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THE RELATIONSHIP BETWEEN INCREASING TEACHERS' LANGUAGE KNOWLEDGE AND STUDENTS' DECODING AND READING COMPREHENSION SKILLS

Capstone Project in Special Education

SPED 696

Presented To

The Graduate Faculty of

Minnesota State University of Moorhead

By

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Abstract

Teaching children how to read is not an easy task. Students with reading difficulties often continue to struggle even as intensive and individualized instruction and curriculum is implemented with fidelity. Educators need to be well prepared in the science of reading as well as the scope of sequence of reading skills in order to be more effective in designing reading instruction (Duke & Mesmera, 2018; Moats, 2020; Washburn et al., 2011). Language Essentials for Teachers of Reading and Spelling (LETRS) is one professional development course that helps address these concerns – it focuses on increasing teachers' language knowledge based on most scientific research (Moats & Tolman, 2019). In addition to having a strong background in the teaching of reading, well-prepared educators analyze progress monitoring data accurately; they give appropriate feedback and then provide explicit instruction and opportunities to practice new concepts (Filderman & Toste, 2018).

This study, through the self-reflection of the researcher, seeks to examine the relationship between increasing teachers' knowledge of reading instruction and the reading outcomes of students with disabilities. The researcher of this study, an interventionist at an elementary school, participated in the Language Essentials for Teachers of Reading and Spelling (LETRS) professional development course with the hope to improve the reading outcomes for students with disabilities.

As the researcher participated in the LETRS course, she also taught daily, specialized and intensive early reading instruction for least sixty minutes during small-group instruction within the general education classroom. During this time, she focused on integrating her newly learned LETRS instructional strategies to help increase students' early literacy skills in letter names, letter sounds, phonemic awareness, and early writing. This capstone project was not structured in a scientific research design, so the findings are not meant to be interpreted in this manner.

Dedication

I dedicate this work to my parents for nourishing me with love and encouragement throughout my life. I also dedicate this research to my husband, for all his endless support and love.

Chapter 1

Introduction

Teaching students with reading difficulties can be puzzling and challenging. Many students with disabilities, even as an intensive reading intervention is provided with fidelity, continue to demonstrate difficulty with decoding and reading comprehension skills. Why does this occur? One factor may be related to educators and their depth of knowledge regarding language and reading instruction. This study, through self-reflection of the researcher, seeks to examine the relationship between educators' knowledge of reading instruction and the reading outcomes of students with disabilities. Specifically, the researcher will highlight how increasing her knowledge of the reading process may lead to an increase in her students' reading abilities.

Literature Review

Curriculum and Knowledge of Teaching Reading

Many researchers have looked at the correlation between curricula and students' achievement. Nese et al. (2019) concluded that students continue to struggle with their reading skills because there is a great deal of variety with the implementation of both "off-the-shelf" and teacher-designed reading curricula. For example, many educators and school districts, over the past decades, have focused on the Balanced Literacy Approach to teaching reading. This approach focuses on explicit instruction, guided practice and independent reading and writing (Will, 2019). Others identify the Simple View of Reading as the foundation for successful reading instruction. In this model, reading comprehension is the product of decoding skills x language comprehension (Gough & Tunmer, 1986). Moats (2020) suggests, "Without strong skills in either domain [decoding or language comprehension], individual reading comprehension will be compromised" (p. 3-4).

Moats and Foorman (2003) highlighted that educators' language knowledge is the main factor that impacts students' decoding and reading comprehension skills. The implementation of decoding and reading comprehension strategies to support all readers relies on educators' language knowledge, yet many are inadequately prepared with this knowledge (Moats and Foorman, 2003).

In addition to inadequate knowledge of teaching reading, Duke and Mesmera (2018) indicated that, historically, educators have not had a clear scope *or* been provided with direction to follow a sequence in teaching early reading skills. They believe that if educators want to obtain better student outcomes in reading, the implementation of systematic phonics instruction with a scope and sequence is needed. When teachers know the content of phonics instruction (e.g., consonants, short vowels, digraphs) and the order in which children typically learn, they are better able to guide students toward organizing information into cognitive categories that support better cognitive storage and retrieval of information (Duke & Mesmera, 2018, p.12-16).

