text. The reading of familiar text serves as a warm-up activity and a chance to practice skills and strategies under the student's control with special attention to phrasing in fluent reading.

This question was answered using data collected from the videotapes of lessons, daily jottings on the familiar text section on the Lesson Record (Appendix C), weekly analytic memos and entries in a researcher journal. A peer debriefer helped me to challenge my instructional focus with each student, wrestle with challenging behaviors and ensure fidelity to the intervention.

Secondly, *in what ways, if any, might independent problem solving on the second reading of text be revealed in the egocentric speech of a student receiving a reading intervention?* The second reading was a formative assessment used to capture what students know and understand about independent problem solving within the reading process.

This question was answered using data collected from the videotapes of lessons, daily jottings on the second reading of the new text section on the Lesson Record (Appendix C) and Running Record Sheets (Appendix D), weekly analytic memos and entries in a researcher journal. A peer debriefer helped me to challenge my instructional

focus with each student, wrestle with challenging behaviors and ensure fidelity to the intervention.

The third sub-question asked, *in what ways, if any, might independent problem solving on new text be revealed in the egocentric speech of a student receiving a reading intervention?* This sub-question was designed to collect examples of student self-coaching while reading a new text. The teacher provided an introduction before the student began reading the novel text for the first time. Teacher assistance was kept to a minimum in order for the student to draw upon and apply all problem solving skills under the student's control.

This question was answered using data collected from the videotapes of lessons, daily jottings on the new text section of the Lesson Record (Appendix C), weekly analytic memos and entries in a researcher journal. A peer debriefer helped me to challenge my instructional focus with each student, wrestle with challenging behaviors and ensure fidelity to the intervention. I did not collect examples of egocentric speech from this lesson component during the pilot study.

And lastly, *in what ways, if any, might independent problem solving while writing be revealed in the egocentric speech of a student receiving a reading intervention?* Clay (2001, p. 12) concurs with Chomsky (1972) about the power writing has on reading development. The reciprocity of the phonetic work used to record sounds in words in order was applicable and transferable to reading unknown words in reading.

This question was answered using data collected from the videotapes of lessons, daily jottings on the Lesson Record (Appendix C) and each students' individual writing book. Weekly analytic memos and entries in a researcher journal along with a peer

debriefer helped me to challenge my instructional focus with each student, wrestle with challenging behaviors and ensure fidelity to the intervention during the writing component.

3.3. Bounding the Case

This case study examined samples of egocentric speech within the reading and writing components of one teacher's instructional day. My identification of what was to be studied created the "bounded context." Miles, Huberman, and Saldana (2014) represent this concept graphically by a heart embedded within a circle (p. 29). The heart represents the focus of the study; egocentric speech within the one-on-one instruction with the circle surrounding the heart represents instructional practices outside the reading and writing components.

For it to be a case study, *one* particular program or *one* particular classroom of learners (a bounded system), was the unit of analysis (Merriam, 2009, p. 41). The student-teacher dyad within the bounded system created the case. Maxwell (2013, p. 97) further refines the concept of case study design with his term "purposeful selection" where specific settings, activities, or participants are "selected deliberately to provide information that is particularly relevant to your questions and goals." Maxwell encourages researchers to use this method when other research methods cannot gather the data needed to answer the research questions.

The unit of analysis was egocentric speech utterances used by the students as verbal self-coaching during problem solving. Purposeful selection bound the one-on-one intervention and egocentric speech together through the research question of how independent problem solving may be revealed in egocentric speech.

3.4. Role of the Researcher

As the Title IA Coordinator for a rural central Maine district, I oversaw the grant writing requirements outlined in the No Child Left Behind legislation of 2001 with duties that included the (a) supervision and evaluation of the 17 staff members, (b) creation and monitoring of the budget, (c) timely submission of State and Federal reports, and (d) served as a liaison for district administrators with the Maine Department of Education. Additionally, I taught four students daily. My office was located at the school where the study took place, so potential subjects of the study saw me in the building, but, I had never provided educational services to them either in the classroom or during a tutorial. My researcher as participant role allowed me to provide instruction to four students.

My professional interest has focused on the theory and methodologies of elementary students' literacy acquisition. Decisions I have made regarding literature I have read, courses I have taken, and degrees pursued have all been influenced by this interest. It was possible that my instruction benefits from a deeper understanding of the role egocentric speech plays in a student's literacy development than even five years ago. Although I have always adhered to the standards and guidelines of the intervention, this increased understanding may have influenced my instruction and data analysis in ways I cannot control. In my role as researcher-participant it would be impossible to eliminate the bias my life experience brought to this study. However, I will describe in detail my efforts to account for bias later in this chapter.

3.5. Site Selection

This study took place at a Pre-Kindergarten through 6th grade elementary school drawing students from three rural communities within a central Maine school district.

The enrollment averaged between 368-374 students during the time of the study and was predominantly white Non-Hispanic (98%). There was one full time principal in the building, one home-school coordinator, one both a full and a half-time office secretary, and a collection of itinerant staff who provided art, music, and physical education. The itinerant staff rotated between at least two district schools every week. The school had lost one full time classroom teacher annually over the last two years due to budget cuts, resulting in an average class size of 19 students. There were 19 classroom teachers, one session of Pre-K, six special education teachers, including three who run the district's Transitions program for students identified with behavioral issues and who were unable to be educated in a regular classroom. Three Title IA educators provided literacy and math interventions.

The school community had 71% of the students qualifying for free and reduced lunch the month this study began as reported by the district's Poverty Report. Maine Department of Education's ED534 report the district's FY 2014 Percent Free and Reduced School Lunch Report poverty rate of 65.98%. These reports indicate a high economically disadvantaged student population and qualified the district for participation in the Community Eligibility Provision (CEP). This provision from the Healthy, Hunger-Free Kids Act of 2010 allows schools and local educational agencies (LEAs) with high poverty rates to provide free breakfast and lunch to all students. The program is sponsored by the United States Department of Agriculture (USDA) and allows school districts to stop collecting applications for free and reduced breakfast and lunch for school age children. Districts that implement the CEP feed all students regardless of

family income and are reimbursed on the basis of a formula (http://www.fns.usda.gov/school-meals/community-eligibility-provision).

The central Maine school district where this study took place was the first district in Maine to implement the CEP program. There were numerous discussions during the previous school year regarding the benefits and drawbacks of committing to the program, but the swaying point was the growing poverty within district schools and reports of families experiencing food insecurity (Nord, Andrews, & Carlson, 2003). Starting on the first day of the 2014-2015 school year all students received free breakfast and lunch at school. While the school's participation in the CEP program did not directly affect this study, the district and school's participation in the program reflects a poverty within the student population and potential student participants.

3.6. Participants

The researcher used purposeful sampling to select the participants in this study: they were the first four of the six lowest-ranked first grade students, as identified from Clay's *An Observation Survey of Early Literacy Achievement* (2013), who returned their permissions forms. These students had not received this one-on-one intervention during the first round of the tutorial which took place from September 2014 through February 2015. As such, the students in this study were not the lowest achieving students when their first grade year began, but were the next tier of students after the lowest were selected. Another possibility was that the literacy skills of these second round students did not progress as expected and they had not made expected gains from classroom instruction. Three of the four students received small group instruction from an educational technician in addition to classroom instruction during the first half of the

school year. While the previous tutorial was provided five times a week, the intensity was diluted compared to one-on-one instruction.

3.7. Data Collection

In this study I built upon the pilot study and used a case study design to collect examples of egocentric speech during the regular course of four students' lessons. I used the methods of *An Observation Survey of Early Literacy Achievement* (2013), an assessment designed for systematic observation of young children as they learn to read and write, to identify the student participants. The six students who demonstrated the lowest literacy skills were identified as potential participants for this study. Starting alphabetically by last name I telephoned each parent to explain that their student would receive the intervention and to explain my study and what would be involved if they granted permission for their student to participate. The first three parents granted permission over the telephone for their student to participate in the intervention and to be videoed. The fourth parent was not home and I left a message informing the parent of the opportunity for their child to participate in the intervention and that a parental permission form would be sent home with their child. The fifth parent granted permission and when I explained I was collecting examples of student speech, said "You'll get some great material." Parent 2 and Parent 3 expressed a concern about the videos being posted on the Internet and I explained all videos were for research purposes only and would not be posted.

Parental permission (Appendix B) forms were sent that same day and based on the verbal permission given via telephone the first Roaming Around the Known (Clay, 2005a) lesson was planned. These first lessons of the intervention, called Roaming

Around the Known, are comprised of ten induction sessions with the foci of getting to know the student, engaging in conversations and authentic reading and writing tasks. Clay explains, "The teacher tries to strengthen all that the child is able to do, helping him achieve a level of confidence and fluency that will assist him later, when he moves into new learning" (p. 32). These lessons strengthened the child's knowledge and confidence and support the budding relationship between student and teacher for the lessons ahead. The teacher was provided examples of each student's literacy processing strengths and content knowledge. Additionally, the lessons were filled with demonstrations of problem solving language provided by the teacher. While my teaching of these lessons was beyond the scope of the study, the learning that took place worked to build a firm foundation for future instruction.

The four student participants, coincidentally all girls, were assigned the pseudonyms of Hannah, Julia, Leah, and Nora. In my experience the dominant gender for this intervention is boys. From a research perspective a mixture of boys and girls would have been more representative of typical participants. All references to the students during the study and ensuing research used only these names. The master list of pseudonyms was stored electronically using software that provides additional security and was destroyed April 29, 2015, the final day of data collection. Each student exited the Roaming Around the Known lessons and entered the intervention with specific strengths. In order to better understand each student, some context will be provided.

Hannah attended three different schools during her Kindergarten year. At the end of Kindergarten she and her 10 year old sister and mother were living with Hannah's maternal grandmother in the community where the school is located. Over the summer

Hannah and her mother moved to a neighboring community and a different school district. Hannah's sister remained with the grandmother and Hannah's mother transported Hannah to and from school daily with the understanding they were building a house in the community and would soon move. Over the course of the school year the house was never completed. Because Hannah's attendance was based on parental transportation, she was late most days and consistently missed 30-60 minutes of literacy instructional time as her classroom teacher began the day with her literacy instruction.

Hannah received a literacy and math intervention and was referred for special education testing due to academic concerns. Because Hannah did not reside within the school district the district was not obligated to conduct the lengthy and costly assessment and chose not to act on the referral. She was articulate when speaking and did not appear to struggle understanding verbal directions. Hannah received a small group literacy intervention the first half of her first grade year and then the one-on-one intervention that qualified her as a participant in this study.

Hannah entered the instructional phase of the intervention as the youngest student of the four participants; she was six years and four months old. She was able to read simple text exhibiting a beginning ability to self-monitor and self-correct some errors. Her writing was legible and demonstrated a beginning ability to compose a thought into a complete sentence with assistance. She was able to write many high frequency words independently and approached reading and writing tasks with cautious enthusiasm. She would stop and comment on the text or a personal thought connected to what she was reading or writing with little regard for maintaining the meaning of what she was reading or the word or message she was writing.

Julia was new to the school as a first grader and lived with her great-aunt and uncle for the entire first grade year. She occasionally saw her mother and was very excited about the birth of her brother about the time her one-on-one intervention started. Previously she has received small group literacy instruction where she was often unwilling to engage in the daily lesson or read her books at home for fluency practice. Julia did not receive any special education services, nor was she referred during her first grade year. She did not receive a math intervention, she was articulate and did not appear to struggle understanding verbal directions. On numerous occasions Julia said that she did not do homework.

Julia entered the instructional phase of the intervention at six years and seven months old. She was able to read beginning text with attention to phrases and high frequency words using her finger to track words and lines of print. Julia demonstrated an ability to reread and self-correct some errors; on occasion she skipped words and did not notice the error. Julia's writing was legible and the letter size appeared grade appropriate. She was able to compose a simple sentence and relied on her many known (56) high frequency words for writing her message and was reluctant to attempt unknown words. Julia approached reading and writing tasks reluctantly and used negative comments to delay engagement with books and writing.

Leah came to first grade having attended the same school for her Kindergarten and preschool years. She lived with her mother, two brothers and grandfather in an apartment within the community. Leah's older brother was in third grade and her younger brother was a toddler not yet enrolled in the preschool program. Leah's mother worked set hours as a waitress in a busy restaurant located approximately twenty minutes from

the school. Leah stayed with her father every other weekend. Her younger brother also went on the weekend visits, but her older brother had a different dad and did not go. On visitation weekend Leah was usually picked up after lunch by her dad and occasionally arrived late on Monday morning.

Leah took responsibility for her books and consistently read and returned them the next day and wanted to take different ones home. She often recounted about her younger brother's reaction to the books when she read them to him at night and twice she described using the books to teach him how to read. Leah once confided that she either wanted to be a pretty waitress like her mom or a teacher when she grew up. She did not receive any special education or intervention services prior to the one-on-one intervention.

Leah began the intervention as the oldest student at seven years and one month old. Because of her age she had been practicing ineffective literacy skills the longest of the four student participants; this put her at heightened risk for delayed reading and writing acquisition. Leah was reading beginning texts with a staccato voice while relaying expression when she reread; Leah's behavior appeared to support her attempts to confirm or self-correct at the point of confusion. Leah's writing was large, but legible and she was able to compose a simple message. She demonstrated mastery of many (65) high frequency words while writing and was able to reread her sentence accurately.

Nora lived with her mom, dad and younger brother in a neighboring town within the school community. She consistently attended school and usually read her books at night and returned them the next day. When the books were forgotten at home she would report that her mom forgot to put them in her backpack. Each time she said that I would

remind her that it was her responsibility to put the books in her backpack after reading them. She consistently smiled and shrugged her shoulders. Nora received a small group literacy and math intervention prior to this one-on-one literacy intervention. The math intervention extended through the school year. Nora's classroom teacher reported that Nora was easily distracted and not able to get herself back on task. Her independent work was consistently not done and sometimes not started. While many of her classmates were able to complete the independent work in the allotted time, the classroom teacher did not observe this caused stress or concern for Nora. She was referred for special education testing in the early spring of her first grade year, but she did not qualify for academic services.

Nora entered the instructional phase of the intervention at six years and five months old. She exhibited self-distracting behaviors such as; hair twirling and fidgeting in her chair (to the extent she fell on the floor one day.) She would stand up in the middle of reading a sentence or recording a word often losing her place. It was difficult for her to lay the book flat to read, but when she did she kept the right hand page in her hand and moved the page back and forth even when it made the page difficult to read. Nora often gave the impression of being in perpetual motion and was not able to attend to the task at hand. Her writing was very large and the letter formation at times difficult to read. She used a pencil grip to encourage a pincer finger placement. During beginning lessons she would comment that her fingers were tired after writing four to five words. Nora demonstrated mastery of 55 high frequency words when writing, but was not able to consistently reread her writing accurately.

3.8. Data Collection within the Study

After each student participated in ten Roaming Around the Known (RAK) sessions the instructional phase of the intervention began and the responsibility for learning was gradually shifted to the student. My research and data collection began at this point. Lesson #1 immediately following the RAK was planned and taught using the Daily Lesson Record Sheet (Appendix C), the Running Record Sheet (Appendix D), and standard instructional procedures. The lessons were formatted around the individual strengths and needs of each student. The lessons will be outlined in the following sections.

I began data collection on March 4, 2015 with the daily videotaping of the four students' lessons. This schedule continued until April 29, 2015 when the last lesson was videotaped. Data analysis began with each student's first lesson. A Research Timeline (Appendix E) outlines the progression of dates and benchmarks within the study.

3.8.1. In What Ways, If Any, Might Independent Problem Solving on Familiar Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

Rereading familiar texts was the first component of a lesson. Clay designed the daily lesson to start with the students reading familiar texts to (a) attend to concepts about print, directionality, and the linking of print and speech; (b) practice fluent reading of increasingly difficult text, (c) deepen their knowledge of story structure and vocabulary, and (d) increase their independence in reading on increasingly more difficult text (2005a, p. 48). Accurate and fluent reading are the hallmark of reading familiar texts. Evidence of

egocentric speech during the reading of a familiar texts provided insight into the student's problem solving ability and shift towards self-regulation in reading.

3.8.2. In What Ways, If Any, Might Independent Problem Solving on the Second Reading of a New Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

The next opportunity to collect examples of egocentric speech was during the daily formative assessment of the second reading of a text. This was the new text from the day before. The Running Record Sheet was used to record the student's oral reading behaviors on continuous text using Conventions of a Running Record (Appendix F) and capture the student's reading so the teacher was able to (a) assess the text difficulty, (b) monitor student progress in strategic reading of increasingly difficult books, and (c) reflect on how to plan meaningful instruction in the next lesson. Accurate reading as well as problem solving was recorded on the Running Record form (Appendix D) and for this study examples of egocentric speech were recorded here.

3.8.3. In What Ways, If Any, Might Independent Problem Solving While Writing Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

The recording of the student's unique message provided dual opportunities to collect examples of egocentric speech as the student wrestled with how that message was recorded (Clay, 2005a, 2005b). Samples of egocentric speech were collected as the student recorded the message using known orthographic skills and writing conventions. Opportunities to collect student examples of egocentric speech during the recording phase supported opportunities to hear and record sounds in order, record high frequency words, and the use of analogy to solve unknown words when writing words. My role as

the teacher during the writing phase was to co-construct the message and to record unknown sounds and conventions as necessary while leaving as much work to the student as possible. The teacher writes the student's complete sentence on a strip of paper and cuts this sentence into meaningful units so that the student can assemble the pieces to recreate the sentence and reread it for meaning.

3.8.4. In What Ways, If Any, Might Independent Problem Solving on a New Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

The last component of the intervention and the final opportunity each day to collect examples of egocentric speech was the reading of the new text. The text was carefully chosen to accelerate the student's learning by providing just enough challenge so the student can apply fledging problem solving skills on a new text. Examples of egocentric speech during the reading of the new text were recorded on the Daily Lesson Record Sheet (Appendix C) and signals independent problem solving as the student works to maintain meaning.

I collected videotapes of all lessons and jottings written on Daily Lesson Record Sheet (Appendix C) and the Running Record Sheet (Appendix D) adhering to the conventions of recording a running record (Appendix F). All data were expanded to field notes at the end of each day. Weekly analytic memos were written to aid the analysis process and a researcher journal became the place to wrestle with insights and reflections. While daily analysis of the Lesson Record Sheet and Running Record Sheet is standard practice in the one-on-one reading intervention, weekly analytic memos (Maxwell, 2013, p. 19) assisted in the analysis and coding of egocentric speech obtained from each student. However it was the researcher log or journal where I wrote my thoughts,

recorded my evolving questions and wrestled with tentative thoughts and theories (Maclean & Mohr, 1999, p.13).

Videotapes of the daily lessons provided a record of student talk and student behaviors from six weeks of sessions on each of the four students. Analysis of student physical behavior while engaged in egocentric speech was not part of the pilot study but added to this study to study the facial expressions and mannerisms associated with the problem solving behavior the student engaged in prior to and during the verbal self-coaching egocentric speech provides.

Physical behaviors (PB) exhibited by the student while engaged in egocentric speech were recorded on a second analysis grid (Appendix K) during the four lesson components of the intervention. Specifically, a physical shift toward the teacher (PB-T), away from the teacher (PB-A), and any stress behaviors to include nail biting, hair twirling, or a verbalization of the task being too difficult (PB-S) were recorded. On March 17, 2015 I added the inductive code Physical Behavior Attending (PB-Att) to include when a student attended to the text and engaged in problem solving. This included looking at the text, sub-vocalizing or vocalizing problem solving language. This was an observed event that included problem solving that did not include an appeal or stress behavior exhibited by the student.

Recordings of egocentric speech were transcribed, and de-identified. Video-recordings were stored on a dedicated external hard drive and are not available on any other device to which others might have access.

Observational field notes of the daily lessons were recorded first on the Daily Lesson Record Sheet (Appendix C). These observational field notes focused on

participants' use of egocentric speech when problem solving text in reading and writing. Lesson record notes were expanded after viewing the videotape of each lesson. On the observational field notes, the students' real names were replaced with pseudonyms and identifying information was removed.

Analytic memos where I considered evidence of egocentric speech were written once every week using conceptualized field notes for that period as the basis for analysis. As the data set expanded, my analysis focused on emerging themes and evidence of triangulation, analyzing gaps in the data set. In analytic memos, students' real names were replaced with pseudonyms and other identifying information, including birthdate and classroom teacher's name was removed.

I recorded thoughts and reflections on case design and research activity in a research journal. I captured insights, questions, and/or dilemmas in the journal that may or may not prove consequential enough to examine in analytic memos and wrestled with validity threats and bias in order to establish trustworthiness with the resulting data. Participants' real names were replaced with pseudonyms and other identifying information were removed. The research journal was stored in a locked cabinet at home.

With these types of data collection, I was able to triangulate the data sources of (a) observed egocentric speech during problem solving directly during the lesson, (b) reflective jottings recording on The Daily Lesson Record Sheet and Running Record Sheet, and (c) viewing videotaped lessons to recapture lost observations.

3.9. Variability

Variability was addressed with the use of four students with each two person set as a student-teacher dyad. McMillan & Schumacher (2010) recommend attention to

systematic, error, and extraneous variance to address credibility of the research results. In this study students were chosen based on the results of a standardized assessment. The six students with the lowest scores were chosen to receive the one-on-one literacy intervention with the first four students for whom verbal parental consent was given over the telephone became the students involved in the study. Student strengths and weaknesses maximized the systematic variance within this study.

Error and extraneous variance were minimized through the use of standardized procedures and guidelines of the one-on-one intervention. Evidence of egocentric speech was collected during the intervention; no additional instruction other than standard classroom instruction interfered with the data collection. No additional interventions were provided to these four students during this study.

3.10. Trustworthiness

I established trustworthiness (Lincoln & Guba, 1985, McMillan & Schumacher, 2010) using collection methods and analysis techniques to include a) triangulation of data sources (videotape, teacher artifacts, and student progress); b) the verbatim recording of participant language and gestures, c) negative case analysis or evidence of outliers, d) use of an audit trail, and e) extended time within the study. I wrote the verbatim examples of egocentric speech on the lesson forms as part of field note collection to write weekly analytic memos focused on participants' use of egocentric speech when problem solving text while reading and writing. I wrote analytic memos weekly to reflect upon the evidence of egocentric speech using conceptualized field notes and jottings as the basis for my analysis. As the data set expanded, my analysis focused on analyzing emerging themes and analyzing gaps in the data set.

I used a research journal to document thoughts and reflections on case design and research activity. I wrote daily in an attempt to capture insights, questions, and/or dilemmas that may or may not have proven consequential enough to examine in analytical memos. The researcher journal also provided an opportunity to address bias and the influence it may have had on data analysis.

I have included rich, thick description as an added validity strategy (Glesne, 2011) for the examples of egocentric speech collected from the four students included in this study as a way of addressing transferability (Lincoln and Guba, 1985). While the six week research window may not typically qualify as a prolonged time "in the field" as suggested by Creswell and Miller (2000) to improve validity of a qualitative study, it was the close study of four students' daily 30 minute one-on-one intervention that provided an intense opportunity to collect sufficient examples of egocentric speech that a prolonged time "in the field" demands. It was the intensity of this study that satisfactorily addresses the need for prolonged time in the field.

During data collection I met regularly with a peer debriefer (Lincoln & Guba, 1985) to challenge my instructional focus with each student, wrestle with challenging behaviors and ensure fidelity to the intervention. I have worked to address the transferability of my research methods with clear and descriptive methodology so that other researchers have a clear understanding of the study. Researchers interested in replicating this study may or may not obtain similar results based on their values and expectations.

3.11. Limitations

The findings from this study are limited to the time and place of this case study. The examples of egocentric speech cannot be generalized to other instructional interventions or other populations of first grade learners. The intent of this study was to collect examples of egocentric speech and all findings are confined to this study. I have included a thick description (Glesne, 2011) of research setting, students, and methodology in the event others care to investigate this study in their own setting.

A second limitation of this study was that it took place over a six week time period. Any examples of egocentric speech displayed before the research window opened or after it closed are not included. Thirdly, in my role within the case it was possible I affected the data in an unidentified way even though I worked to put trustworthiness measures in place.

3.12. Data Analysis

To analyze data I started with the master and sub-codes generated from my pilot study (Appendix G). Three inter-reader reliability tests were conducted with these problem solving codes during the pilot study and resulted in an 87% agreement, demonstrating satisfactory external reliability (Miles, Huberman, & Saldana, 2014, p. 312). A second inter-rater reliability test was constructed using the first ten examples of egocentric speech and the corresponding behaviors collected from this study (Appendix H) and resulted in 91% agreement. This reliability check was the second data run using the codes and built on the reliability of the pilot study. Student physical behavior codes were added to collect data on overt student behavior while engaged in egocentric speech

and the inter-reader reliability score of 91% reflects a test of the physical behavior codes as well.

Data analysis began with the intervention. Each Running Record Sheet was analyzed immediately following the lesson because "The most reliable records would be obtained by scoring an observation immediately following its manual recordings" (Clay, 2013. p. 170). Student reading errors and self-corrections recorded on the running records were analyzed for meaning (M), structure (S), and visual (V) cues used at the point of error and self-correction using the Standard Guidelines and Procedures (Appendix I). Examples of egocentric speech were coded and recorded on the Analysis Grid (Appendix J) using the master code Problem Solving while Reading (PSR).

Student writing was analyzed using the master code Problem Solving while Writing (PSW). All examples of egocentric speech collected during the writing component of the lesson were coded and recorded on an analysis grid (Appendix J). On April 3, 2015 the writing analysis grid was split to accommodate egocentric speech collected during the recording of a message and the separate activity of assembling the sentence, two separate activities found within the writing component of the lesson.

I analyzed student errors and self-corrections on familiar texts and with the new text in a way consistent with the second reading of the text analysis. The master code of Problem Solving while Reading (PSR) was applied to familiar text and new text analyses. The completed grid documenting all collected examples of egocentric speech can be found in Chapter Four of this document.

3.13. Conclusion

This study was designed to collect examples of students' egocentric speech within one-on-one intervention lessons with the lowest 20 percent of first grade students in literacy as identified by *An Observation Survey of Early Literacy Achievement* (Clay, 2013) in order to advance the understanding of how independent problem solving might be revealed.

CHAPTER FOUR

RESEARCH RESULTS

The purpose of this study was to record if and how independent problem solving might be revealed in the egocentric speech of students receiving Reading Recovery®, a one-on-one literacy intervention focused on the lowest 20 percent of first graders as identified by *An Observation Survey of Early Literacy Achievement* (Clay, 2013). As stated in the previous chapter, six first grade students were identified to receive the intervention starting in late February 2015. Four students were selected to receive the intervention and be part of the study and the remaining two received the same intervention from another teacher at the school. The students included in this study were those whose parents I called and who granted permission over the phone. The intervention permission slip and research permission form were sent home and returned the next day.

As mentioned in Chapter Three, all four students ranged in age from six years, four months old to six years, seven months old placing the students chronologically in age within three months of each other. Each was able to read simple texts and demonstrated a beginning ability to combine thoughts into a sentence and then write the sentence with teacher assistance. All students in the study received thirty lessons spanning eight weeks from March 4, 2015-April 29, 2015. Variance in start and ending dates was attributed to student attendance (Appendix L). Additionally, all four of the students received a math intervention four days a week and three students received a word study lesson daily.

The main question in the study examined *how might independent problem solving be revealed in the egocentric speech of a student receiving a reading intervention**?*** To answer this question the following sub-questions were: 1) *In what ways, if any, might independent problem solving on familiar text be revealed in the egocentric speech of a student receiving a reading intervention?* 2) *In what ways, if any, might independent problem solving on the second reading of new text be revealed in the egocentric speech* of *a student receiving a reading intervention?* 3*) In what ways, if any, might independent problem solving while writing be revealed in the egocentric speech of a student receiving a reading intervention?*, and 4) *In what ways, if any, might independent problem solving in the new text be revealed in the egocentric speech of a student receiving a reading intervention?*

As mentioned previously, anticipated student behaviors exhibited when the egocentric speech is observed could include 1) student appealing for help behaviors including looking or moving towards the teacher, 2) moving away from the teacher, and 3) stress behaviors such as whining and hair twirling. I was curious what behaviors students would display and started with this list of behaviors collected from peers who provide the same intervention instruction used in this study.

4.1. Study Findings

As stated earlier, the current study collected examples of egocentric speech that were provided by four students who received a daily lesson between March 4, 2015 and April 29, 2015 for a total of thirty lessons per student. This created a pool of 120 lessons over nine weeks from which data emerged with these focal students. Due to the intensity of the daily, 30 minute, one-on-one intervention, a six-week period of close examination

provided a sufficient opportunity to collect examples of egocentric speech and demonstrated a prolonged time in the study. The study findings are reported in the order they appear within the intervention. In addition to collecting examples of egocentric speech, observable student behaviors were collected to provide data on overt student actions while engaged in egocentric speech.

4.1.1. Lesson Format

A typical intervention lesson follows a sequence of activities within which teachers design appropriate tasks for each individual (Clay, 2005b). An overview of how the lesson unfolds is included along with the description of the intended educational purpose for the student.

1. Rereading several familiar texts supports the development of reading for pleasure as well as fluency, comprehension and speed (p. 87).
2. Rereading yesterday's new text supports problem solving, monitoring, confirming and linking known to near novel learning and provides the teacher an opportunity to observe and capture the student's work with a running record of oral reading (p. 88).
3. Letter identification with magnetic letters supports fast visual perception using letters (p. 88).
4. Breaking words into parts by manipulating magnetic letters supports attending to details in print including left to right orientation, letter-word hierarchy and flexibility in attending to parts of words in order to solve new words (p. 19, 42).
5. Composing and recording a unique story supports language learning including how language is constructed in writing, sound to letter recording, flexibility in

ways to write words and using “a variety of ways to structure written language” (p. 50).

6. Reconstruction of the teacher’s copy of the student’s story cut-up supports self-monitoring, self-correcting and linking writing to reading and speaking (p. 50).
7. Introduction of new text supports the development of the student’s ability to orient to a new text and how to access knowledge using content and print information (p. 90).
8. The first reading of the new text supports daily practice in reading new texts (p.88) using the student’s “repertoire of responses” (2005a, p. 38).

The teacher designs a unique lesson daily for each student using the lesson framework outlined above. Clay (2005a) reminds intervention teachers the goal is for each student to develop a self-extending processing system with literacy skills on par with the average of the class. All 120 lessons included in this study were taught using the framework outlined above with the development of each student’s self-extending system as the goal.

4.1.2. How Might Independent Problem Solving Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

Table 4.1 tallies the egocentric speech examples used in problem solving that were collected during the three reading and the one writing lesson components across all students for all lessons. Each example was coded with the student’s name, the date and number of the lesson in which the example was observed. The frequency tallied in the table below represents all examples of egocentric speech gathered during the assessment window.

Table 4.1 Tally Table for Egocentric Speech Revealed During the Lesson Components

Familiar Text	**Second Reading of New Text**	**New Text**	**Writing** Record	Assemble
I I I	~~I I I I~~ ~~I I I I~~ ~~I I I I~~	~~I I I I~~ I I I	I I I	I I I

Note. I = one utterance

Further analysis demonstrated the frequency of egocentric speech by student. This analysis creates a clear picture of which students relied on the verbal self-coaching that egocentric speech provides. Table 4.2 was created to display this analysis.

Table 4.2 Table of Egocentric Speech Revealed During the Lesson Components as Collected by Student

Familiar Text	**Second Reading of New Text**	**New Text**	**Writing** Record	Assemble
J J J	H H H H J J J J J J J J L N	H H J J J L L L	J J L	J J H

Note. H = Hannah, J = Julia, L = Leah, N = Nora

Analysis of this table identified Julia and Hannah were students who used egocentric speech during the reading and writing components of the lesson. Julia used the verbal self-coaching speech in all lesson components while Hannah used it during the three reading components and the assembly phase of the writing component.

Four themes emerged from the data. First, egocentric speech was revealed during all lesson components in the form of either a statement, question, self-correction, or a short comment. Second, students used short examples of egocentric speech to confirm or disconfirm when problem solving. Third, students used egocentric speech while engaged in problem solving with different frequencies and in different lesson components. Fourth, student behaviors while engaged in egocentric speech appear to shift over time from

moving towards or appealing to the teacher for help at point of difficulty to attending to the task and working independently.

4.1.3. In What Ways, If Any, Might Independent Problem Solving on Familiar Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

Data from the current study recorded specific examples of independent problem solving revealed in the egocentric speech of students receiving Reading Recovery®. Rereading familiar texts is the first component of the intervention lesson and the first opportunity to collect examples of student problem solving speech. The rereading of familiar texts is used to help students (a) attend to concepts about print, directionality, and the linking of print and speech; (b) practice fluent reading of increasingly difficult text, (c) deepen their knowledge of story structure and vocabulary, and (d) increase their independence in reading on increasingly more difficult text (Clay, 2005a, p. 48). A student's accuracy and fluency in reading are supported during the reading of familiar texts. The student is left with reading work that supports the mastery of as yet unnoticed text features. Evidence of egocentric speech during the reading of familiar texts provided insight into the student's fluent problem solving ability and shift towards self-regulation in reading.

Julia provided all three examples of egocentric speech collected while a student read familiar texts during the course of this study. Her examples answer the sub-question *In what ways, if any, might independent problem solving on familiar text be revealed in the egocentric speech of a student receiving a reading intervention?* I have written the example of egocentric speech and provided the student's name and date of the lesson

directly underneath each example with the lesson number also provided. Independent problem solving was revealed through the student use of a (a) question, (b) short comments, (c) self-correcting, and (d) evidence of confirming and disconfirming statements of "yup!" and "no!" from this lesson component.

Julia was reading (March 18, 2015, Lesson #7) when she came to the passage "Meanies sleep in garbage cans" where she substituted "old tin" for "garbage" while reading her familiar text *Meanies*. She then questioned herself and provided her own answer "Is that right? No!" Julia was able to use a question as a verbal self-coaching exchange with the disconfirming statement of "No!" to support her ability to reread the sentence and correct her error.

Later in the series of lessons, Julia (April 14, 2015, Lesson #27) read 'one' for 'on' in the sentence 'On day number one it grew a cake.' while reading *The Amazing Popple Seed*. After reading "One day number" she immediately said "no!" This short example of egocentric speech was a comment on what she had just read and demonstrated her ability to monitor her reading. She possessed sufficient skill to create a self-correct plan, and an ability to identify her best course of action. Her short comment of "no!" did not stop her thought process and she immediately reread, corrected her error and continued reading the text successfully. Julia demonstrated how a short disconfirming example of egocentric speech may support independent problem solving. It may also demonstrate egocentric speech beginning to go undergroupd because she did not articulate the question "Is that right?"

Three lessons later (April 27, 2015, Lesson #30) Julia was reading a version of *The Three Little Pigs* and demonstrated how a short comment of egocentric speech works

to confirm and support reading. She read "Each little pig wanted to build a home, house, yup!" This short comment relayed Julia's self-correcting behavior on the word 'house' and her ability to confirm she was right once the correction was made. These examples demonstrate how a question, short comment, and self-correction accompanied by confirming or disconfirming egocentric speech can indicate independent problem solving beginning to go underground. All examples were provided by Julia as no other students used egocentric speech during their reading of familiar texts during the study; this is curious since one might anticipate multiple examples of independent problem solving collected from the familiar text due to the problem solving opportunity repeated readings provide. Julia's demonstrated ability could be attributed to the development of her problem solving going underground; this behavior warrants further study.

4.1.4. In What Ways, If Any, Might Independent Problem Solving on the Second Reading of a New Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

The daily formative assessment of the second reading of a text is the second component of the intervention and the next opportunity to collect examples of egocentric speech. This is the new text from the day before and one the student has read only once before. The Running Record Sheet was used to record the student's oral reading behaviors on continuous text (Appendix E) and capture observations of the student's reading. Analysis of this assessment provided sufficient data to (a) asses the text difficulty, (b) monitor each student's reading, and (c) reflect on how to plan meaningful instruction in the next lesson. Accurate reading as well as problem solving was recorded on the Running Record form (Appendix D). Any examples of egocentric speech collected

during the second reading of the new text were recorded on the Running Record sheet as well.

Examples of egocentric speech were collected during the second reading of the new text component of student lessons and answer the sub-question of *In what ways, if any, might independent problem solving on the second reading of a new text be revealed in the egocentric speech of a student receiving a reading intervention?* I have written the examples of egocentric speech and provided the student's name, date of the lesson and lesson number under each example. Independent problem solving was revealed through the student use of a (a) question, (b) statement, (c) short comment, (d) self-correcting, and (e) evidence of confirming and disconfirming statements of "right" and "not, nope" from this lesson component.

Nora (March 6, 2015, Lesson # 2) was reading *Red Squirrel Hides Some Nuts,* when she questioned her reading of the sentence "Red Squirrel goes to sleep inside his home in the tree." She had substituted 'outside' for the word 'inside' making it sound like the squirrel was sleeping outside in the snow instead of inside his hole in the tree. Her question "Outside his home?" is a question she addressed to herself and then turned to the teacher. The mismatch between what she had read and the picture showing a squirrel curled up and sleeping in the hole in the tree caused Nora to stop and question her reading. This verbal self-coaching supported Nora's fledging reading as she maintained meaning in her reading during her second lesson of the intervention.

Hannah (March 1, 2015, Lesson # 4) was reading "I am going to lay my egg **outside** (emphasis hers) the hen house." She then said "I am laying to" immediately followed by "Not!" This short disconfirming comment demonstrated the use of

egocentric speech to support the continued reading of a text. Hannah was able to use a short disconfirming example of egocentric speech to support independent problem solving while reading. Hannah was not able to correct her error, but her ability to monitor her reading and know when she had made a mistake demonstrated her growth as a reader.

4.1.4.1. Distribution of Egocentric Speech Samples Over Time

Nora and Hannah's egocentric speech samples were collected during the first week (Lessons 1-5). These examples were chosen to spotlight the range of egocentric speech collected during the study. The second reading of the new text lesson component provided the most examples of the verbal self-coaching over the course of the 30 lessons.

In addition to the two examples provided in the section above from the first week of lessons, Hannah demonstrated a third way egocentric speech can support problem solving. While reading *Mother Bear's Red Scarf* she read "I'm getting at fish." (March 11, 2015, Lesson #4) for 'I'm good at fishing.' Immediately after she said "that doesn't make sense." then reread and self-corrected her errors.

The second week (Lessons 6-10) Julia provided three kinds. She used questions twice to check her reading; asking herself "Am I mixed up?" and "Is that right? Yup, it's right." The confirming language of "Yup, it's right." supported Julia in her independent problem solving and she was able to keep reading.

Julia provided five kinds of egocentric speech during the third week (Lessons 10-15): one question, one self-correction, one statement and two short comments. When she asked the question "Is that right? she was able to reread and then commented "right" and "not, nope" even though she confirmed her error as correct. Julia had read "Let's" for "It's" in the sentence 'It's a sand castle." from *The Sand Castle*. It is possible when she

reread the sentence the visually similar substitution looked correct, but she was right that it did not sound right or make sense. On a different page within the same text Julia provided another way independent problem solving may be revealed while reading – a comment. She was reading a page where horseshoe crabs were pictured and discussed when she stopped and said "I want to say hermit crabs."

Her two short comments of "Right!" (Lesson #14) and " n – n – n – wait" (Lesson #15) demonstrated the confirming and disconfirming nature of egocentric speech. In both cases Julia was working to fix an error. The confirmation of "Right!" supported her ability to keep reading after self-correcting her error while "n – n – n – wait" marked two errors in a row within her reading. After she said the word "wait" she reread and self-corrected the two errors in her sentence.

In contrast, Julia demonstrated the way the verbal self-coaching of egocentric speech can assist in problem solving (Lesson # 11) while reading *The Super Dog Club*. She came to the sentence 'Let's start a club.' and said "Let's s - s – st – stairt – cut - start! a club." and then stopped. Her ability to coach herself through the work 'start' and eventually self-correct demonstrates how powerful egocentric speech can be for a student.

During the fourth week Hannah was the only student who provided an example of egocentric speech. Her attempts at the words 'have two' within the sentence of 'We have two towels' demonstrated the self-correcting way egocentric speech supports independent problem solving. She read "We h – h – haf – have two" and then she stopped, briefly leaving the impression that something needed to be done. When she reread she was able to read "We have two t – t – towels." and continued to read. There were no examples of

egocentric speech collected during the fifth week (Lessons 21-25), but three examples were provided during the sixth and final weeks of the intervention (Lessons 26-30). Hannah (Lesson #26) was reading *The Cooking Pot* and used a disconfirming comment while trying to solve 'what' within the sentence 'What have you got for dinner Mrs. Spot?' Hannah said "wh at (rhymes with cat), what (rhymes with cat). Not what (rhymes with cat), Wh at. Nope." She was unable to self-correct her error and eventually stopped trying.