Using Data to Inform Instruction

Filderman and Toste (2018) found that students with reading difficulties require intensive and individualized reading instruction that utilizes student data. Data-driven instruction is important to determine if students are making adequate progress. If students are not making progress, educators will need to change their instruction based on data collected. Roehring et al. (2008) found that teachers at different schools reported varying levels of success in using assessment data to inform their instruction. Filderman and Toste (2018) recommend that to effectively monitor students' progress and make instructional decisions, educators need to set appropriate reading goals for individual students, decide on the tools used to measure reading progress, determine the frequency of progress monitoring, and select a method for making decisions about the progress monitoring data.

Progress monitoring data is a valuable tool for responsive educators. By looking at patterns of errors, responsive educators can give correct feedback. If students continue to make the same pattern of errors, then a responsive educator will provide explicit instruction to explain the targeted concept and provide many opportunities to practice until the students do not make those errors. Yet, in order to understand patterns of errors students make and support students, educators must have the background knowledge and know the scope and sequence of reading skills.

In order to become responsive educators, Moats (2020) called for teachers' preparation to be more rigorous and aligned with research-based reading instructions. Effective educators should have a deep understanding of language layers that include sounds, syllables, morphemes, phrases, sentences, and paragraphs. They should monitor student learning and use their knowledge to inform instruction. By analyzing students' patterns of errors, educators can give correct feedback to their students and can use teaching strategies that fit their students' current reading level. Effective educators provide explicit reading instruction and give many opportunities for their students to practice until the skills are mastered.

When educators are more informed of research-based language or reading curriculum, and instruction, they will be able to accurately deliver the curriculum to all students *and* make informed decisions regarding the success of the reading instruction.

Background Information

This study describes the relationship between an educator deepening her language knowledge and understanding of the reading process and how this knowledge impacted her ability to identify reading difficulties with struggling students as well as her improve her reading instruction.

Teacher Professional Development

The researcher of this study, an interventionist at an elementary school, participated in the Language Essentials for Teachers of Reading and Spelling (LETRS) professional development course with the hope to improve the reading outcomes for students with disabilities. Her school district offered the course to general education classroom teachers and interventionists. The purpose of it was to deepen teachers' knowledge and understanding of reading development and language instruction based on scientific research in order to improve each educators' reading instruction. LETRS training, consisting of four full days of a workshop, once/month meetings, and an online team that discussed the implementation of the LETRS knowledge, began in August 2020 and ended in April 2021. Participating teachers received the LETRS manual, written and published by Moats and Tolman (2019). In addition to the four-unit LETRS manual, participants were assigned an interactive online course aligned with the units and provided demonstrations of reading instruction in the classroom. For this study, the researcher implemented several of the learned LETRS reading instructional strategies with a group of kindergarten students with disabilities, as well as used her deepening knowledge to make informed decisions based on reading assessments.

Curriculum Materials

This specialized and intensive early reading instruction was taught in the general education classroom during small-group instruction. This occurred daily for at least sixty minutes. The intervention focused on increasing students' early literacy skills including the following: letter names, letter sounds, phonemic awareness, and early writing. Varying curricula were used, based on the beginning of the year (Fall) universal screening data and the needs of the students. Throughout the study, the researcher continued to use the same curricula with her kindergarten students such as Pre-A Fountas and Pinnell Early Reading Curriculum, Leveled Literacy Intervention (LLI) curriculum, and Haggerty Phonemic Awareness, as well as newly

learned LETRS reading instructional strategies. Table 1 highlights the various curricula and the population, based on universal screening data, of students who used them.

Table 1

Supplemental Reading Curriculum and Student Population Based on Fall Universal Screening Data

Supplemental Reading Curriculum	Student Population
Pre-A Fountas and Pinnell Early Reading Curriculum (Richardson, 2009)	Student who demonstrated less than 40 letter names and letter sounds
Leveled Literacy Intervention (LLI) (Fountas and Pinnell, 2013)	Students who mastered more than 40 letter names and sounds
Haggerty Phonemic Awareness (Heggerty and VanHekken, 2020)	All general education students and modified instruction for students receiving intervention services

The Pre-A Fountas and Pinnell Early Reading Curriculum consisted of commercial lesson plans focused on activities to support students in the very beginning reading stages. This was supplementary to the core curriculum of Benchmarks (2009), which was used with all kindergarten students.

Students with reading and writing difficulties were taught reading with the Benchmarks curriculum (2009) and Leveled Literacy Intervention (LLI) (2013). The LLI curriculum (2013) is used with students who experienced reading and writing difficulties. The goal of this curriculum was building reading and writing knowledge by engaging students in large amounts of successful daily reading. The LLI (2013) intervention also expands comprehension with close reading and helps monitor student reading and reading comprehension progress.