Leah used verbal self-coaching language to read and confirm 'place', an unknown word within the sentence "You've come to the right place." She traced her finger under the word 'place' while subvocalizing the sounds. Then she reread 'place' and continued reading. Leah demonstrated the way confirming language can help with independent problem solving while reading. Leah's solving was fast, but observable as she slowed down to read through and confirm the unknown word. She never appealed for help during this short example and continued reading.

Lastly, Julia provided another example of disconfirming speech as a way independent problem solving may be revealed in the egocentric speech of a student. She was reading a version of *The Three Little Pigs* and read "down" for the word "in" within the phrase 'and I'll blow your house in.' She immediately said "No!" and reread the phrase and self-corrected her error.

4.2. In What Ways, If Any, Might Independent Problem Solving While Writing Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

The video-recording of the students' writing components provides the third lesson component and the first opportunity to observe each student physically engaged in

recording a unique message using known orthographic skills and writing conventions. This includes examples of each student's ability to hear and record sounds in order, record high frequency words, and the use of analogy to solve unknown words when writing words. My role as the teacher was to support each student in the recording process and to write the student's complete sentence on a strip of paper and cut this sentence into meaningful units so that the student can assemble the sentence and reread it for meaning.

Examples of egocentric speech were collected during the writing component of student lessons. A small corpus of examples was collected over the course of thirty lessons with the four students. Coding and graphing the first few examples was difficult due to the fluctuation between speech focused on recording the message and the students' assembly of the sentence pieces. This difficulty continued until I realized the need to create two inductive codes within the writing component. I went back and recoded the examples and created the sub-codes of Record and Assemble within writing.

Both sub-codes of the writing component confirm egocentric speech during the lesson and answer the research sub-question: *In what ways, if any, might independent problem solving while writing be revealed in the egocentric speech of a student receiving a reading intervention?* Students revealed independent problem solving using a statement, short comment and questions; additionally, there is evidence of disconfirming speech from this lesson component.

Julia (March 27, 2015, Lesson #14) wrote 'hald' for hold in the sentence 'I want to hold a horseshoe crab.' After writing 'hald' she looked at her word and slowly said 'h ooo l d' articulating an elongated long /o/ sound. Then she said "It's an o.", looked up

and said “Right? I wrote a.” The short example of egocentric speech embedded in “It’s an o.” after her slow rereading of the sentence and the elongated pronunciation of the vowel demonstrated the use of egocentric speech in her problem solving in writing. She possessed sufficient skill to create a self-correct plan, and a reflective phase of identifying her error and what is needed to fix it. Her appeal relayed in “Right?” did not stop her thought process and she immediately provided the short comment “I wrote a.” Julia just advanced her skill as a writer.

Earlier in the series of lessons Julia was assembling her sentence, a procedure focused on the reconstructing of the student’s own sentence (March 17, 2015, Lesson #6) when she asked: “Is that right? No!” She had written the message “The bumpy slide is my favorite slide.” in her writing book, but when the sentence was written on the sentence strip and cut into individual word pieces, she had assembled it to read “The is slide “ and then could not find the word “is” she needed to continue. She reread her sentence after asking “Is that right?”, a question she addressed to herself, and when she found her error, stated “No!”, a short example of disconfirming speech; the two examples together illustrated the problem solving action going on in her head. Once she found her error she was able to answer her question, fix her error and complete the task of putting the words from her sentence in order. Her two step prompt supported her independent problem solving.

4.2.1. Distribution of Egocentric Speech Samples over Time During the Recording Phase

In addition to the example described in the section above, two examples of egocentric speech were collected during the recording phase of the writing component.

While no examples were collected during the first week (Lessons 1-5) of session, Julia provided a second example during Lesson #14 (March 27, 2015) while writing the last word of her sentence "I want to hold a horseshoe crab, I think it will bite me." Just after writing the m for 'me' she wrote a line that slanted from right to left '/', stopped and said "Wait! Oh, I was going to write my." in a voice that relayed her amusement over such an error. She quickly recorded an 'e' once the line was covered and placed a period at the end of the word. Julia used the short comment "Wait!" to demonstrate how verbal self-coaching language can support independent problem solving while writing.

The third and final example was collected during the sixth week of the study. Leah (April 14, 2015, Lesson #26) was recording her sentence "My mom has three days off of work because she will work three days in a row." She was able to correctly record all words up to 'work' where she quickly wrote "wrck". She paused and said "No!" Once she saw how 'work' is written she fixed her error and was able to correctly write the word later in her sentence without looking at the model. The three examples of egocentric speech collected during the recording phase of the writing component contained disconfirming language.

4.2.2. Distribution of Egocentric Speech Samples over Time During the Assembly Phase

In addition to the example described in the section above, two additional examples of egocentric speech were collected during the assembly phase of the writing component. While no examples of egocentric speech were collected during the first week (Lessons 1-5) of session, the second of three example was collected during the second week of lessons (March 17, 2015, Lesson #6). Julia was assembling her cut up sentence

‘The bumpy slide is very high.’ After placing ‘The is’ she said “Is that right?” and reread the two words and exclaimed “No!” and quickly switched ‘is’ for ‘bumpy’ and completed her sentence.

The third example was collected during the sixth and final week of the study. Hannah (April 14, 2015, Lesson # 27) first assembled the words to say ”I want a cookie chip chocolate. No!” Because she was able to monitor the meaning and structure of her sentence along with the ‘cook’ part of ‘cookie’ she was able to rearrange ‘cookie’ and ‘chocolate’ to create her original message of ‘I want a chocolate chip cookie.’ The three examples of egocentric speech display some form of disconfirming speech.

4.3. In What Ways, If Any, Might Independent Problem Solving in the New Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

The last component of the intervention and the final opportunity to collect examples of egocentric speech was the reading of the new text. The new text is purposefully chosen to accelerate the student’s learning by providing just enough new challenge for the transference of fledgling problem solving skills. Examples of egocentric speech during the reading of the new text are routinely recorded on the Daily Lesson Record Sheet (Appendix C) and signals independent problem solving within an unfamiliar text as the student works to maintain meaning.

Student examples were collected to answer the sub-question *In what ways, if any, might independent problem solving in the new text be revealed in the egocentric speech of a student receiving a reading intervention?* I have written the example of egocentric speech and provided the student’s name and date of the lesson directly underneath each example with the lesson number also provided. Independent problem solving was

revealed through the student use of a (a) statement, (b) short comment, (c) self-correcting, and (d) evidence of confirming and disconfirming statements of "no!" and "yup!" from this lesson component.

Leah (March 20, 2015, Lesson # 10) was reading her new text *The Toytown Race Car,* when she said: "That doesn't sound right." She had read "It is racing in and out of"" when she made the statement to herself before finishing the sentence. Once she reread Leah was able to finish the sentence "It is racing in and out of the puddles!" Her egocentric speech provided the verbal self-coaching Leah needed to support the reading of a new text with an unfamiliar sentence structure. Her statement regarding how her reading did not make sense demonstrated a way independent problem solving may be revealed while reading a new text.

Two lessons later (March 25, 2015, Lesson # 12) Leah came to the word 'better' while reading a version of *Little Red Riding Hood.* She read the beginning of the sentence and when she came to 'better' she said "b-b-b better – yes!" and kept reading. This example of self-correcting language and the short confirming comment "yes!" demonstrated Leah's independent problem solving skills and the use of egocentric speech to support the continued reading of a new text. Because she possessed sufficient phonics knowledge to create a problem solving plan of attending to the first letter in the word and reading through the word while monitoring what would make sense in her reading, Leah was able to use a short confirming example of egocentric speech to support independent problem solving while reading.

4.3.1. Distribution of Egocentric Speech Samples over Time

Leah's egocentric speech samples were collected during the second and third week (Lessons 6-10 & 11-15) of lessons during the intervention. These examples were chosen to spotlight the variance of egocentric speech collected during the study. The new text lesson component provided a corpus of samples collected during the 30 lessons.

In addition to the two examples provided in the section above, Julia provided another example of how a statement can work as a way to support problem solving. While reading *Lost In the Woods* she read "We are goings." (March 6, 2015, Lesson #1) for 'We are dogs.' Immediately after she said "Doesn't sound right." and then reread and self-corrected her error.

During the second week of lessons (Lessons 6-10) no additional examples other than Leah's *The Toytown Race Car,* sample described in the section above were collected. The third week Leah's example of egocentric speech described above collected on March 25, 2015 (Lesson #12). That same day Julia (March 25, 2015, Lesson #12) also provided an example of disconfirming language that week while reading *A Trip to the Beach*. She read "I will leeed, nope, need." for "I will need my" within the sentence 'I will need my sunglasses at the beach.' Both examples demonstrate how egocentric speech supports students in problem solving while reading a new text.

The fourth week of lessons Hannah (March 16, 2015, Lesson #16) substituted 'went' for 'walked' while reading *A Bike Ride for Jack* and immediately said "nope!" She was not able to correct her error, but her disconfirming comment marked her dissatisfaction with the substitution. Leah was reading *The Seashell* (March 31, 2015, Lesson #17) when she omitted the word 'go' said "No." and immediately was able to reread and correct her error. When she reread she was able to read "Let's go look for seashells, Daisy said to Jack." These examples

demonstrate the way a disconfirming comment provides sufficient verbal self-coaching to support problem solving.

There were no examples of egocentric speech collected during the fifth week (Lessons 21-25), but two examples were provided during the sixth and final week of the intervention (Lessons 26-30). Julia (April 14, 2015, Lesson #27) was reading her new text, a version of *The Three Little Pigs* when she came to the sentence 'So off went the three little pigs.' Initially she substituted the visually similar word 'if' for 'off'. She stopped and said "Not if, it wouldn't make sense." She reread the phrase correctly and continued reading. The disconfirming statement Hannah made (April 15, 2015, Lesson #28) while reading *Baby Bear's Hiding Place* provided a similar example of how egocentric speech supported problem solving. Hannah read "Where are you?" correctly and then immediately said "I don't think it's right." She was able to reread and confirm she was correct and continue reading. Julia and Hannah demonstrated a way disconfirming statements can be revealed in the egocentric speech of a student that supports independent problem solving.

4.3.2. Summary of the First Theme

I collected examples of egocentric speech from the familiar text reading, second reading of the next text, and new text reading within the lesson. It can also be revealed in the writing component of the lesson during the physical act of recording their message and the students' assembly of their cut-up sentence.

The ways problem solving may be revealed in a student's egocentric speech as a 1) statement, 2) question, 3) self-correction, or 4) short comment.

4.3.3. Summary of the Second Theme

Data analysis identified a second theme of egocentric speech from this study as it can be used to confirm or disconfirm an attempt at problem solving in reading and

writing. Student use of short comments including “Yup, it’s right.”, “Yes!”, “That doesn’t make sense”, “I don’t think it’s right.”, “Not!”, and “Nope!” reveal how a few words of verbal self-coaching can impact students’ independent problem solving.

New analysis (Table 4.3) suggests that some form of disconfirming speech is the predominant form of egocentric speech students used when problem solving. This finding is evidenced by the data from the second reading of the new text, the assembly phase within the writing component, and the reading of the new text lesson components.

Table 4.3 Tally Table for Confirming and Disconfirming Speech Revealed During the Lesson Components

	Familiar Text	**Second Reading of New Text**	**Writing** Record	**Writing** Assemble	**New Text**
Confirming	J	J J J	J	J J H	L
Disconfirming	J J	H H H J J J N	J L	J J L	H H J J J L L

Note. Note. H = Hannah, J = Julia, L = Leah, N = Nora

Analysis of the table identified Julia and Hannah as students who used confirming and disconfirming examples of egocentric speech throughout the lesson. Julia used confirming speech in most lesson components and disconfirming speech in all lesson components. Hannah used disconfirming speech during the reading of the new text and the second reading of the new text lesson components. Her one example of confirming speech was collected during the assembly of her cut up sentence. Leah used disconfirming speech during the recording and assembly phases of the writing components with one example of confirming speech collected during the reading of a new text. Nora’s one example came as a disconfirming speech during the second reading of a new text.

4.3.4. Summary of the Third Theme

The four students in this study used egocentric speech while engaged in problem solving during the reading and writing with different frequencies and in different lesson components. Data analysis confirms more examples of disconfirming speech than confirming speech during problem solving. The second reading of the new text and the reading of the new text have the highest frequency of speech samples.

4.4. Student Behaviors Changed Over Time

My analysis of the data identified two oppositional physical reactions when students engage in egocentric speech while problem solving (Table 4.4). The first is a shift in body position towards the teacher or an appealing look towards the teacher that included a direct look, eyes shifting back and forth between the book and the teacher, and leaning towards the teacher at point of difficulty. This was coded as a Physical Behavior with movement Towards the teacher (PB-T) within the Coding Dictionary (Appendix G). This appealing look often accompanied a direct request for help and was most observed during the second reading of the new text as represented in the table.

The second physical reaction frequently observed during the study was unexpected and added on March 17, 2015 to address the behavior of attending to the print when engaged in egocentric speech while reading. Students were observed using egocentric speech during problem solving text in reading and writing without moving either towards or away from the teacher. Students continued to look at the page;

- might put their finger under the word and subvocalize letter sounds;
- look up, but not at teacher; and
- turn back to a previous page and then return to the problem solving page.

The code Physical Behavior-Attend (PB-A) was created to address the student behaviors of continuing to look at the text while problem solving. The necessity of this code was confirmed when examples were collected within the three reading components of the lesson and the writing component over the six weeks of the study.

At no time while engaged in egocentric speech did a student appear to shift away from the teacher. While I have observed this behavior in past years, it was not observed during this study.

Table 4.4 Tally Table for Physical Behaviors Exhibited During Egocentric Speech

	Familiar Text	**Second Reading of New Text**	**Writing** Record	**Writing** Assemble	**New Text**
Towards	J	H J J J J J J N	J L		H J J L
Away					
Stress		H			
Attend	J J H	H H J J J L	J	J J H	H J J L

Note. Note. H = Hannah, J = Julia, L = Leah, N = Nora

The student use of the indirect shifting body position towards the teacher as an appeal for help or the direct verbal request for help while engaged in egocentric speech was used by all students in the course of their intervention. Appeals were used by all students with varying frequency within all reading components of the lesson and the recording phase of the writing component. No examples of appealing behavior were observed during the assembly phase of the writing component. Julia appealed for help from the teacher at least once during all lesson components while Hannah, Leah, and Nora used appeals less frequently. A significant number of student appeals occurred during the second reading of the new text with the majority provided by Julia. Hannah, Julia and Leah appealed for

help during the reading of the new text while Julia and Leah appealed for help while reading a new text. Julia provided the only example of an appeal during the reading of a familiar text.

Stress behaviors were observed in just one example provided by Hannah and it appeared in combination with an appeal. The examples below include an underlined word to illustrate how the student initially read the text which is written on top as compared to the text within the book which is written underneath.

Hannah (March 30, 2015, Lesson #16) was engaged in the second reading of her new text *Getting Ready* and came to the sentence "I hope I get to go." She read:

I h-h-ho (hope) I go-to go (get) to go. That doesn't sound right.

After working to solve her multiple errors she glanced up and said "I don't know. Can you help me?" using a tone of voice that relayed her frustration and lack of confidence. Once provided the word 'hope' Hannah was able to connect with the meaning embedded in the sentence and continue reading successfully. If she had made the comment in a regular tone of voice the behavior would have been coded as an appeal, but the tone relayed a sense of frustration and stress, resulting in the only speech coded in two categories of Towards and Stress and the only stress behavior observed in the study.

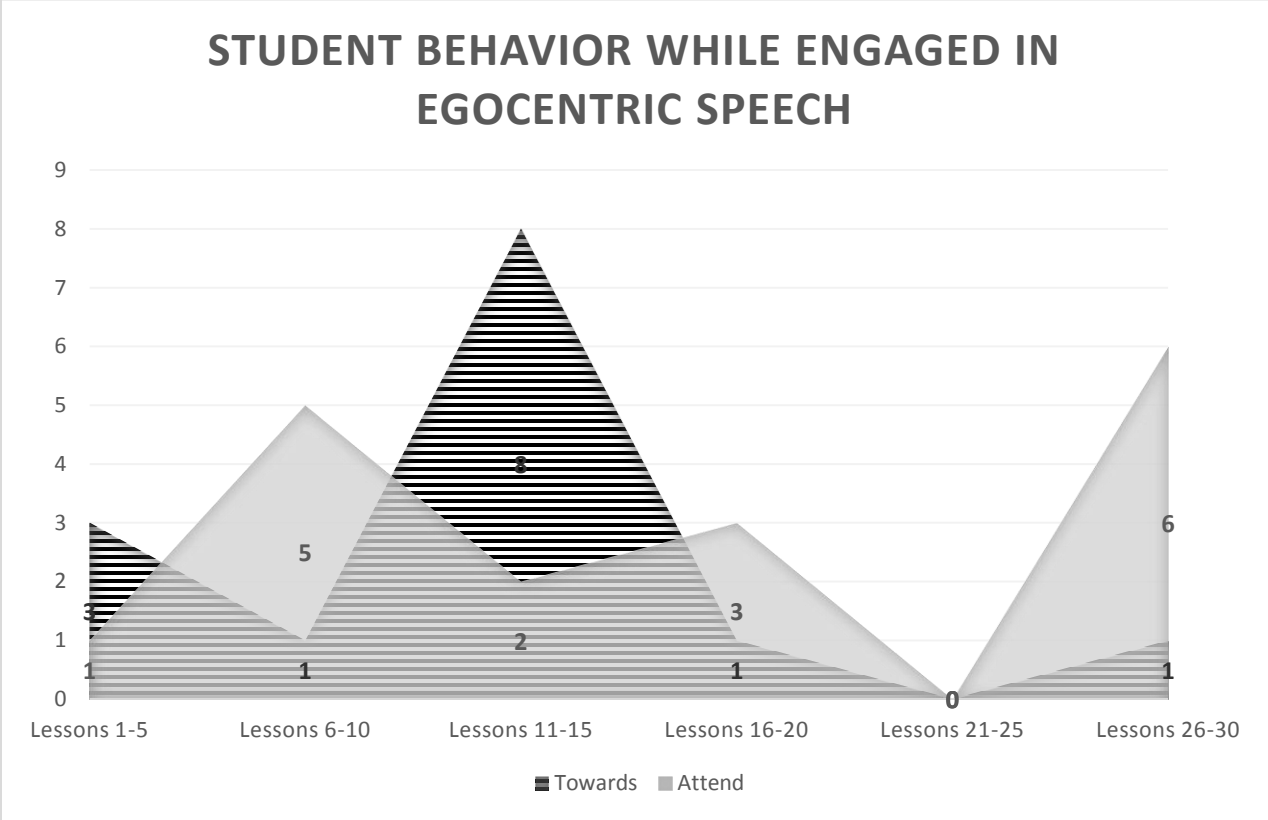
Attending behavior at the point of difficulty was observed in all reading components of the lesson as well as the recording and assembly phases of the writing component. Julia demonstrated attending behavior while engaged in egocentric speech during all reading components and both phases of the writing component. Hannah demonstrated attending behaviors with less frequency than Julia, but still was observed attending while engaged in egocentric speech during the three reading components and the

assembly phase of the writing component. Leah was observed engaged in attending behavior once during the second reading of the new text and while reading a new text.

Leah's example of attending behavior while engaged in egocentric speech on April 14, 2015 (Lesson #27) highlighted the independent problem solving students demonstrated with increased frequency over time. She was looking at the text and working to solve the word 'better' on the second reading of a new text. The problem solving events of this example were described in a previous section, but it is her attending behavior at the point of her error and her ability to confirm for herself that her correction was indeed correct that highlighted her ability to use a short comment as verbal self-coaching. She did not look up or appeal for help and there were no stress behaviors displayed. Leah's behaviors displayed a problem solving reader in action who used a short example of egocentric speech to confirm for herself that the required correction had been made.

The student behavior of physically shifting towards the teacher which may be accompanied with a verbal appeal for help appears to peak during Week 3, Lessons 11-15 and then diminish as represented with striped shading in the background of Graph G1. Frequency of the appealing behavior is provided with the observable peak. At the same time the attending behavior represented in light grey remains observable with a possible increase as the research window concluded.