Another tool utilized by the researcher and the classroom teacher was the Heggerty Phonemic Awareness curriculum (2020). The classroom teacher used this for whole-group

instruction and the researcher used a modified version during small-group instruction with a focus on supporting the following skills: rhyme repetition, onset fluency, blending compound words, isolating final sounds, segmenting compound words, adding, deleting words, and substituting words. Students who participated in this also participated in the Benchmark curriculum (2013).

Data Collection

Daily small-group observations were documented to monitor students' progress, but the data gathered for each group differed. For students who were still at a Pre-A level (knowing less than 40 letter names and letter sounds), the researcher collected weekly timed and untimed data that involve letter naming and letter sound skills, initial sounds skills, segmenting, and blending sounds in single-syllable words. The Aimsweb (2020) progress monitoring tool was also used to monitor students' weekly progress. For students who knew more than 40 letter names and letter sounds, Leveled Literacy Intervention (LLI) running records were collected every two weeks to monitor students' reading skills such as decoding and reading comprehension levels.

Throughout the study, the researcher monitored students' progress and used students' reading data to inform her reading instruction. The researcher then provided differentiated reading instruction based on her insights for improving the decoding and reading comprehension skills of her students.

Definition of Terms

The following section highlights specific terms that are common to the teaching of reading.

- Alphabetic Principle: The concept that letters are used to represent individual phonemes in the spoken word. Insights into the principle are critical for learning to read and spell (Moats & Tolman, 2019).
- Blending: Reading unfamiliar words by producing all the sounds then adjusting or flexing the sounds to make a real word (Moats & Tolman, 2019).

- Decoding: The ability to translate a word from print to speech, usually by employing knowledge of sound-symbol correspondence (Moats & Tolman, 2019).
- Grapheme: A letter or letter combination that spells a phoneme, can be one, two, three or four letters in English e.g., e, ei, igh, eigh (Moats & Tolman, 2019.
- Orthography: understanding that letters and letter combinations (graphemes) represent sounds but are not the same as sounds (Moats & Tolman, 2019).
- Phonemic Awareness: The conscious awareness of individual speech sounds (consonants and vowels) in spoken syllables and the ability to consciously manipulate those sounds (Moats & Tolman, 2019).
- Phonology: The rule system within a language by which phonemes can be sequenced, combined, and pronounced to make words (Moats & Tolman, 2019).
- Reading Comprehension: The student's ability to construct meaning while reading a text (Moats & Tolman, 2019).
- Semantics: Word meaning and relationships with another word that include antonyms, synonyms, associations, and analogies (Moats & Tolman, 2019).
- Syllables: The unit of pronunciation that is organized around a vowel; it may or may not have a consonant after the vowel (Moats & Tolman, 2019).
- Syntax: The structure of a sentence or a text and how words in a sentence and a text follow the connections among ideas as meaning is constructed (Moats & Tolman, 2019).
- Vocabulary: Bank of words that are instantly and effortlessly recognized, including both regularly spelled and irregularly spelled words (Moats & Tolman, 2019).

Conclusion

Gaps in educators' insights of the teaching of reading impact their overall teaching and subsequently students' achievement (Moats et al., 2003). This lack of insight into language knowledge may ultimately hinder them in becoming responsive educators. In this study, the researcher reflected upon her reading instruction and participated in the LETRS professional

development course to gain more insight into the causes of variation in students' reading skills. This study highlights the students she worked with and the way her LETRS training affected students and their learning. To maintain confidentiality, pseudonyms were used for students whose reading data was examined.

Chapter Two

Introduction

Learning to read is perhaps the most important accomplishment of children in elementary school. Many students with learning disabilities (LD) and students with reading and writing difficulties struggle with reading comprehension and written expression (Swanson & Saenz, 2003) yet reading difficulties for students with learning disabilities are most often rooted in problems with phonological processing and decoding (Melby-Lervåg et al., 2012).

Skilled decoding requires an understanding that letters and sounds work in systematic ways to form words O'Connor, (2011). Students need to learn to blend sounds effortlessly and automatically to become fluent decoders (Adams, 1990). Students with or at risk, for reading disabilities often have more difficulty than others in developing blending skills and for students who experience difficulty, additional practice may be necessary (Juel & Minden-Cupp, 2000; Qi & O'Connor, 2000).

How Educators Have Been Taught

Over the past 20 to 25 years, educators have taught reading without following a systematic scope and sequence for the development of early reading skills (Duke, 2018). Educators often addressed letter sounds only as they incidentally arose in interactions with children or when the letter sounds were needed to read words within a specific text. The problems with this approach in teaching phonics instruction are that information is not presented logically to the child *and* phonics instruction should not be based primarily on opportune moments in text reading.

In order to teach phonics systematically, educators need to have a strong understanding of how reading occurs. Yet, many K-4 teachers demonstrate limited language knowledge. Moats and Foorman (2003) conducted an experimental survey design that was given to K-4 educators through three different phases. The surveys included open-ended questions and multiple-choice questions. The results highlighted that only 34% of the teachers demonstrated a high level of

understanding language content knowledge. About 43% of the teachers showed fair knowledge while 21% of the teachers demonstrated very limited content knowledge.

Additionally, K-2 educators demonstrated a lack of knowledge of concepts of print to speech correspondence; many of the surveyed teachers tended to overcount the number of speech sounds in a one- syllable word when the number of letters exceeds the number of speech sounds as in (*wrath & weigh*). They also demonstrated difficulty identifying phonemes when phonemes are spelled with complex graphemes such as (*-dge &-tch).* They also demonstrated a lack of awareness of syllable spelling conventions, correspondence to phonological aspects of word structure, and awareness of morphology (Moats & Foorman, 2003).

Importance of Increasing Educator Knowledge

In 2011, Washburn et al. indicated that preservice teachers lack phonics and alphabetic principles knowledge; citing this lack of preparedness as a possible hindrance to the learning of their future students (Washburn et al., 2011). According to Moats (2009), if teachers are not well prepared in language knowledge, they will not become responsive teachers. She described responsive teachers as those who provide differentiated instruction based on their insights into the causes of variation in students' reading achievement. Responsive teachers can explain concepts explicitly and can choose examples wisely while also providing targeted feedback when errors occur (Moats, 2009). Ten years later, Moats and Tolman (2019) stressed that the better teachers were informed in language knowledge, the better they would be at designing courses, evaluating tools, and training for their students.

If teachers begin their careers without this knowledge, it isn't too late for them to learn. Moats and Foorman (2003) were among a few researchers who investigated the impact of teachers' professional development courses to improve students' decoding -and reading comprehension skills. They found that increasing teachers' language knowledge was an important factor that positively impacted students' decoding and reading comprehension skills

(Moats & Foorman, 2003). Thus, to increase teachers' language knowledge, the content of pre-service teachers' learning about reading *and* professional development for practicing teachers needs to change.

Guiding Principles of Teaching Reading

The Three Cueing Systems

For many years, educators were taught to teach reading using the three-cueing systems model. This model relies on the systems of graphophonics, syntactic and semantic. Through the years, educators have focused primarily on making meaning of text, comprehension. Although educators have advocated for decoding unknown words, beginning with the first sound, many children have learned to overly focus on pictures and cues such as "Does it sound right? or "Does it make sense?" in place of using sound and letter knowledge of an unknown word to decode unfamiliar words. According to Schwartz (2020), the goal of the reading teacher who implements the three-cueing systems focuses less on helping early readers "…attend to every part of a word" and more on helping them "…complete a coherent thought," (p. 4).

Additionally, Schwartz (2020) warns that encouraging children to check the picture when they come to a tricky word decreases their ability to use their knowledge of letter sounds and letter sounds combination to read through part of the word which then lowers their ability to recognize the word the next time they see it. New research suggests that there has been a shift from implementing the three-cueing systems that focus on meaning in early reading instruction to a more balanced instruction that focuses on both meaning and word solving (Schwartz, 2020).

The Simple View of Reading

Gough and Tunmer (1986) presented the relationship of decoding and reading comprehension through the Simple View of Reading (p. 6-10). *Simple View of Reading* Theory states that "Reading comprehension is the product of word recognition and language comprehension. Without strong skills in either domain, an individual's reading comprehension

will be compromised" (Moats & Tolman, 2019, p.16). The Simple View of Reading Theory establishes the foundation for successful reading instruction with a focus on the phonological processor (speech/sound), orthographic processor (written language symbols), meaning processor (interprets word meanings) and context processor (interacts and provides support for the meaning processor) in word recognition (Seidenberg & McClelland, 1989, P 546). Moats (2020) calls for teachers' preparation to be more rigorous and aligned with research-based reading instructions, including the teaching of the simple view of reading.