Figure 3 Analysis of the Physical Behavior of Towards vs Attend as Exhibited During Egocentric Speech. This figure illustrates the shift over time of student physical behaviors from towards to attend.



No student behaviors associated with egocentric speech were collected during Week 5, Lessons 21-25. A second analysis of video-taped lessons and a re-examination of students' Lesson Record (Appendix C) and Running Records (Appendix D) from Week 5 confirm this observation. While students were engaged in problem solving during the reading (Appendix M) and writing (Appendix N) components of the lessons and academic gains resulted, no examples of egocentric speech were collected during the five lesson span of the fifth week of lessons. During the sixth and final week of the study

attending behaviors while engaged in problem solving verbal self-coaching peaked while the appealing behaviors remained at a minimum.

4.4.1. Summary of the Fourth Theme

I collected examples of student behaviors when engaged in egocentric speech during student problem solving within the three reading and one writing component of the intervention. Data from the study suggest the physical behaviors students demonstrate while engaged in egocentric speech shift over time from moving towards or appealing to the teacher for help at point of difficulty to attending to the task and working independently.

4.5. Outliers

My review of the literature (Miles, Huberman & Saldana, 2014) suggests that outliers work to define the edges of a phenomenon in order create a deeper understanding by demonstrating what is just beyond the edges, and therefore not part of the phenomenon. Outliers in this study include comments made about characters or events in the text that relay a level of comprehension or understanding of the theme and action of characters versus problem solving. Hannah provided an outlier (April 12, 2015, Lesson #26) while problem solving on the second reading of her new text. The text said ‘What have you got for dinner Mrs. Spot?’ forcing Hannah to solve the first word of the text ‘What’ within the context of the sentence because she was not able to read it as a high frequency word. Her attempts at breaking the word into parts demonstrated she knew /wh/ and ‘at’ (rhymes with cat) but she was not able to produce a word she recognized. She used the short example of egocentric speech “Nope” to signal her dissatisfaction with the problem solving process, but then added “Wait, I forgot.”

wh at (rhymes with cat)

what (rhymes with cat)

Not what (rhymes with cat)

Wh at
Nope. Wait. I forgot.

"Wait, I forgot" is not an example of egocentric speech because it did not relay the verbal self-coaching needed for problem solving and it did not look or sound like an appeal. Up to that point Hannah was working to self-correct, but "I forgot" is an outlier. Because Hannah did not exhibit any appealing behaviors it is clear she was relaying a message to herself that her visual cueing system also known as phonics knowledge was not working. Hannah produced an egocentric speech outlier with "Wait. I forgot." that reflected a break down in problem solving behavior, but did not support actual problem solving whereas an appeal is an effort to solve the problem with teacher support.

Nora commented on punctuation during the second reading of her new text (March 6, 2015, Lesson #2). Her comment "And this one has no period except for at the end" accompanied her pointing to a sentence in the book. Because the text in the book was written using two lines of print on the page Nora wondered if there should be a period at the end of the first line of print instead of at the end of the sentence. This outlier relays a growing understanding about punctuation, but is not an example of egocentric speech during problem solving.

While reading a familiar text (April 10, 2015, Lesson #26) where one little bear was jumping rope, Leah remarked "I can jump rope good. I tried it with two jump ropes and I only made it one time." Her personal connection to the topic demonstrated an ability to read and comprehend the text, make a personal comment and then return to the book and continue reading. While this is not an example of egocentric problem solving

speech it does illustrate how a reader may interact with another person about a common text. In my data analysis this example is another example of an outlier.

These examples are a sample of outliers collected from this study. Most examples demonstrate student thinking about effective or ineffective problem solving, comments about text features, and relaying a personal comment connected to a text. While some examples were collected during the writing component of the intervention, most occurred during the three reading components.

4.6. Summary and Conclusion of Findings

The four themes identified in the data analysis from this study include 1) egocentric speech was revealed during all lesson components in the form of either a statement, question, self-correction, or a short comment, 2) students used short examples of egocentric speech to confirm or disconfirm when problem solving, 3) students use egocentric speech while engaged in problem solving with different frequencies and in different lesson components and 4) student behaviors while engaged in egocentric speech appear to shift over time from moving towards or appealing to the teacher for help at point of difficulty to attending to the task and working independently.

The problem solving examples of student speech collected during this study confirm the phenomenon of egocentric speech. The examples demonstrate ways it may be revealed in the verbal self-coaching of students receiving a one-on-one literacy intervention focused on the lowest 20 percent of first graders as identified by *The Observation Survey of Literacy Achievement* (Clay, 2013).

I discuss the implications of these themes in the following chapter. Limitations and implications are also included in Chapter Five, along with suggestions for future research.

CHAPTER FIVE

DISCUSSION AND IMPLICATIONS

This study examined four students' egocentric speech while receiving a one-on-one literacy intervention. Research documents the effectiveness of one-on-one interventions, student problem solving while engaged in literacy learning and speech development in beginning learners. Now it is vital to collect examples of egocentric speech in order to better understand the role it plays in student problem solving while engaged in reading and writing learning.

Chapter Five begins with a discussion of the research question and identified themes culled from the findings outlined in Chapter Four. A discussion of limitations and implications of the study is included and suggestions for future research conclude the chapter.

Four themes address the main question in the study of *how might independent problem solving be revealed in the egocentric speech of a student receiving a reading intervention**?*** As stated in Chapter Four the themes include 1) egocentric speech was revealed during all lesson components in the form of either a statement, question, self-correction or short comment, 2) students used short examples of egocentric speech to confirm or disconfirm when problem solving 3) students use egocentric speech while engaged in problem solving with different frequencies and in different lesson components and, 4) student behaviors while engaged in egocentric speech appear to shift over time from moving towards or appealing to the teacher for help at point of difficulty to attending to the task and working independently.

5.1. How Might Independent Problem Solving be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

Examples from this study confirm the phenomenon of egocentric speech as students worked to independently problem solve during the three reading and one writing components of the intervention. Student problem solving may be revealed in a student's egocentric speech as a statement, question, self-correction or short comment as documented in Chapter Four. Additionally, the student examples provide documentation of how students used language as a cultural tool on emerging literacy skills and as a sign or psychological tool to organize thinking (Bedrova & Leong, 1996; Vygotsky, 1978) as outlined in Chapter Two.

While examples were collected during all lesson components, it is difficult to know if instruction took place within a student's ZPD. As discussed in Chapter Two the ZPD is established in collaboration with more capable other (Tharp & Gallimore, 1988; Vygotsky, 1978). The first weeks of the intervention work to develop report between the teacher and student and to define each student's ZPD. Future collaborative work between the teacher and student takes place within the Zone once focused instruction begins. An additional complexity is the dynamic nature of the ZPD; students could reside for seconds, minutes, days or longer within the Zone (Vygotsky, 1978), creating a measurement and instructional challenge.

Analysis of the data identified Julia and Hannah as students who used egocentric speech during the three reading and one writing components of the lesson. Julia used the verbal self-coaching speech in all lesson components while Hannah used egocentric speech during the three reading components and the assembly phase of the writing

component. Leah used egocentric speech during both the record and assemble phases of the writing component and during the reading of the new text while Nora's sole example was collected during the second reading of a new text.

Moreover, it is clear that Julia and Hannah used the verbal self-coaching that egocentric speech provides to a greater degree than Leah and Nora. One could speculate that Julia and Hannah's monitoring systems needed to hear the problem solving language as part of the verbal self-coaching process. All students' ability to transfer knowledge to various lesson components demonstrated a capacity to monitor the circumstances and apply the necessary strategy. Since transfer includes knowing how and when to apply the problem solving strategy (Dorn & Soffos, 2001) these students demonstrated such flexibility. It appears that egocentric speech supports this transfer especially for Julia and Hannah to assist in the application of fledging skills in reading and writing. Additionally, it may provide insight into the learning style of these students.

Leah and Nora's reduced use of egocentric speech could indicate a shift towards the use of inner speech while problem solving. As discussed in Chapter Two, someone might believe these students are on the cusp of developing the in-the-head problem solving or *inner speech*; the silent in-the-head, dialogue key to internalization and independent use as the student engages in learning (Vygotsky, 1978). Therefore they do not need the verbal self-coaching that egocentric speech provides. Further studies are needed in this area.

The variety of student speech collected during the study included:

- statements;
- questions;

- self-corrections; and
- short comments.

Each example was collected while the student was attending to the print and not engaged in any appealing behavior; these examples provide insight into egocentric speech and the verbal self-coaching that accompanies the problem solving. The self-corrections are the result of the student's ability to self-monitor, or conduct a self-check on a problem solving attempt.

This is significant because it provides the teacher with evidence of in-the-head or intracognitve (Lyons, 2003; Tharp & Gallimore, 1988) processing. It is a window into the thinking that the student is engaged while reading and writing. For example, when a student makes the statement "right," "not", "nope" and "Oops, I was going to write my" the student's engagement with the text is evident as well as an attempt to make meaning. Questions like "Is that right?" relay an act of self-monitoring with the direct question spoken. Whereas "Outside his home?" signals a mismatch between the author's and reader's message. Both types of questions communicate the student's self-monitoring and self-questioning behavior.

Students have also been observed using a short comment in combination with a self-correction. Leah's (March 31, 2015, Lesson #17) example demonstrates how the short comment relays the message that the student knows when something is not quite right.

"Daisy said Jack – no. Daisy said to Jack."

Alternately, sometimes just a short comment accomplished the task, Hannah (March 11, 2015, Lesson #4) uses just the short comment of 'not!' to signal a mismatch and the

need to reread and fix an error. She doesn't need to comment further as she re-engages with the text and continues reading.

laying
"I am going to – NOT! I am going to."

Teachers and researchers sensitive to the verbal self-coaching and active problem solving in action these speech samples provide are able to provide clear and specific feedback to students whether to encourage continued problem solving behavior or provide targeted instruction. This window into students' thinking can provide clear examples of what each student is attending to when problem solving and relays to the sensitive teacher what the student may not be attending to when problem solving. Attention to egocentric speech could bring contingent teaching (Wood & Wood, 1996) or the ability for teachers to provide specific instruction and support to each student as needed and then fade out the support, to every student.

5.2. In What Ways, If Any, Might Independent Problem Solving on Familiar Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

Independent problem solving during the reading of a familiar text was revealed through the student use of a (a) question, (b) short comment, and (c) self-correction. Only Julia provided egocentric speech samples while reading familiar texts. She used the short comments in conjunction with self-correcting language to confirm or disconfirm their attempts. Confirming and disconfirming statements similar to "yup!" and "no!" provide a glimpse into her problem-solving thought. The confirming statements appeared to relay permission to keep reading, while the disconfirming examples relayed a message to try again.

These examples demonstrate how egocentric speech supported Julia's reading of familiar texts. Hannah, Leah and Nora could have used in-the-head problem solving to support fluent problem solving ability in reading during this lesson component or ignored their errors and continued reading. Additionally, it is possible an alternate, as yet undiscovered explanation exists to explain their behavior.

5.3. In What Ways, If Any, Might Independent Problem Solving on the Second Reading of a New Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

Examples of egocentric speech were collected during the second reading of the new text component. Independent problem solving was revealed through the student use of a (a) statement, (b) question, (c) self-correction, and (d) short comment. All students used the verbal self-coaching that egocentric speech provides during the second reading of a new text. Hannah and Julia used the statements of "That doesn't make sense." and "I want to say hermit crabs." as markers to stop and check their reading. Julia and Nora used questions while reading; these questions articulated a tension created by a miss-match between what they had said and their comprehension of the text. Their question "Am I mixed up?" and "Is that right?" relay that tension.

All four students used self-correcting language, often in combination with confirming or disconfirming statements. Evidence of confirming and disconfirming statements of "right" and "not, nope" were used. The confirming statements appeared to relay permission to keep reading, while the disconfirming examples relayed a message to try again. One could speculate that the variety and volume of speech samples collected are due to the cognitive demand of reading a text only seen once before and

reading it without teacher support. Students working within their ZPD without teacher support layer in the supportive language their teacher has used in the past to read the current book. The 'buds' of learning Vygotsky (1978) described and were discussed in Chapter Two begin to mature supporting what appears to be learning in action.

5.4. In What ways, If Any, Might Independent Problem Solving While Writing Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

Examples of egocentric speech were collected during the writing component of student lessons and were observed during the recording and assembly phases. Hannah, Julia and Leah revealed independent problem solving using a (a) statement, (b) question, and (c) short comment. All three students used statements to reflect on the process of writing, including "I'm getting mixed up" and "Ooops, I was going to write my." Hannah and Leah used "No" as a marker to stop the assembly of their cut-up sentence and fix an error. Julia provided two examples where a short comment and question prompt her to reread and fix her error: "O. It's an o right? I wrote a" and "Is that right? No" demonstrate the combination. In the first example she appealed for help and with the second she reread and self-corrected her error independently. Given the difference in her ability to work independently, one could speculate that she is becoming more independent and confident in her problem solving skills leading her to attend to her reading and work independently. One can only speculate what a close examination of the writing component within the intervention would reveal. It is possible a subtle difference between the combination of speech types used when students appeal for help and the combination of speech types when they attend and solve independently could be detected.

5.5. In What Ways, If Any, Might Independent Problem Solving on a New Text Be Revealed in the Egocentric Speech of a Student Receiving a Reading Intervention?

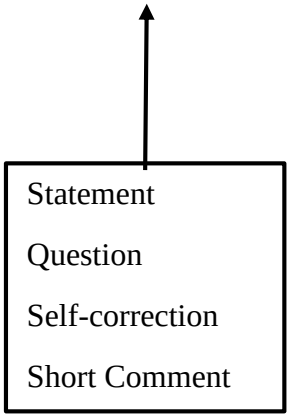
Independent problem solving was revealed through the student use of egocentric speech while reading a new text including the use of a (a) statement, (b) self-correction, and (c) short comment. Hannah, Julia and Leah used the verbal self-coaching that egocentric speech provides while reading a new text. Julia and Leah commented when the reading did not sound right, a possible reference to a mismatch between their anticipated oral language and their ability to comprehend.

Self-corrections were often precipitated by short comments of disconfirming speech with follow-up comments confirming the self-correcting was accurate. In no lesson component was this behavior more evident than the reading of a new text. It is possible the novelty of a new text and the problem-solving demands benefit from a disconfirming and confirming speech frame. Additionally, I was surprised this did not happen during the rereading of familiar text. Further study of this surprising finding is called for; a larger collection of examples gathered from this lesson component might provide insight.

5.6. Student Speech Within the Zone of Proximal Development

Students consistently used four types of egocentric speech within the lesson components. Each type of speech appeared to signal the students' attention to or attempt at problem solving while reading or writing within the intervention. Figure 3 provides a visual representation of this finding; the arrow will connect the samples to egocentric speech within the ZPD.

Figure 4. The Four Types of Egocentric Speech Revealed. This figure illustrates the egocentric speech revealed during the three reading and one writing lesson components of the intervention.

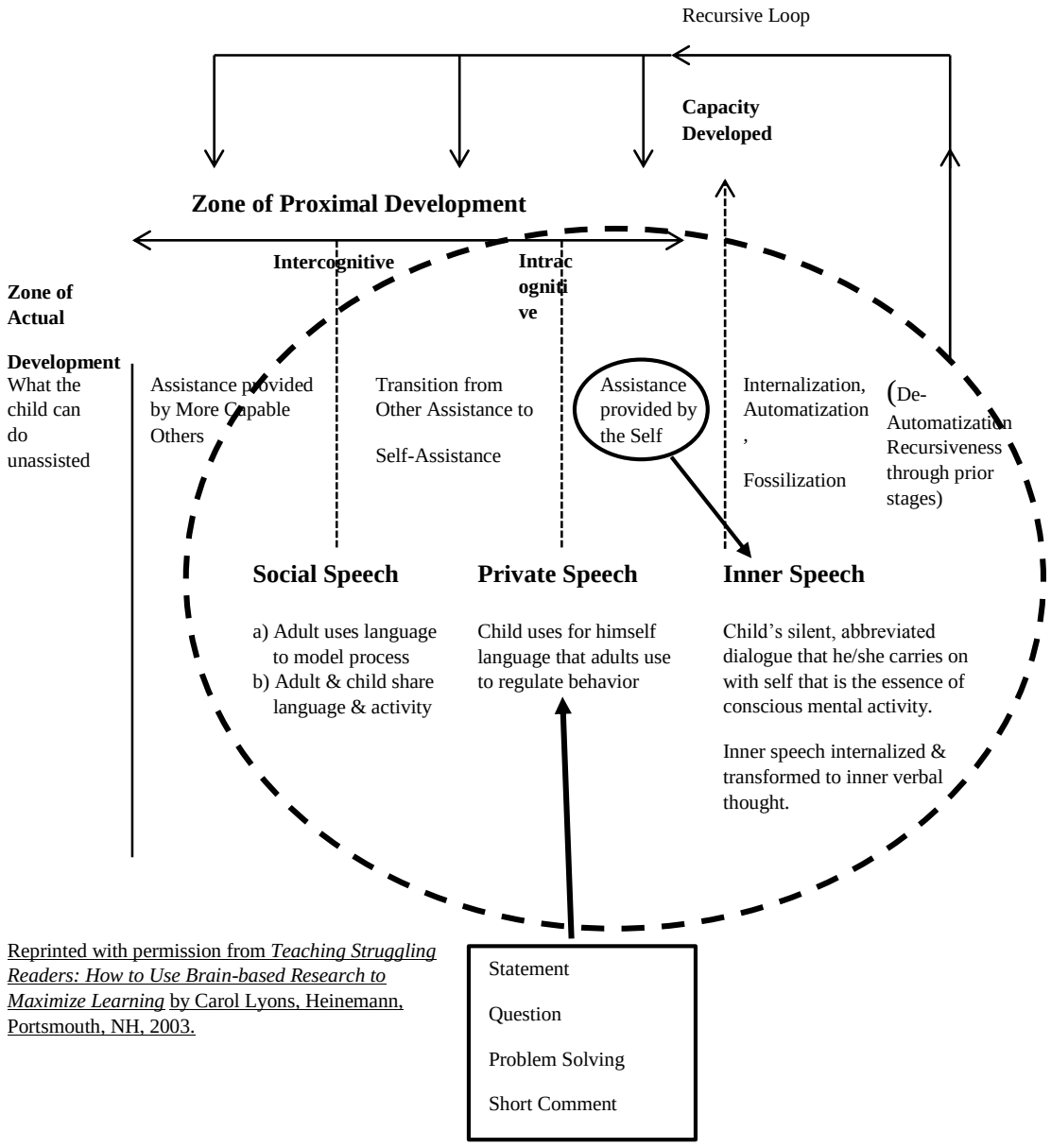


The dotted oval below highlights Lyon's (2003) explanation of the transition from social speech to private or egocentric speech and how thought, spoken out loud, works within the ZPD. Based on the findings of this study I propose an addition to the figure as clarification of what egocentric speech sounds like within a literacy intervention and the possible role it plays in students' independent problem solving. By connecting Figure 4 to the established figure a demonstration of speech is provided. Figure 5 works to provide a graphic that demonstrates where the examples were collected. This study confirms the phenomenon of egocentric speech and proposes where the verbal self-coaching works to support the Recursive Loop within the ZPD.

The smaller oval encircling "Assistance provided by the Self" highlights an existing part of Figure 5 (Lyons, 2003). The student's ability to successfully self-assist in problem solving also demonstrates qualities of executive function (Cartwright, 2012) including the ability to make a plan including prioritizing and sequencing behavior to problem solve, the demonstration of a working memory to call upon needed problem

solving skills and strategies, and the ability to handle novel, or new reading or writing demands. When the student is able to provide the self-assistance needed to problem solve, a shift towards inner speech results and a capacity for problem solving is formed. One could speculate Julia's "I will climb. Is that right? Yup, it's right." (March 19, 2015, Lesson #8) demonstrates egocentric speech in action that results in a successful "Assistance provided by the Self" supported by qualities and processes of executive function (Cartwright, 2012; Duff, Schoenberg, Scott & Adams, 2005).

Figure 5. Types of Egocentric or Private Speech Collected. This figure illustrates the types of egocentric or private speech located within the Zone of Proximal Development.



Reprinted with permission from *Teaching Struggling Readers: How to Use Brain-based Research to Maximize Learning* by Carol Lyons, Heinemann, Portsmouth, NH, 2003.