Awareness of the Layers of Language

According to Moats (2020), effective teachers increase students' awareness through every layer of language that includes sounds, syllables, morphemes, phrases, sentences, and paragraphs. For example, while teaching phonemic awareness skills knowledgeable teachers direct students to focus on listening for the sounds instead of confusing the task with spelling or phonics. While teaching morphemes (the smallest meaningful units of language), knowledgeable teachers help students identify morphemes and distinguish them from syllables. For example, the word *interchangeable* has five syllables and three morphemes: *Inter, Change, Able (*Moats, 2020).

In the area of phonics and phonology, knowledgeable teachers who understand that consonants and vowels can be grouped into groups with similar properties (e.g., stops, nasals, fricatives, affricates, glides, and liquids) can focus on each sound property to teach children. She suggested that instead of asking students, "What sound does each letter make?" the knowledgeable teacher can help students focus on sounds by saying things like, "/m/, /n/ and /ng/ are three 'nasal' sounds in English; hold your nose to feel how these sounds go through the nose." Increased teachers' knowledge of letter sound properties increases students' awareness of letter sounds and their ability to identify and produce those sounds accurately (Moats, 2020).

Explicit Teaching

Effective teachers use explicit teaching strategies, systematic and engaging. They also balance language skills instruction with its application to purposeful daily reading and writing activities, no matter what the skills level of their learners (Moats, 2020). Orthography, *understanding that letters and letter combinations (graphemes) represent sounds but are not the same as sounds*, should be explicitly taught and should extend at least through grade three when syllables and morphemes in longer words are tackled. Current practices of teaching orthography or writing depend on following a comprehensive scope and sequence that includes instruction in digraphs, blends, silent letter combinations, vowel teams, diphthongs, and the six common syllable types (Moats, 2020).

Current teaching practices for syntax or text structure focus on “identifying cohesive devices such as pronouns references, connecting words, word substitutions, parallel sentence structure, and paragraph organization,” (Moats, 2020 p.8). She also suggested that teachers’ instruction should focus on illustrating for students the purpose of a given text and how a text hangs together and follows the connections among ideas as meaning is constructed (Moats, 2020).

Teaching semantics or word meaning with other word meanings should be through providing students with friendly definitions, numerous examples, and opportunities for students to say and use new words that include antonyms, synonyms, associations, analogies, and categorical relationships on vocabulary tasks instead of only adopting a routine for teaching unfamiliar word meaning (Moats, 2020).

Efficacy Using Data

Making informed teaching decisions stems from having the knowledge of how students learn to read *and* the ability to implement high-quality teaching, In a study investigating the relationship between teachers’ language knowledge and student achievement in 3rd and 4th-grade classrooms within high--poverty schools serving minority students, Moats,(2009) found

that many teachers lacked language knowledge. This deficit is troubling because armed with knowledge, teachers would be able to develop assessment measures as well as interpret screening or diagnostic assessment data – allowing them to make informed decisions about student instructional needs.

Filderman and Toste (2018) found that teachers often find using data to make instructional decisions overwhelming when implementing data-based decisions-making processes. However, students with reading difficulties require intensive and individualized reading instruction that utilizes student data. They recommend that to effectively monitor students' progress to make instructional decisions, teachers need to complete the following: decide on which measurement tools to use to assess student progress; determine the frequency of progress monitoring; set appropriate reading goals and select a method for making decisions (Filderman and Toste, 2018).

Roehrig et al. (2008) focused on how teachers are using assessment data to inform their reading instruction, finding that that teachers at different schools reported varying levels of success while using assessment data to inform their instruction. Successful implementation of data-driven instruction required reading coaches to provide teachers' professional development on use of assessment data to inform their literacy instruction. Also, successful implementation of data-driven instruction required reading coaches, teachers and administrators to closely monitor students' progress throughout the year and adjust their reading instruction according to each student's needs. Teacher knowledge and willingness of teachers to examine the effectiveness of their practices through the use of progress monitoring are among the barriers to effectively use assessment data when planning instructions. Reading coaches should work closely with teachers to help them understand progress monitoring and how it works in order to understand students' data and, ultimately, improve student learning (Roehrig et al., 2008).