Evidence of egocentric speech collected from the study marked an important step in a student's progression through the ZPD. The verbal self-coaching that egocentric speech provides works to support the student and is the "Assistance provided by the Self" highlighted by the oval in Figure 5. It signals within each student an ability to

guide and direct behavior that leads to self-regulation, or independent problem solving instead of the socially mediated problem solving used in social speech provided during instruction.

5.7. Egocentric Speech Used in Problem Solving to Confirm or Disconfirm

Some egocentric speech samples appeared to signal an attempt to confirm while reading and acted as the verbal self-coaching needed to decide if the text made sense or the letters in the word looked visually correct when compared to the text. The confirmational speech included the short comments of "yup!" and "yes" and appeared to encourage the student to keep reading.

Other egocentric speech samples signaled that the student had noticed a problem or mis-match while reading or writing. The short disconfirming language included the short comments of "No!", "Nope", "Not!" and "Is that right? No!" and were observed while the student attended to the reading and writing task and did not signal an appeal for help. The disconfirming examples of these two types of speech are provided in Table 5.1.

Table 5.1 Examples of Confirming and Disconfirming Speech

Confirming Speech	Disconfirming Speech
wanted to build a home / house yup! House	and I blow your house down no! in
sea shells – right? sea shells (slow check) yup!	l-eeeed I will need – nope need
b-b All the better - yes!	went He walked – nope.
I will climb Is that right? Yup, it's right.	cookie I want a chocolate chip chocolate cookie. No!
	Meanies sleep in old tin cans. garbage - Is that right? No!
	One day number On No!
	laying I am going to Not!
	Daisy said to Jack. No!

The short examples of confirming egocentric speech appeared to bridge the student's problem solving from the verbal self-coaching of egocentric speech towards

inner speech. This independent intracognitive (Lyons, 2003) problem solving was more refined and supported the higher level of problem solving needed for the internalized, in-the-head thinking of inner speech. The arrow linking "Assistance Provided by the Self" to Inner Speech shown in Figure 4 demonstrates the bridge egocentric speech appears to provide during independent problem solving. This bridge is needed in order for a student to become self-regulated in reading and writing because it is dialogue or the verbal self-coaching the student has engaged in and addressed to no one but the student. It will only take the next step of the student to conduct this dialogue in-the-head where problem solving goes silent and becomes inner speech for self-regulation to be established. Tharp & Gallimore, 1988 describe this phase as "internalization, automatization, fossilization" because it is behavior that is regulated by the student, a process they labeled *intra individual functioning*. While it is possible this connection is implied within the original graph, data provide specific examples of student egocentric speech in order to advance the understanding of the transformation of egocentric speech to inner speech and self-regulation or a developed capacity for problem solving and links to executive function.

Disconfirming examples of egocentric speech can act as a signal to try again. The mismatch between what the student read and what is printed in the page can initiate disconfirming speech and problem solving behavior. This example demonstrates how the student was able to notice an error, use disconfirming speech to stop herself and then self-correct the word:

l-eeeed

I will need – nope need

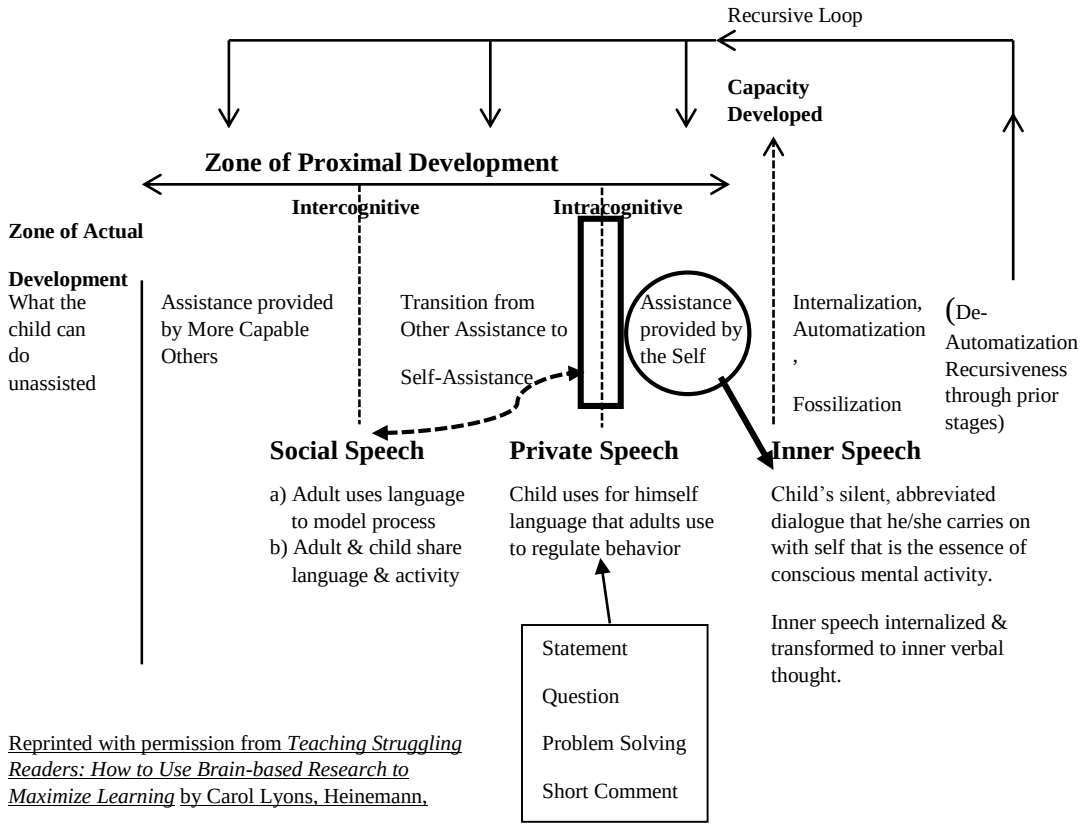
This elongated example of egocentric speech that included problem solving, disconfirming speech and self-correcting never leaves the realm of "Assistance provided by the Self." The fluid movement between the different types of speech and independent problem solving is portrayed by the rectangle in Figure 6 framing 'Private Speech'. The student is actively problem solving. This activity could be thought of as movement within or around private or egocentric speech necessitating the space or width defined by the rectangle. The concept of a width within the ZPD was discussed in Chapter Two (Gaffney & Anderson, 1991).

A different student example demonstrates a shift from egocentric speech while problem solving to the need for the support of teacher supplied social speech, both of which reside within the ZPD. The student's multiple attempts at reading the word 'hope' with the last attempt producing the word 'ho' ultimately leads to disconfirming speech and an appeal for help:

h-h-ho go-to go
I hope I get to go (student stops reading and shakes head)
That doesn't sound right.
I don't know. Can you help me? (high pitched appeal for help)

This example of student problem solving speech starts with egocentric speech, but when it shifted to an appeal that demonstrates frustration and a lack of confidence, the teacher's social speech was needed. Once the teacher told the student the word and modeled reading the word by running a finger under the word to the final sound, the student was able to reread the sentence and correct the remaining error. Disconfirming speech that needs social speech to problem solve is portrayed by the double sided dotted arrow connecting social speech to private speech in Figure 6.

Figure 6. The Role of Confirming and Disconfirming Speech. This figure illustrates the role student examples of confirming and disconfirming speech displayed within the intervention.



Evidence of confirming and disconfirming egocentric speech collected from the intervention demonstrate the fluidity of students' problem solving abilities. The double sided arrow demonstrates how the transition from social speech to private or egocentric speech could include a lapse when the challenge within the task is too great and teacher support is needed.

The oval surrounding "Assistance provided by the Self" with the solid arrow pointing towards 'Inner Speech' demonstrates problem solving exhibited by Julia (March 23, 2015, Lesson #11) while reading the sentence 'Let's start a club.' She said "Let's s - s – st – stairt – cut - start! a club." Julia provided assistance to herself is

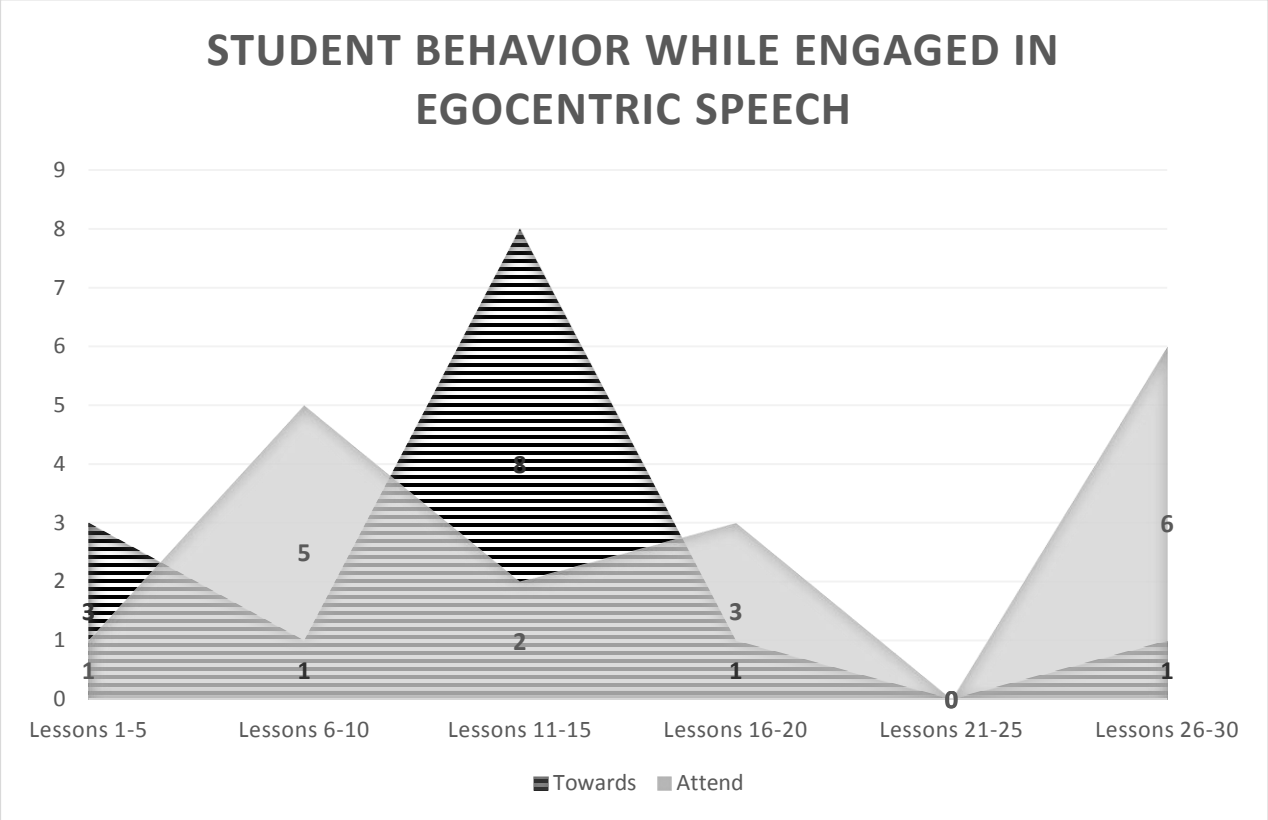
solving the words ‘start’ and ‘club’ and continued reading. One could speculate the audible problem solving was followed by an internal verbal thought confirming she had solved her problems; that internal confirmation is an example of inner speech. The power of inner speech serves as a catalyst for elevating the thinking towards the recursive loop discussed in Chapter Two and the ZAD.

5.8. Student Behaviors Changed Over Time

The data collected regarding student behaviors while engaged in egocentric speech during problem solving highlighted oppositional physical reactions. The first is a shift in body position towards the teacher or an appealing look towards the teacher at point of difficulty. This appealing look often accompanied a direct request for help and is represented in stripes on Figure 5.1.

The second physical reaction frequently observed during the study was not anticipated in the study design. Students were observed using egocentric speech during problem solving in reading and writing without moving towards the teacher, away from the teacher, or displaying any stress behaviors. The student attended to the task of reading or writing and was able to problem solve. This self-monitoring and correcting behavior is represented in light grey on the graphic.

Figure 7 Representation of the Change in Physical Behavior Over Time Within the Study. This figure illustrates the shift over time of student physical behaviors from towards to attend.



Student behavior changed over time within the intervention as demonstrated in Figure 7. Time as measured in weeks runs along the x axis with frequency of behavior represented on the y axis. Student appealing behaviors are represented in the graph with striped shading; appealing behaviors included looking at the teacher and asking for help when problem solving on text or in writing. It is noticeable that this behavior peaks within the middle of the study and then diminishes. The data suggest that students appealed for help during the first few weeks of the intervention and because the behavior

diminished by the end of the study, students did not appeal for help when engaged in egocentric speech when problem solving as they did at the beginning of the intervention.

Further analysis revealed this behavior was not effective or necessary for the students as they progressed through the lessons and were reading more complex texts and writing more complex sentences. Appendix M documents the growth in reading and Appendix N demonstrates the increased number of words each student was able to write independently while appealing behavior diminished. One-on-one instruction was supporting this literacy growth and the students were becoming more independent problem solvers.

In the literature social problem solving (Siu & Shek, 2010; Dinwiddie, 1994) is a multi-step cognitive process teachers used to assist students in solving social problems. The steps within the social problem solving process are reflective of the cognitive apprenticeship instruction (Dorn & Soffos, 2001; Mooney, 1990) of the one-on-one intervention (Clay, 2005a, 2005b, 2013) as examined earlier. Intervention teachers use consistent language to model and instruct students in literacy problem solving strategies; the teachers use social speech to support students' acquisition of egocentric speech when problem solving. As the student develops inner speech the literacy behavior becomes self-regulated (Tharp & Gallimore, 1986). The appealing behavior used by students at the beginning of the intervention was replaced by attending; this independence in problem solving demonstrates literacy growth. The students no longer ask for help because they can attend to and solve their own reading and writing problems, demonstrating self-regulation or executive function.

5.8.1. Attending Behavior

While appealing behavior (represented with the striped shading) diminished over time the attending behavior (represented in light grey) increased. Students attending to the task while engaged in egocentric speech appears to peak multiple times within the six weeks of the study. The first peak could reflect the instruction provided during the intervention, as students benefited from the direct instruction of the one-on-one intervention they would be able to engage in the verbal self-coaching of egocentric speech. The peak of appealing behaviors and the dip in attending behaviors occur during the same week and because of the oppositional nature of the behaviors it makes sense that as appealing increased attending could decrease. As appealing diminishes after the peak, attending peaks twice. It appears that by the end of data collection students are attending to the task of problem solving and the increase in independent problem solving could be a result of the instruction.

No examples of egocentric speech were collected within the five lessons of the fifth week of the intervention. While this is a curious finding, a second analysis of video-taped lessons and a re-examination of students' Lesson Record (Appendix C) and Running Records (Appendix D) from Week 5 confirm this observation. It is possible the silent in-the-head or intracognitve problem solving of inner speech took place during this time span and then reappeared. Further analysis, possibly of eye movements and lessons records would be needed to confirm this thinking. Attending behaviors reappeared during the final week of the study, which coincided with an increase of text difficulty as demonstrated on the student reading graphs located within Appendix M. One could speculate that the limited number of cases attributed to a lack of examples

during this week of instruction or that the challenge within the books read was greater for each student than the previous week.

Table 5.2 demonstrates that the most examples of attending behavior while engaged in the verbal self-coaching of egocentric speech was observed during the second reading of the new text. This is the new text introduced and read once by the student at the end of the previous day's lesson. This lesson component has the least amount of teacher support, serves as the daily formative assessment and takes place right after the student reads familiar texts.

Table 5.2 Frequency of Attending Behaviors While Engaged in Egocentric Speech by Lesson Component

Familiar Texts	**Second Reading of New Text**	**New Text**	**Writing** Record	Cut up
I I I I	~~I I I I~~ ~~I I I I~~ ~~I I I I~~	~~I I I I~~ I I I I	I I I	I I I

The data suggests that the second reading of the new text supplied the most examples of egocentric speech while the student attended to problem solving. This is expected as this lesson component has minimal teacher support because the student reads the text independently. This finding demonstrates the use of egocentric speech within the development of independent problem solving or self-regulation while reading and suggest the supportive role egocentric speech plays in the development of self-regulation. Analysis of the pilot study outlined in Chapter One demonstrated a similar result; the second reading of the new text provided the most examples of egocentric speech with the reading of the new text contributing the next significant number of examples.

The new text reading takes place at the end of the lesson when the student is able to call upon all literacy activities taught and modeled by the teacher and used by the student across that day's lesson. While the teacher has provided an introduction and drawn attention to unique words or phrases, the student is asked to problem solve the text. It is possible the tension of a novel text bolstered by the success experienced in the lesson with previous readings and writing activates the students' problem solving through the use of egocentric speech.

5.9. Limitations

The findings from this study are limited to the time and place of the case study. The examples of egocentric speech cannot be generalized to other instructional interventions or other populations of first grade learners specifically or elementary school learners in general. The intent of this study was to collect examples of egocentric speech; all findings are confined to this study. Also confined to the study is the description of one research experience, one point of view and one set of findings; any misrepresentations are mine.

I have included a rich, thick description of research setting, students, and methodology for the purpose of addressing transferability. Other researchers will be able to assess any similarities between themselves and this study based on this description. Confirmability, or the degree to which the findings of a study are shaped by the respondents and not researcher bias, motivation, or interest are addressed through lesson records, running record analysis and video analysis.

A second limitation of this study is that it took place over a six week time period. Any examples of egocentric speech displayed before the research window opened or

after it closed are not included. Anecdotal notes confirm additional examples of the verbal self-coaching known as egocentric speech were expressed by the students during problem solving after the six week research window closed. It is possible these examples could have brought additional clarity to the phenomenon.

Thirdly, in my dual role of researcher and teacher within each student-teacher dyad of the case study it is possible I have affected the data in an unidentified way even though I worked to put trustworthiness measures in place. These measures included (a) triangulation of data sources (videotape, teacher artifacts, and student progress), (b) the verbatim recording of participant language and gestures, (c) negative case analysis or evidence of outliers, (d) use of an audit trail, and (e) extended time within the study. Researchers interested in replicating this study may or may not obtain similar results based on their values and expectations.

One explanation for the examples of egocentric speech collected from this study is that the students learned the problem solving talk at home or in the classroom setting rather than learning it within the intervention. While home environments vary, three of the four students did come to the intervention from the same classroom and all attended the same school. Instructional classroom practices could have modeled and taught the problem solving language collected during this study.

As discussed in Chapter Two, the language limitations of young children, those with literacy tangles in particular come to school with oral language based on the language, conversations, and expectations from the home (Cazden, 2001; Heath, 1983; Lareau, 2003; Moll & Greenberg, 1990; Purcell-Gates, 1997). It is possible these limitations could interfere or delay the student's ability to formulate and express

egocentric speech until the language is internalized from the daily one-on-one intervention.

If egocentric speech and inner speech are so intertwined that a student could go back and forth between the two while problem solving, possibly examples of egocentric speech have been missed. Inner speech is not observable nor audible and some examples of egocentric speech occur in short comments, therefore not all problem solving thoughts may have been collected as the line between egocentric and inner speech could be blurred.

It is possible, due to the limited number of egocentric examples gathered, that instruction did not take place within each student's ZPD. Students accurately instructed within their ZPD could have provided more utterances for analysis.

Beyond this study, examples could have been formed by experiences not known at this time. While people of all ages have been observed using egocentric speech to problem solve, from toddlers working to pick up toys and put them in the proper basket to adults coaching themselves on how to drive out of a city, these experiences are beyond the scope of the intervention used in this study. Therefore any effects on egocentric speech development cannot be known.

5.10. Implications for Future Research

The findings and implications of this research study highlight the need for additional studies focused specifically on the phenomenon of egocentric speech and student problem solving behaviors. First, interested researchers could increase the student participant size to include all students receiving the intervention at a school or within a school district. Additional teachers and video cameras would be needed, but the

increased data set would provide the opportunity to potentially collect a large corpus of examples and thereby increase the understanding of the phenomenon. While the additional teachers would need training on how to record, save and transfer the recorded lessons or specific examples of egocentric speech, the opportunity to collect a larger number of examples would add depth to this phenomenon.

A larger number of examples could also be attained by the expansion of the data collection window to include more weeks within the study. An increased data collection window could potentially provide more examples of the student self-coaching of egocentric speech. More examples could expand the understanding of the suggested behavior of diminished appealing behavior and increased attending behavior while engaged in egocentric speech this study suggests.

An additional study framed within the intervention could be the collection of student examples of egocentric speech within the composing, recording and reconstruction of the cut up sentence processes of the writing component. Data from this study identified examples from the recording and cut-up sentence assembly. The inclusion of any verbal self-coaching examples from the composition of the sentence before writing begins could bring insight into student thinking and problem solving during the entire writing process.

In retrospect a correlational study that included a description of each student's prior literacy life would provide an added depth of understanding. Preschool opportunities including children's books available in the student's home, frequency of parent-child read alouds, the students' access to paper, crayons, pencils and markers to support writing development would be variables to measure. The type and frequency of

formal or informal preschool attendance along with special services started before Kindergarten enrollment could be examined. A more complete understanding of each student would result.

Alternately, it is important to collect examples of student problem solving speech from math instruction. Is there evidence of egocentric speech revealed when students are engaged in independent problem solving while engaged in mathematical thinking? Are there correlations between the language used and the processing revealed between literacy and mathematical problem solving? Clay (1991) contends that once a student learns how to learn, that student can learn anything. A study designed to collect examples of egocentric speech from the same students while engaged in literacy and mathematical problem solving could address these questions.

A quantitative study designed to correlate reading levels within the intervention where egocentric speech appeared and then disappeared could raise awareness of the phenomenon. This study could expand the knowledge of student problem solving behaviors during reading and provide guidance to the teachers. If a correlation between reading levels and the verbal self-coaching egocentric speech provides is established, the effectiveness of the intervention could be positively impacted and more students would learn to read.

A correlational study using the (a) Peabody Picture Vocabulary Test, Fourth Edition (PPVT™-4) (Dunn & Dunn, 2007), an assessment of receptive language; (b) Clinical Evaluation of Language Fundamentals (CELF®-5) (Wiig, Semel, Secord, 2013) an expressive language measure, and (c) egocentric speech samples would provide

valuable data. Analysis of students' receptive and expressive language correlated with egocentric speech samples could advance the field of speech analysis.

A second correlational study focused on the frequency with which students use egocentric speech and learning styles could identify a link between specific learning styles and the reliance on egocentric speech. Given the disparity of individual student egocentric speech samples documented in Chapter Four, learning styles could shed light into the observed imbalance.

The issues of family and community socioeconomic status and the influence of parental involvement in school and social activities on student achievement were not taken into consideration in this study. Additionally, parental views on the value of education was not taken into consideration. Future studies examining these issues could advance the understanding of the impact home, school and societal influences have on student achievement.

Parents, educators and researchers aware of the verbal self-coaching that egocentric speech provides and that works as both a cultural tool and sign (Vygotsky, 1978) could better understand student thinking. The variety of types of egocentric speech-statements (questions, self-corrections and short comments) found in this study that are oriented outward at the letter and word level could be a sign orienting to the reality of their own emerging literacy skills. At the same time the speech samples oriented inward may signal a shift towards the use of organizational thinking when problem solving. More studies are needed to refine this possible relationship.

5.11. Conclusion

This study has focused a flicker of light on egocentric speech used during problem solving. Now that the phenomenon has been identified and named, further

studies exploring the facets and power of the verbal self-coaching egocentric speech provides are needed. To ignore this phenomenon creates a missed opportunity to understand individual student's problem solving processes.

'Listen to Children' is a current mantra. The results and findings from this study reiterate the importance of not only listening to children, but calls for more research exploring what exactly they are saying. What a powerful education each student would receive if teachers could provide the specific instruction each student needed. Then we could truly say we are listening to children.

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APPENDIX A

AN OBSERVATION SURVEY OF EARLY LITERACY ACHIEVEMENT

OBSERVATION SURVEY SUMMARY SHEET

Name: _____ Date: _____ D. of B.: _____ Age: _____ yrs _____ mths

School: _____ Recorder: _____

Text Titles	Errors / Running Words	Error Ratio	Accuracy Rate	Self-correction Ratio
Easy _____	_____	1: _____	_____ %	1: _____
Instructional _____	_____	1: _____	_____ %	1: _____
Hard _____	_____	1: _____	_____ %	1: _____

Directional movement _____

Analysis of Errors and Self-corrections
Information used or neglected [Meaning (M), Structure or Syntax (S), Visual (V)]

Easy _____

Instructional _____

_____

Hard _____

_____

Cross-checking on information (Note that this behaviour changes over time)

_____

		Raw Score	Stanine
How the reading sounds	**Easy** **Instructional** **Hard**		
Letter Identi-fication			
Concepts About Print	* **Sand** **Stones** **Shoes** **Moon**		
Word Reading	* **List A** **List B** **List C** **Other** _____ (Enter test name)		
Writing Vocabulary			
Hearing and Recording Sounds in Words	* **A** **B** **C** **D** **E**		
Other tasks	**Writing sample** **Story** **Spelling**		

* Circle whatever was used

LETTER IDENTIFICATION SCORE SHEET

Date: _____

Name: _____ Age: _____ TEST SCORE: /54

Recorder: _____ Date of Birth: _____ STANINE GROUP:

	A	S	Word	I.R.		A	S	Word	I.R.
A					a				
F					f				
K					k				
P					p				
W					w				
Z					z				
B					b				
H					h				
O					o				
J					j				
U					u				
					a				
C					c				
Y					y				
L					l				
Q					q				
M					m				
D					d				
N					n				
S					s				
X					x				
I					i				
E					e				
G					g				
R					r				
V					v				
T					t				
					g				
				TOTALS					

Confusions:

Letters Unknown:

Comment:

Recording:

- A — Alphabet response: tick (check)
- S — Letter-sound response: tick (check)
- Word — Record the word the child gives
- I.R. — Incorrect response: Record what the child says

TOTAL SCORE

An Analysis of the Child's Strategic Activity

Useful strategic activity on text:

Problem strategic activity on text:

Useful strategic activity with words:

Problem strategic activity with words:

Useful strategic activity with letters:

Problem strategic activity with letters:

Summary statement:

Signature: _____

 Copymasters for the Revised Second Edition of An Observation Survey of Early Literacy Achievement (2006) and *Literacy Lessons (2005)* 9

WORD READING SCORE SHEET

Use any **one** list of words

Date: _____

Name: _____ TEST SCORE: /15

Age: _____ Date of Birth: _____ STANINE GROUP:

Recorder: _____

Record incorrect responses beside word

LIST **A**	LIST **B**	LIST **C**
I	and	Father
Mother	to	come
are	will	for
here	look	a
me	he	you
shouted	up	at
am	like	school
with	in	went
car	where	get
children	Mr	we
help	going	they
not	big	ready
too	go	this
meet	let	boys
away	on	please

COMMENTS

 Copymasters for the Revised Second Edition of An Observation Survey of Early Literacy Achievement (2006) and *Literacy Lessons (2005)*

☐ *Sand*
☐ *Stones*
☐ *Moon*
☐ *Shoes*

CONCEPTS ABOUT PRINT SCORE SHEET

Date: _____

Name: _____ Age: _____ TEST SCORE: /24

Recorder: _____ Date of Birth: _____ STANINE GROUP: _____

PAGE	SCORE	ITEM	COMMENT
Cover		1. Front of book	
2/3		2. Print contains message	
4/5 4/5 4/5 4/5		3. Where to start 4. Which way to go 5. Return sweep to left 6. Word-by-word matching	
6		7. First and last concept	
7		8. Bottom of picture	
8/9		9. Begins 'The' (*Sand*) Begins 'I' (*Stones*) Begins 'I' (*Moon*) Begins 'Leaves' (*Shoes*) bottom line, then top, OR turns book	
10/11		10. Line order altered	
12/13 12/13 12/13		11. Left page before right 12. One change in word order 13. One change in letter order	
14/15 14/15		14. One change in letter order 15. Meaning of a question mark	
16/17 16/17 16/17 16/17		16. Meaning of full stop (period) 17. Meaning of comma 18. Meaning of quotation marks 19. Locate: m h (*Sand*); t b (*Stones*); m i (*Moon*); m i (*Shoes*)	
18/19		20. Reversible words 'was', 'on'	
20 20 20 20		21. One letter: two letters 22. One word: two words 23. First and last letter of word 24. Capital letter	

WRITING VOCABULARY OBSERVATION SHEET

Date: _____

Name: _____ Age: _____

Recorder: _____ Date of Birth: _____

(Fold heading under before child uses sheet)

TEST SCORE: ☐

STANINE GROUP: ☐

COMMENTS:

 Copymasters for the Revised Second Edition of An Observation Survey of Early Literacy Achievement (2006) and *Literacy Lessons (2005)*

HEARING AND RECORDING SOUNDS IN WORDS
OBSERVATION SHEET

Date: _____

Name: _____ Age: _____

Recorder: _____ Date of Birth: _____

TEST SCORE: /37

STANINE GROUP:

(Fold heading under before child uses sheet)

COMMENTS:

 Copymasters for the Revised Second Edition of An Observation Survey of Early Literacy Achievement (2006) and *Literacy Lessons (2005)*

RUNNING RECORD SHEET

Name: _____ Date: _____ D. of B.: _____ Age: _____ yrs _____ mths

School: _____ Recorder: _____

Text Titles	Errors / Running Words	Error Ratio	Accuracy Rate	Self-correction Ratio
Easy _____	_____	1: _____	_____ %	1: _____
Instructional _____	_____	1: _____	_____ %	1: _____
Hard _____	_____	1: _____	_____ %	1: _____

Directional movement _____

Analysis of Errors and Self-corrections
Information used or neglected [Meaning (M), Structure or Syntax (S), Visual (V)]

Easy _____

Instructional _____

_____

Hard _____

_____

Cross-checking on information (Note that this behaviour changes over time)

Page	Title	Count E	Count SC	Analysis of Errors and Self-corrections: Information used E MSV	Information used SC MSV

APPENDIX B

PARENTAL PERMISSION

Dear Parent/Guardian,

Your child is invited to take part in a research project being conducted by Debra Hogate, a doctoral student in the College of Education and Human Development at the University of Maine, and RSU 54's Title IA Coordinator and a literacy intervention teacher at Mill Stream Elementary School. This research will be carried out in order to inform Mrs. Hogate's doctoral studies in Literacy Education. The research will be conducted under the guidance of Dr. V. Susan Bennett-Armistead, a literacy professor in the College of Education and Human Development at the University of Maine.

The purpose of this research is to explore student's egocentric speech during the reading and writing components of a literacy intervention – that is, what they say out loud as they are problem solving during the reading and writing components of a lesson.

What will your child be asked to do?

As part of your child's regular intervention instruction, he/she participates in 30 minutes of reading and writing activities daily. As part of this research, no other or additional tasks will be asked of your child or yourself beyond the regular program. I will be videotaping these sessions so that I might study the way your child works as he or she reads and writes. Your child will receive a literacy intervention whether you grant permission for participation in the doctoral study or not. Additionally I am asking permission to collect the scores from standard tests that your child completes as part of regular classroom instruction.

Confidentiality

Care and attention will be taken to ensure the privacy of the participants of this study. All participants will be de-identified using pseudonyms. The master list of pseudonyms will be stored electronically using software that provides additional security and will be destroyed June 1, 2015. Participants' real names and any other identifying information will not be used in any reports, publications, or conference presentations that result from this study.

Transcripts of the lessons will be stored on a dedicated external hard drive and will not be available on any other device to which others might have access The dedicated external hard drive containing de-identified digital transcripts of lessons as well as any de-identified hard copy transcripts will be secured in a locked cabinet in the investigator's home office for a period of five years following the investigator's successful completion of doctoral studies, which is anticipated to occur in May, 2016 and will be used for research purposes only.

Risks

Risks to your child will be minimal beyond those of a regular school day. All data sources and research methods fall within the school district's policies guiding instructional activity.

Contact Information

If you have any questions about this study, please contact me, Debra Hogate, at 634-3121 or at dhogate@msad54.org. You may also contact my faculty advisor, Dr. Susan Bennett-Armistead at (207) 581-2418 or at susan.bennett-armistead@maine.edu. If you have any questions about your child's rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine's Protection of Human Subjects Review Board, at 581-1498 or at gayle.jones@umit.maine.edu

---

Parental Permission to Take Part in the Doctoral Study

Please chose one option below, sign the form and return it to school with your child. Your child will continue to receive the literacy intervention no matter which option you choose.

Thank you.

_____ Yes, I give permission for my child to be part of Mrs. Hogate's doctoral study.

_____ No, I do not give permission for my child to be part of Mrs. Hogate's doctoral study.

_____ _____

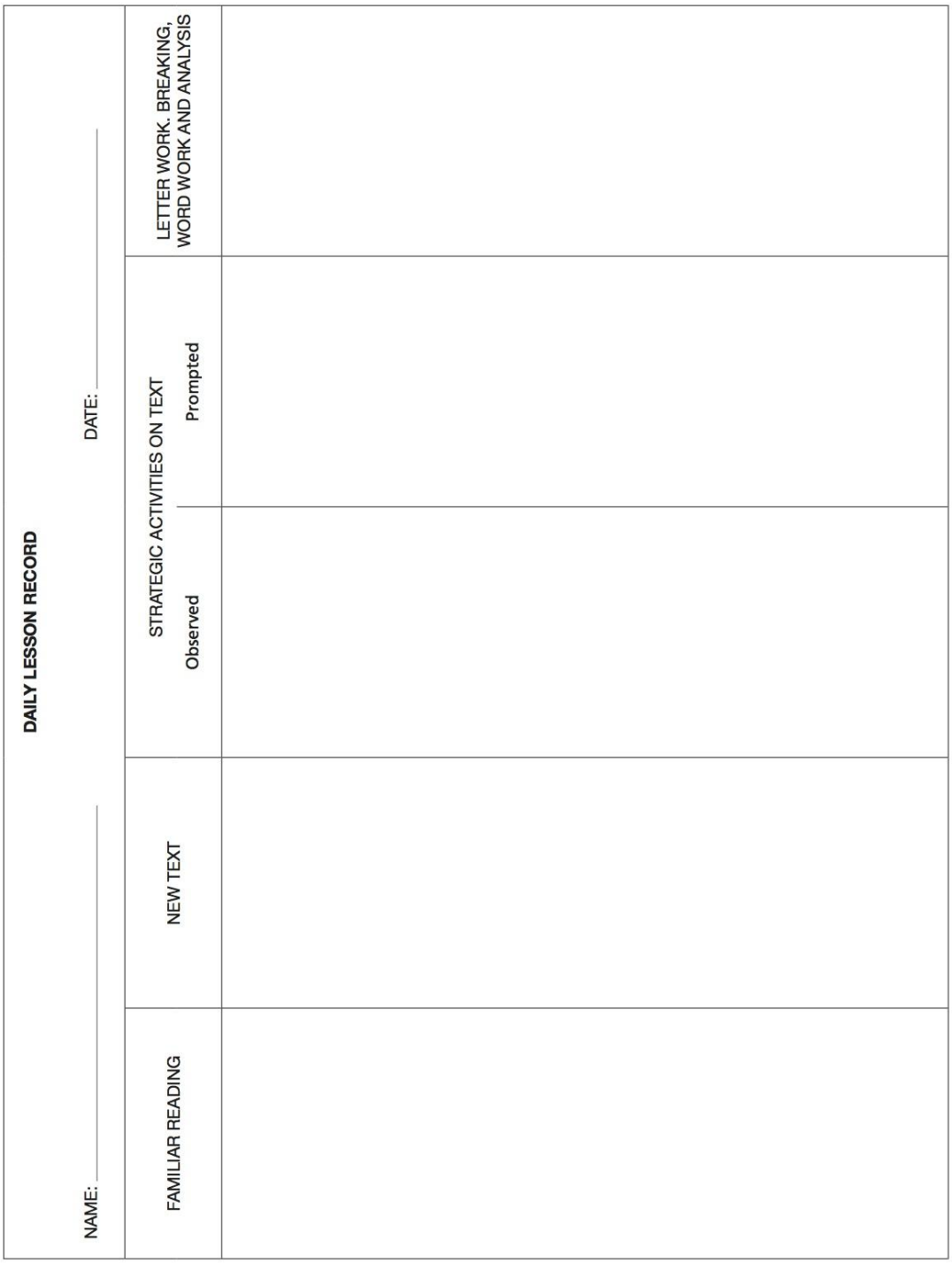
Parent Signature Date

_____

Child's Name

APPENDIX C

READING RECOVERY® DAILY LESSON RECORD SHEET



DAILY LESSON RECORD

NAME: _____ DATE: _____

FAMILIAR READING	NEW TEXT	STRATEGIC ACTIVITIES ON TEXT Observed	STRATEGIC ACTIVITIES ON TEXT Prompted	LETTER WORK. BREAKING, WORD WORK AND ANALYSIS

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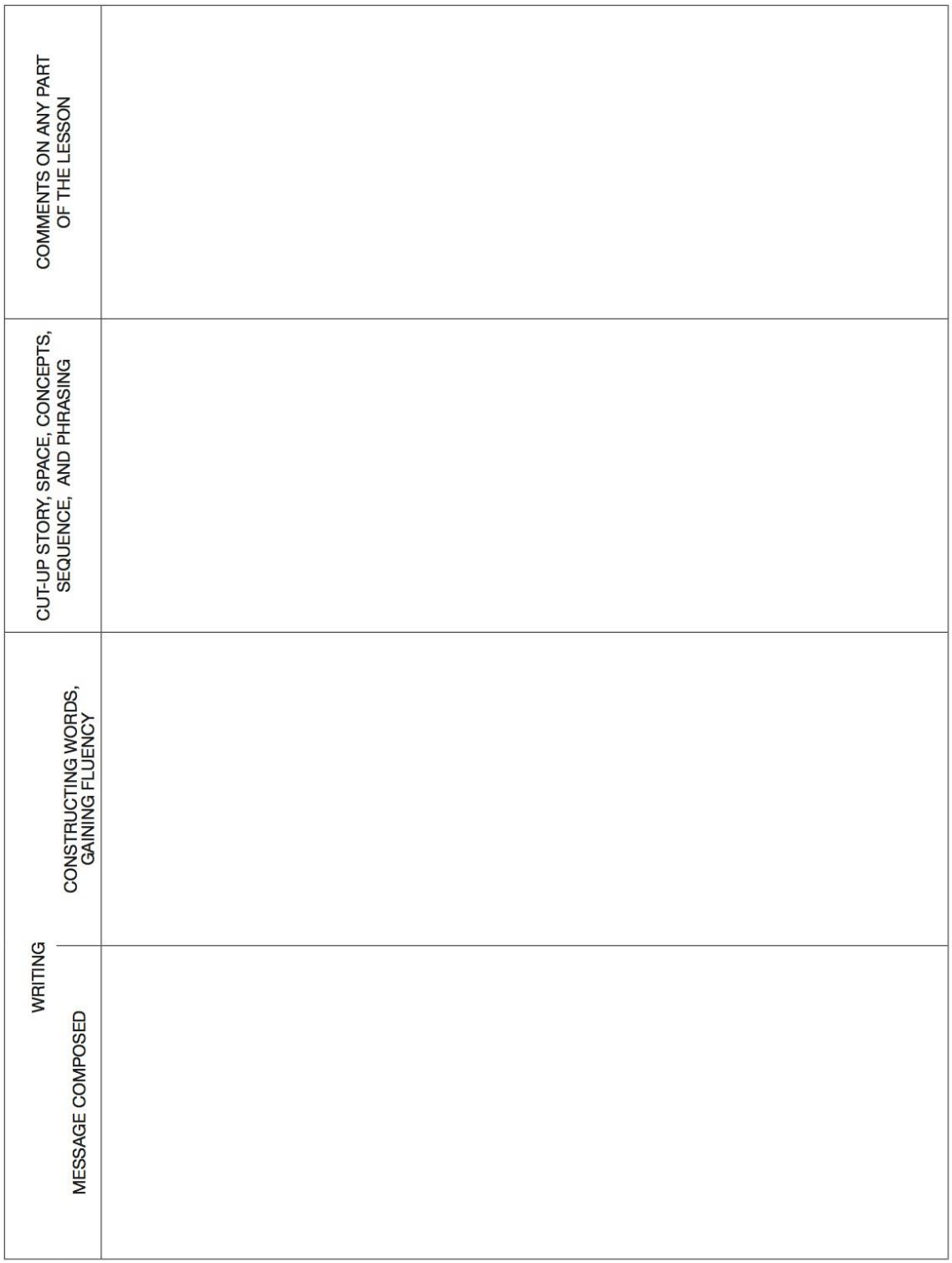


APPENDIX D

READING RECOVERY® RUNNING RECORD SHEET

RUNNING RECORD SHEET

Name:_____ Date:_____ D. of B.:_____ Age:____ yrs____ mths

School:_____ Recorder:_____

Text Titles	**Errors / Running Words**	**Error Ratio**	**Accuracy Rate**	**Self-correction Ratio**
Eas	_____	1: _____	____ %	1: _____
Instructio	_____	1: _____	____ %	1: _____
Har	_____	1: _____	____ %	1: _____

Directional movement_____

Analysis of Errors and Self-corrections
Information used or neglected [Meaning (M), Structure or Syntax (S), Visual (V)]

Eas _____

Instructio _____

_____

Har _____

_____

Cross-checking on information (Note that this behaviour changes over time)

Page	Title	Count E	Count SC	Analysis of Errors and Self-corrections **Information use** E MSV	Analysis of Errors and Self-corrections **Information use** SC MSV

APPENDIX E

CONVENTIONS OF RUNNING RECORDS

Clay, M. M. (2013). *An observation survey of early literacy achievement.* Portsmouth, NH: Heinemann. pp. 59-62.

1. Mark every word read correctly with a check.
Bill is asleep ✔ ✔ ✔
"Wake up, Bill," ✔ ✔ ✔
Said Peter. ✔ ✔

2. Record a wrong response with the text under it.
Child: home Text:
house

3. If a child tries several times to read a word, record all his trials.
Child: here - h- home [One error}
Text: house
Child: h- ho— ✔ [No error]
Text: home

4. If a child succeeds in correcting a previous error this is recorded as a "self-correction" (written SC).
Child: where - when -SC [No error]
Text: were

5. If no response is given to a word, it is recorded with a dash. Insertion of a word is recorded over a dash.
Child: Child: here [In each case one error]
Text: house Text: —

6. If the child baulks, unable to proceed because he is aware he has made an error and cannot correct it, or because he cannot attempts the next word, he is told the word (written T).

Child: home Text: house - T

[One error]
119

7. An appeal for help (A) from the child is turned back to the child for further effort before using a T as in 6 above. Say "You try it."
Child: A - here [One error]
Text: house - T

8. Sometimes the child gets in a state of confusion and it is necessary to extricate him. The most detached method of doing this is to say "try that again", marking TTA on the record. This would

not involve any teaching but the teacher may indicate where the child should begin again. It is a good idea to put square brackets around the first set of muddled behaviors, enter TTA, remember to count that as one error only, and then begin a fresh records of the problem text.

[✔ look said ✔ ✔] TTA [One error]
Susan went with the headmaster
✔ said - R -SC ✔ ✔ ✔
Went

9. Repetition (R) is not counted as error behavior. Sometimes it is used to confirm and previous attempt. Often it results in self-correction. It is useful to record it as it often indicates how much sorting out the child is doing. "R", standing for repetition, is used to indicate repetition of a word, with R_2 or R_3 indicating the number of repetitions. If the child goes back over a groups of words, or returns to the beginning of the line or sentence in his repetition, the point to which he returns is shown by an arrow.

Child: Here is the home R SC [No error]
Text: Here is the house

APPENDIX F

ANALYSIS TABLE FOR EGOCENTRIC SPEECH

Table F.1 Table of Egocentric Speech Revealed During the Lesson Components

	Familiar Text	Second Reading of Text	New Text	Writing

APPENDIX G

ANALYSIS TABLE FOR PHYSICAL BEHAVIORS

Table G.1 Table of Behaviors Revealed During the Lesson Components

	Familiar Text	Second Reading of Text	New Text	Writing
Towards				
Away				
Stress				

APPENDIX H

CODING DICTIONARY

Definitions

Egocentric Speech:

Egocentric speech is a Vygotskian (2012) term to describe the verbal self-coaching students use when problem solving independently.

Egocentric Speech Used in the Problem Solving Process:

Student use of egocentric speech while reading or writing signals an attempt at independent problem solving, understood to mean the mental process that people go through to discover, analyze and solve problems. Successful independent problem solving in reading and writing works to accelerate students' learning and results in a successful completion of the short-term intervention.

Master Code - Problem Solving while Reading (PSR):

This master code identifies examples of egocentric speech used by the student to problem solve when reading.

- **Problem Solving while Reading – Meaning (PSR-M):**
  This sub-code identifies examples of egocentric speech used by the student to problem solve for meaning (comprehension). This includes the student response of "That doesn't make sense".

- **Problem Solving while Reading – Structure (PSR-S)**
  This sub-code identifies examples of egocentric speech used by the student to problem solve for structure (English language). This includes the student response of "That doesn't sound right".

- **Problem Solving while Reading- Visual (PSR-V):**
  This sub-code identifies examples of egocentric speech used by the student to problem solve for visual information (phonics). This includes the student response of "That doesn't look right".

Master Code – Problem Solving while Writing (PSW):

This master code identifies examples of egocentric speech used by the student while writing.

- **Problem Solving while Writing – Meaning (PSW – M):**

  This sub-code identifies examples of egocentric speech used by the student while talking about, rereading, and deciding upon what to write, so the story makes sense. This includes the student response of "That doesn't make sense".

- **Problem Solving while Writing – Structure (PSW – S):**

  This sub-code identifies examples of egocentric speech used by the student while talking about, rereading, and deciding upon what to write using standard English language structure. This includes the student response of "That doesn't sound right".

- **Problem Solving while Writing – Visual (PSW- V):**

  This sub-code identifies examples of egocentric speech used by the student while talking about, rereading, and deciding upon what to write using visual information (phonics). This includes the student response of "That doesn't look right".

Physical Behavior:

Physical behavior is a term used to describe observed behavior the student used when engaged in egocentric speech during independent problem solving.

Physical Behavior Observed While Engaged in Egocentric Speech:

Student physical behavior exhibited while engaged in egocentric speech signals the level of independence, understood to mean the subconscious student behavior of moving towards or away from the teacher. Movement towards the teacher may signal an appeal for help while movement away from the teacher may signal independence. Stress behaviors of nail biting, thumb or finger sucking, hair twirling, or a verbalization of the task being too difficult to complete (Jackson, 2009) may be observed.

Master Code – Physical Behavior (PB):

This master code identifies examples of physical behavior exhibited by the student while engaged in egocentric speech.

- **Physical Behavior Towards Teacher (PB-T)**

  This sub-code identifies examples of physical behavior used by the student in movement towards the teacher. This includes nonverbal appeals for help from the teacher.

- **Physical Behavior Away From Teacher (PB-A)**

  This sub-code identifies examples of physical behavior used by the student in movement away from the teacher. This includes nonverbal cues signaling help from the teacher is not needed.

- **Physical Behavior Signaling Stress (PB-S)**

  This sub-code identifies examples of physical behavior used by the student signaling a feeling of stress including, but not limited to nail biting, thumb or finger sucking, hair twirling, or a verbalization of the task being too difficult to complete.

- **Physical Behavior Attending (PB-Att)**

  This sub-code identifies examples of physical behavior used by the student signaling the attention to the text and an engagement in problem solving. This includes looking at the text, sub-vocalizing or vocalizing problem solving language.

APPENDIX I

INTER-RATER RELIABILITY TEST

Inter-rater Reliability Check

Codes for Problem Solving Egocentric Speech

Example #1-new text

goings
We are dogs "doesn't sound right."

Example #2-2nd reading

outside
Red squirrel goes to sleep inside his home in the tree. "Outside his home?"

Example #3-2nd reading

getting it fish
I'm good at fishing "That doesn't make sense."

Example #4-2nd reading

laying
I am going to "NOT!"

Example #5-assembling the cut-up sentence

is
The bumpy slide "Is that right? No!"

Inter-rater Reliability Check

Codes for Physical Behaviors

Example #1-new text

We are goings dogs "doesn't sound right." Student shifted towards teacher.

Example #2-2nd reading

Red squirrel goes to sleep outside inside his home in the tree. "Outside his home?" Student turned towards teacher.

Example #3-2nd reading

I'm getting good it at fish fishing "That doesn't make sense." Student turned back a page, checked something and then returned to the current page.

Example #4-2nd reading

I am laying going to "NOT!" Student frowned and looked towards teacher.

Example #5-assembling the cut-up sentence

The is bumpy slide "Is that right? No!" Student continues to check pieces of cut-up sentence.

APPENDIX J

INTERPRETING THE RUNNING RECORD

Clay, M. M. (2013). *An observation survey of early literacy achievement.* Portsmouth, NH: Heinemann. p. 71-72.

There is another level of analysis that will help teachers to work out what information in the test the reader is attending to. To do this you must give closer attention to analyzing the error and self-correction behaviors. The analysis takes a little time but it can uncover some important things about the reading process.

Readers of text appear to make decisions about the quality of the message they are getting. One kind of theory would say the child is recalling words and attacking words; another kind of theory would say that the child is using information of various kinds to make a choice amount possible responses. He is trying to get the best fit with the limited knowledge he has. ***It is this last kind of theory that guides the following discussion.***

Think about the errors in the record

It is important to analyse every error (looking only at the sentence up to the error) and not look at errors selectively. Ask yourself, 'What leads the child to do (or say) that?' For every error ask yourself at least three questions:

M Did the meaning or the message of the text influence the error? Perhaps the reader brought a different meaning to the author's text?

S Did the structure (syntax) of the sentence up to the error influence the response? If the error occurs on the first word of the sentence it is marked as positive for structure if the new sentence could have started that way.

V did visual information from the print influence ***any part*** of the error: letter cluster or word?

(See page 74 for more explanation of the 'V for visual information' category.
When an error is made write the letters MSV in the error column. Circle the letters if the child's error showed that the child would have been led my meaning or structure or visual information (which will include letter form and/or letter-sound relationships) from the sentence so far.

Scan the record to answer two other questions

1 Did the child's oral language produce the error, with little influence from the print?
2 Was the child clearly getting some phonemic information from the printed letters? What makes you suspect this?

These two questions cannot be used in scoring a record because teachers cannot agree upon their interpretations, and the information is therefore unreliable. However, if the reader sometimes responds as if he was 'just talking,' or if specific phonemic information is used without question, teachers can note these things in their records but do not need to include them in the formal summation of test reading.

Now look at the self-correction

Often readers make errors and without any prompting, work on the text in some way and self-correct the errors. It is as if they had a feeling that something was not quite right. It is now easy to circle the letters in the self-correction column to record whether the extra information the reader added to make the self-correction was meaning or structure or visual information. This is usually rather interesting, especially when we look at what happens across the entire record. As single error could have been unusual or accidental for the reader.

Consider the pattern of responses

Now look at the overall pattern of the responses you have circled so that you can bring your analysis of errors and self-corrections together into a written summary. This

statement about the sources of information used and neglected, and ***whether they were used together***, will be useful to guide subsequent teaching.

Record the statement at the top of the Running Record next to the appropriate level of the text. See the completed Running Record sheet on page 73.

1 Analysis of the use of meaning and structure and visual information is of little value unless is done carefully.
2 Consider the sentence only up to the error (not the unread text).
3 Do not try to analyse omissions and insertions.
4 The pattern of M or S or V circled is merely a guide to what is being neglected, what is made a priority, and when the reader can combine different kinds of processing.
5 Avoid analysis for which you have not theoretical support.

APPENDIX K

RESEARCH TIMELINE

Date	Activity	Purpose
February 3-9, 2015	Observation Survey (OS) administered to students recommended for the intervention.	Identification of students needing a literacy intervention.
February 9, 2015	Students identified for intervention.	Identification of four lowest performing students on OS to participate in intervention.
February 10, 2015	Obtained parental permission for intervention and research participation via phone calls.	To insure parents understand what participation in the intervention and research entails. Identified students who received intervention even if participation in research was denied.
February 11-March 5, 2015	Roaming in Known lessons began.	Strengthen students' knowledge and confidence, relationship building, and further assessed each student's knowledge and processing skills.
February 16-20, 2015	Public School Vacation	
March 4–March 6, 2015	Intervention began signaling the start of the six week data collection window.	Data collection began including videotaping of each

		student's daily lesson.
March 4, 2015	Data analysis began to include: Daily Jottings Daily Field notes Weekly Analytic Memos Researcher Journal Entries Peer Debriefer	Trustworthiness
March 4-April 29, 2015	Data Collection Window	Collected examples of egocentric speech and student behaviors.

APPENDIX L

STUDENT ATTENDANCE AND LESSONS TAUGHT CALENDAR

Table L.1 Calendar of Lessons in March and April – Hannah

March	Monday	Tuesday	Wednesday	Thursday	Friday
2-6th			#1	#2	SA
9-13th	#3	SA	#4	#5	#6
16-0th	TW	#7	#8	#9	#10
23-7th	#11	#12	#13	#14	#15
30-April 3	#16	#17	#18	TA	#19
6-10th	#20	#21	#22	#23	#24 & 25
13-17th	#26	#27	#28	SA	#29
20-24th	Public	School	Vacation	Week	
27-May 1	#30				

Note. SA = student absent from school, therefore no lesson taught or data collected that day; TA = teacher absent from school, therefore no lesson taught or data collected that day; TW = teacher workshop day, therefore there was no school and no lesson taught or data collected.

Table L.2 Calendar of Lessons in March and April – Julia

March	Monday	Tuesday	Wednesday	Thursday	Friday
2-6th					#1
9-13th	#2	#3	#4	#5	SA
16-20th	SW	#6	#7	#8	#9 & #10
23-27th	#11	SA	#12	#13	#14 & 15
30-April 3	#16	#17	#18	#19	#20
6-10th	#21	#22	#23	#24	#25
13-17th	#26	#27	#28	#29	LDD
20-24th	Public	School	Vacation	Week	
27-May 1	#30				

Note. SA = student absent from school, therefore no lesson taught or data collected that day; TA = teacher absent from school, therefore no lesson taught or data collected that day; TW = teacher workshop day, therefore there was no school and no lesson taught or data collected. LDD = lock down drill was held, therefore no lesson was taught or data collected that day.

Table L.3 Calendar of Lessons in March and April – Leah

March	Monday	Tuesday	Wednesday	Thursday	Friday
2-6th				#1	#2
9-13th	#3	SA	#4	#5	#6
16-10th	TW	#7	#8	#9	#10
23-27th	SA	#11	#12	#13	#14
30-April 3	#15 & #16	#17	#18 & #19	TA	#20
6-10th	#21	#22	#23	#24	#25
13-17th	#26	#27	#28	#29	#30

Note. SA = student absent from school, therefore no lesson taught or data collected that day; TA = teacher absent from school, therefore no lesson taught or data collected that day; TW = teacher workshop day, therefore there was no school and no lesson taught or data collected.

Table L.4 Calendar of Lessons in March and April – Nora

March	Monday	Tuesday	Wednesday	Thursday	Friday
2-6th				#1	#2
9-13th	#3	#4	#5	#6	#7
16-20th	TW	#8	#9	TU	#10
23-27th	#11	#12	#13	#14	#15
30-April 3	#16	#17	#18*a*	SA	SA
6-10th	#19 & #20	#21	#22 & #23	#24	#25
13-17th	#26	SA*b*	SA	SA	SA
20-24th	Public	School	Vacation	Week	
27-May 1	#27 & #28	#29	#30		

Note. SA = student absent from school, therefore no lesson taught or data collected that day; TA = teacher absent from school, therefore no lesson taught or data collected that day; TW = teacher workshop day, therefore there was no school and no lesson taught or data collected.

a Student left 11:49 into lesson due to illness.

b Student absent due to illness.

APPENDIX M

STUDENT READING PROGRESS DURING INTERVENTION

Screenshots retrieved from the Comprehensive Intervention Model for Maine (CIMME) data management system. This site is sponsored by the College of Education at the University of Maine.

Table M.1. Student Reading Progress during Intervention-Hannah

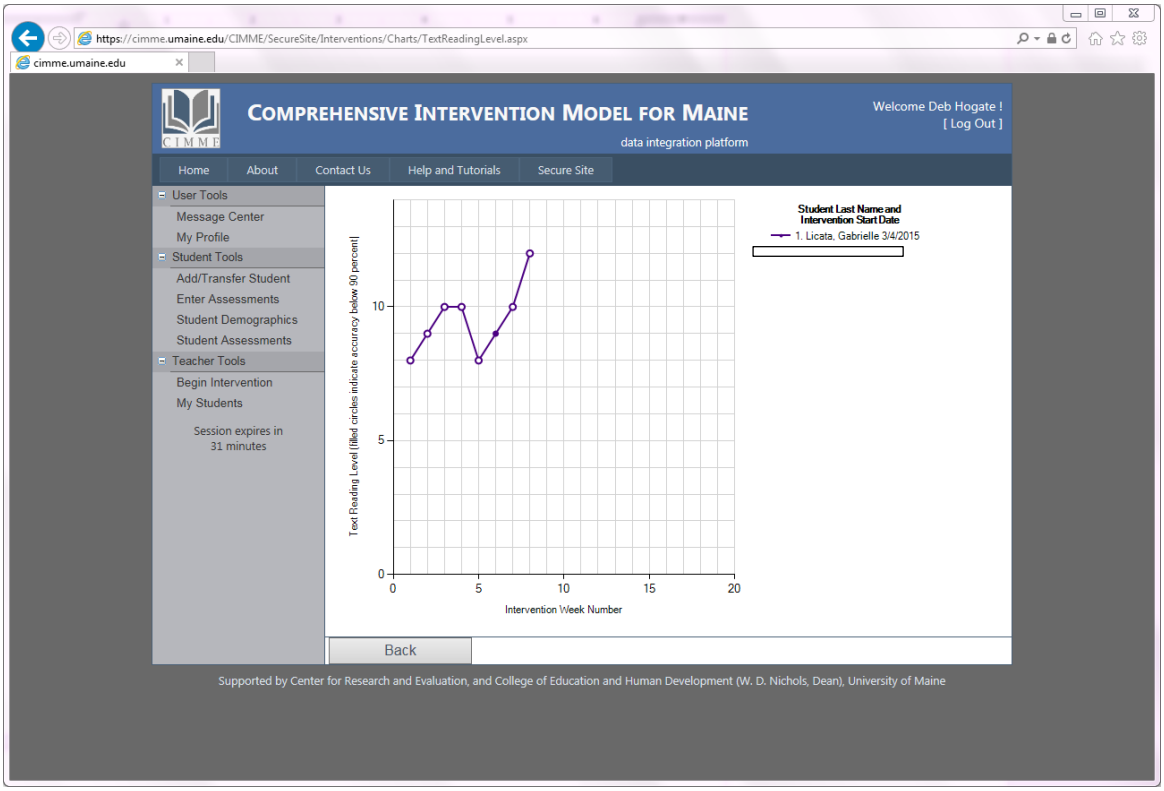


Table M.2. Student Reading Progress during Intervention-Julia

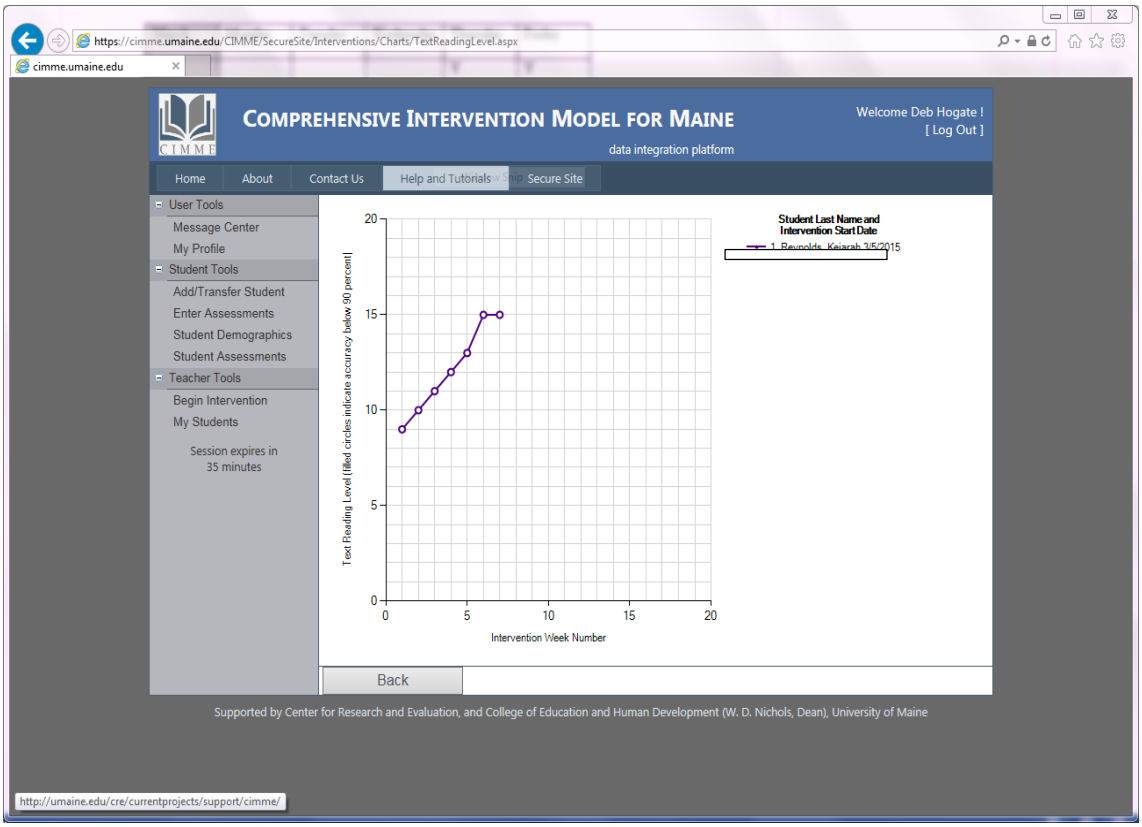


Table M.3. Student Reading Progress during Intervention-Leah

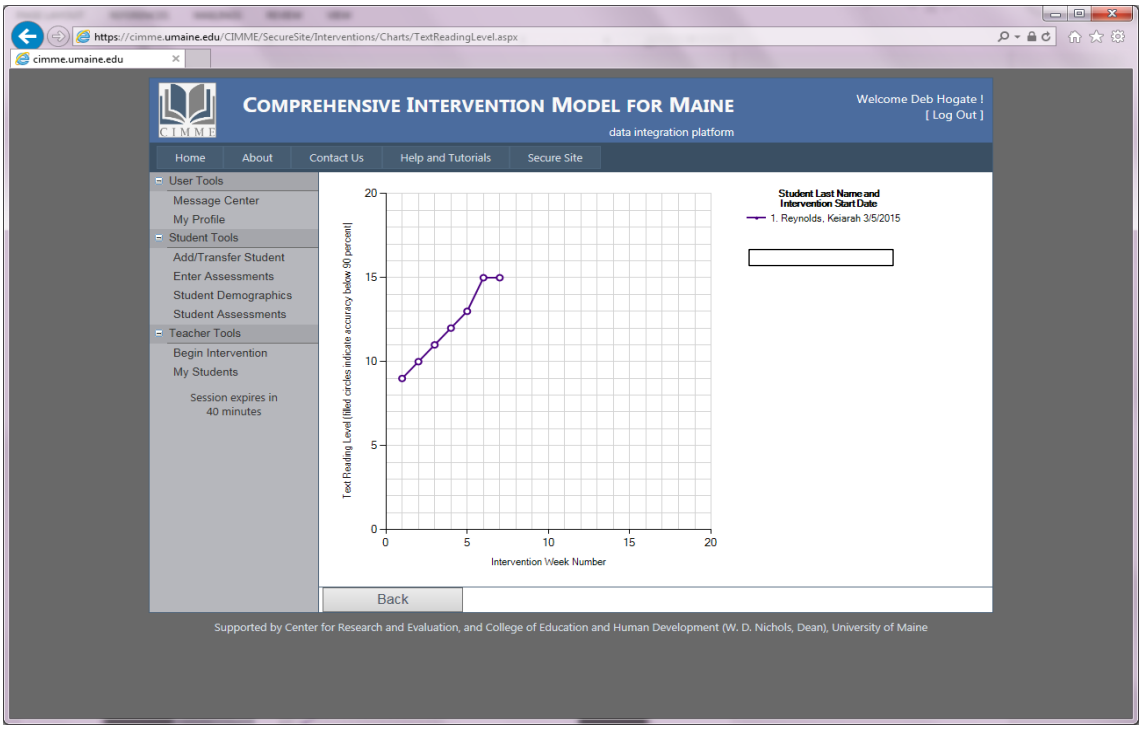
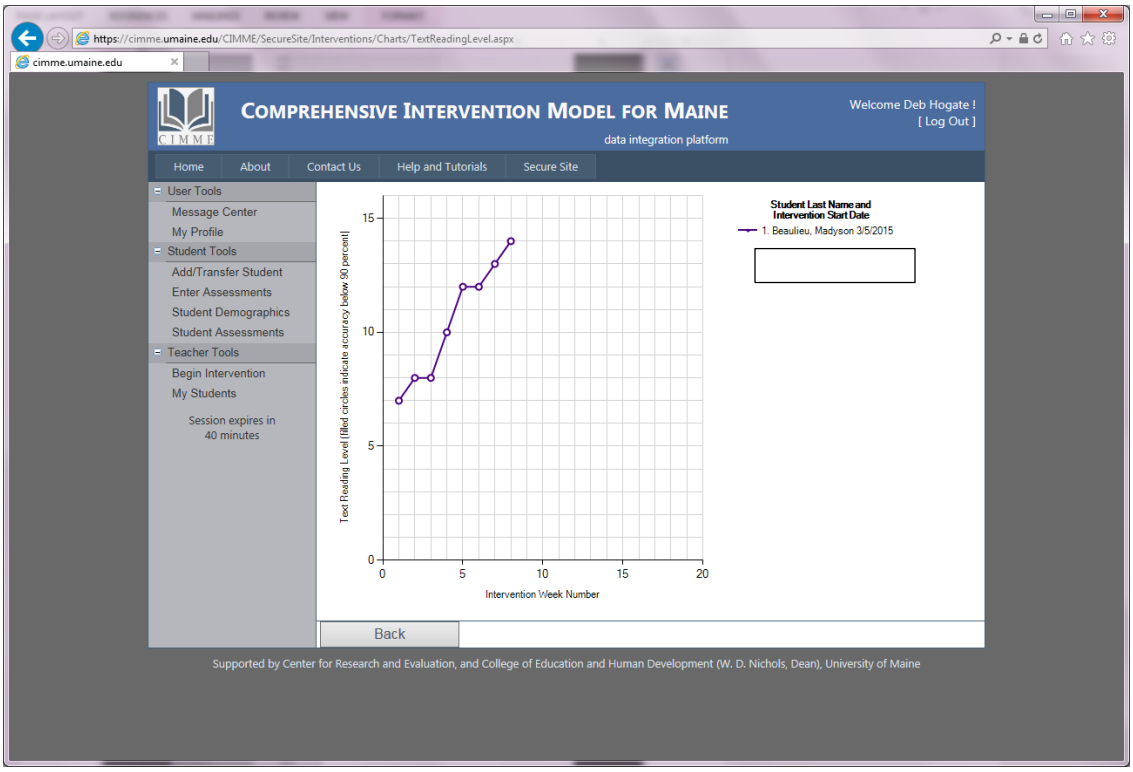


Table M4. Student Reading Progress During Intervention-Nora



APPENDIX N

STUDENT WRITING PROGRESS DURING INTERVENTION

Table N.1. Student Writing Progress during Intervention-Hannah

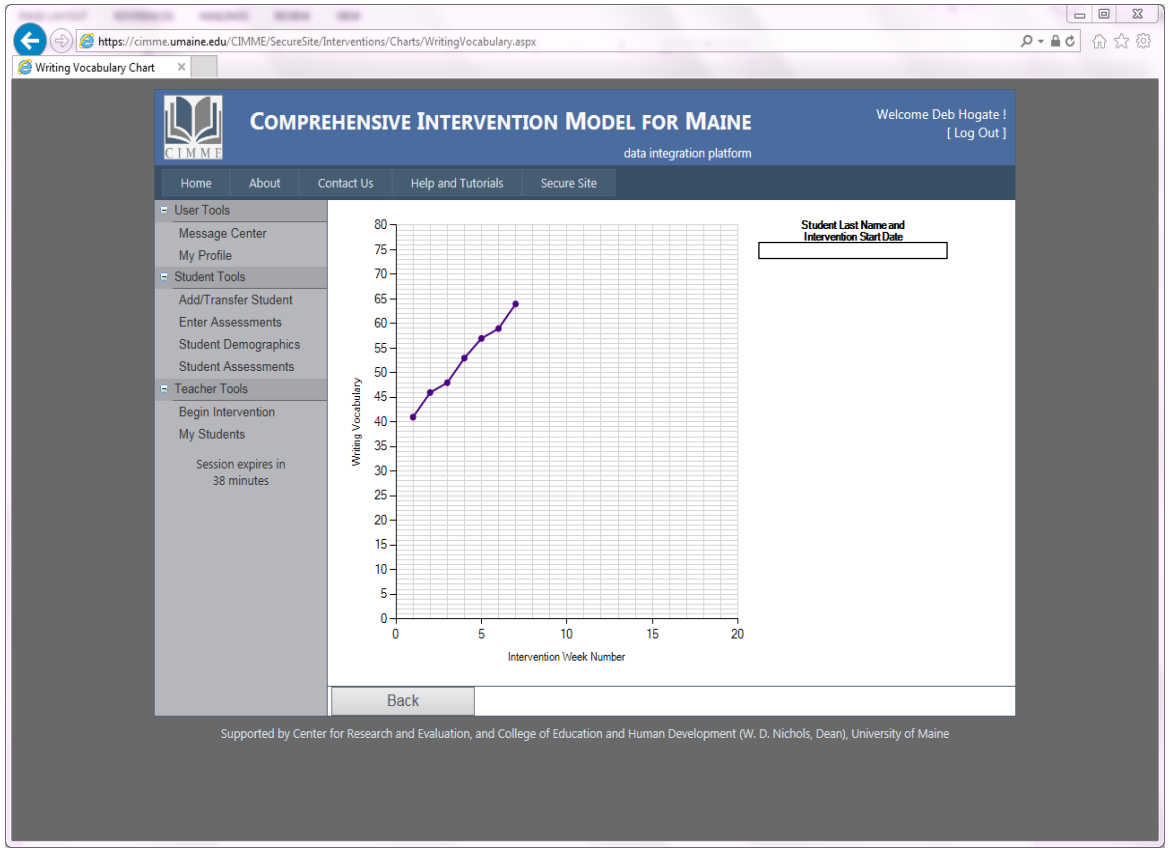


Table N.2. Student Writing Progress during Intervention-Julia

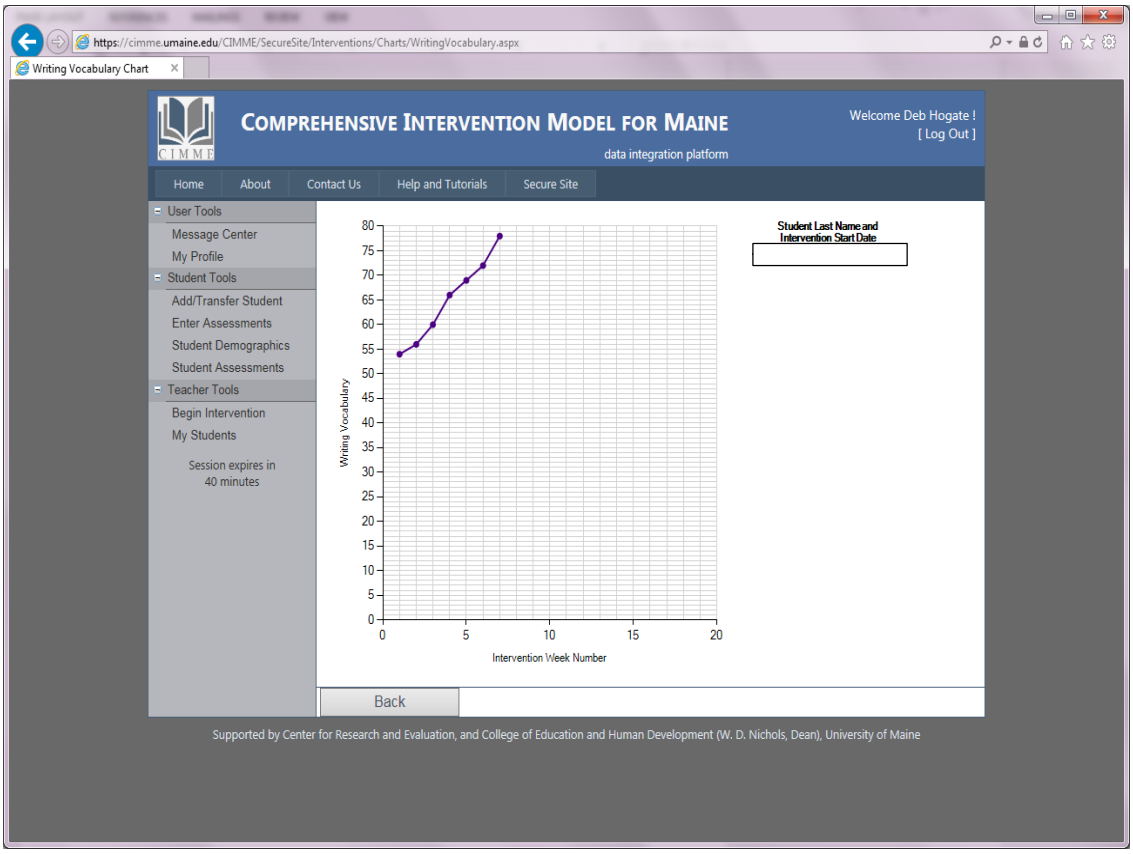


Table N.3. Student Writing Progress during Intervention-Leah

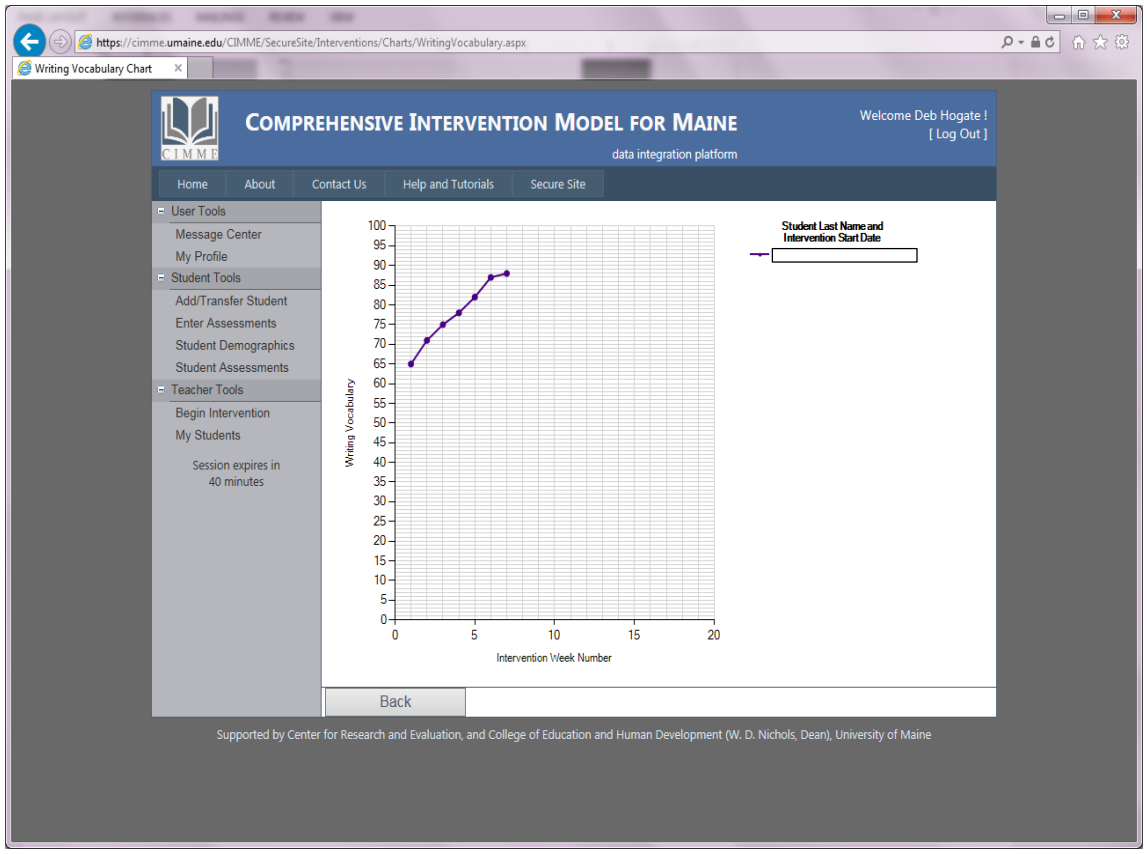
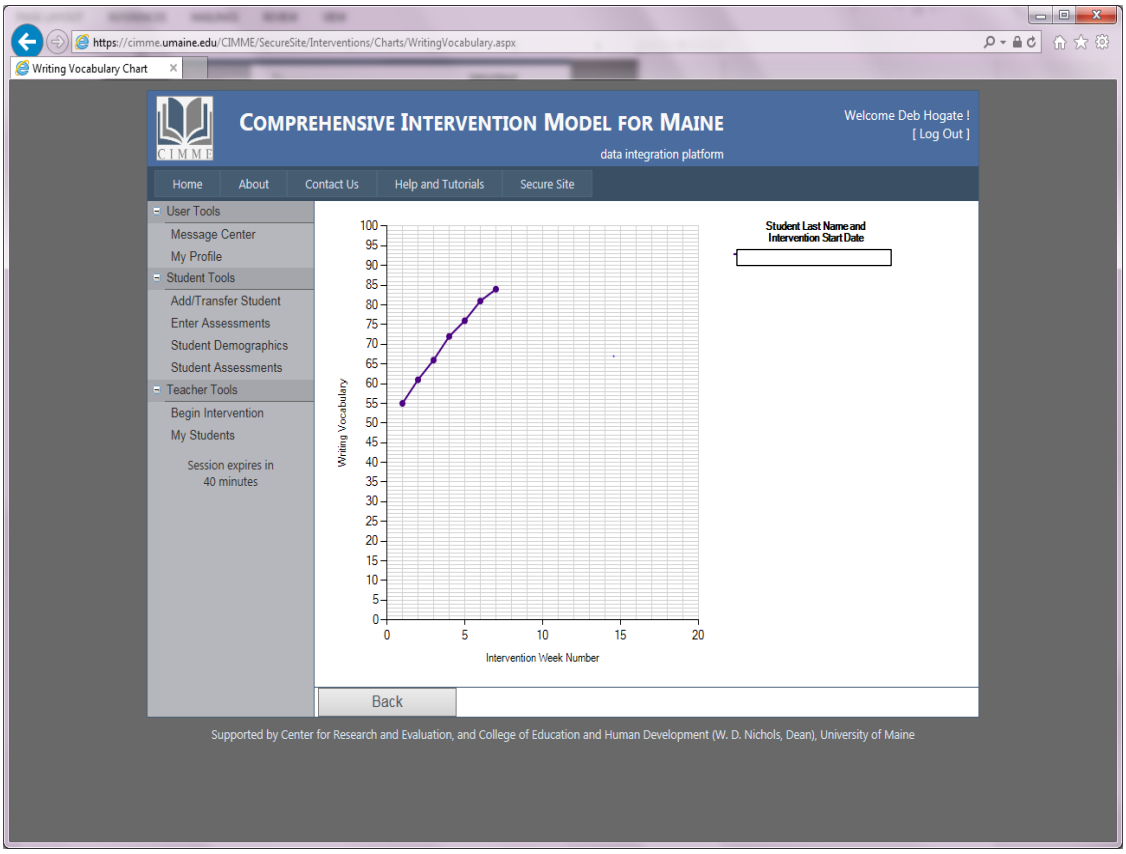


Table N.4. Student Writing Progress during Intervention-Nora



BIOGRAPHY OF THE AUTHOR

Debra Althea Lewis Hogate was born in Boothbay Harbor, Maine. She grew up and was educated in Orono, Maine and has always found it noteworthy that all formal education she has receive to date has been within the Orono public school system and the University of Maine, Orono campus. She currently lives and works in Skowhegan, Maine with her husband, Jon. They have two grown children, Amanda and Conor. Following high school, Debra attended the University of Maine earning a Bachelor of Science degree in Human Development and elementary education in 1983 and a Master of Education degree in literacy in 1987. Following years of work in public education she earned a Certificate of Advanced Study in literacy from the University of Maine. Debra has worked in Maine schools for over 30 years. She is a candidate for the Doctor of Philosophy Degree in Literacy Education from the University of Maine in May 2016.