Conclusion

Although many researchers have examined the efficacy of reading intervention tools, the implementation of instructional strategies, and using data to drive instruction, there was little research that investigated the relationship of improving teacher's reading instruction through professional development and the effect of their learning on students' decoding and reading comprehension skills. This study qualitatively investigated the relationship between deepening my (the researcher's) language knowledge, my understanding of the reading process, my ability to identify reading difficulties with struggling students, and the improvement of reading instruction in order to improve my students' reading skills. I enrolled in the Language Essentials for Teachers of Reading and Spelling (LETRS) professional development course. The next chapter will look at the research design, participants, data collection, analysis, methods, and procedure.

Chapter 3

Setting

The study took place at a K-4 school in northwest Minnesota. In this mid-sized town, K-12 education is provided to over 5,000 students in four elementary schools, two middle schools, and one high school with a second opening in two years. The district is known for its high student achievement, with students consistently performing above the national average on the ACT.

Students from minority groups make up 28.9% of the students' district population, with the largest group being Black/African American students. 40.2% of the students receive free or reduced-price lunch, 8.4% are English Language learners and 18.7% of the students receive special education services (including students' birth-age 21).

Participants

The research study was conducted in a kindergarten classroom with three students, between the ages of five and six years old, who were identified as students with developmental delays. The three kindergarten students spent the majority of their school days in their kindergarten classroom with typically developing peers, however, they also received specialized academic instruction in the area of early reading and early math skills from a special education teacher (the researcher) in a small group setting. This instruction lasted an average of sixty minutes per day, five days a week. Participants also received other related special education services such as speech and language services, occupational therapy services, and physical therapy services. The researcher, who taught all three participants, received the training, Language Essentials for Teachers of Reading and Spelling (LETRS) throughout the 2020-21 academic year.

This group of three kindergarten students was selected based on their demonstrated scores from the Fall Universal Screening and Winter Universal Screening assessments. Data

regarding student learning was collected from September 2020 – January 2021, using the assessment tools highlighted below.

1. Aimsweb Early Reading: This screening provided baseline scores from the fall and winter assessments that addressed students' early literacy fluency skills in the areas of letter naming, initial sounds, letter word sound fluency, and phonemic segmentation.
2. Untimed Weekly Progress Monitoring Data: This was collected by the teacher researcher with a focus on early reading skills such as initial sounds, letter naming fluency, letter words sound fluency, phonemic segmentation, and sight words.

The Fall Aimsweb Early Reading Literacy (Aimsweb™Plus, 2020 monitor) was administered in September 2020. The composite scores were used as a baseline for all three kindergarten students and subsequent literacy instruction was implemented for the three students, using one of the supplementary curriculums highlighted in Table 1. This instruction was in addition to the core reading instruction.

The Winter Aimsweb Early Literacy Composite data (Aimsweb™Plus, 2020 monitor) was administered in January 2021. Trends and patterns were analyzed, and literacy instruction continued. However, the researcher additionally focused on implementing teaching strategies learned during the LETRS training during the course of her work with the students. The following chapter specifically highlights the characteristics of each study participant, followed by a reflection of data-driven teaching decisions made by the researcher.

Summary

The purpose of this study was to understand the relationship between improving one educator's reading instructions by taking the Language Essentials for Teachers of Reading and Spelling (LETRS~~)~~ professional development course and students' decoding and reading comprehension skills. The researcher completed the LETRS professional development to

increase her language knowledge and instruction based on scientific research. The researcher examined the early reading progress monitoring data of three kindergarten students to determine the ~~(~~LETRS~~)~~ professional development efficacy in increasing teachers' reading instructions and students' decoding and reading comprehension skills. Chapter four will describe these findings.

Chapter Four

Data Collection

Data were collected on three kindergarten students who were identified as students with disabilities under non-categorical developmental delay-Part B (3-6). Pseudonyms (Emma, Patrick and Aiden) were provided to the three students to maintain confidentiality.

Learning Characteristics of Students

The following section is a description of learning characteristics of each of the three students (Emma, Patrick and Aiden) that worked with the researcher. This section is then followed by their early reading data including the timed Aimsweb Fall scores and their untimed classroom data.

When the researcher first began working with Emma, she noted that Emma demonstrated strong visual processing skills, and did not need help in noticing similarities and differences in pictures, letters, numbers, words, and objects; she recognized patterns in visual information and noticed visual changes in her surroundings. However, Emma demonstrated difficulty with her planning skills, sequencing skills, working memory, and auditory processing skills. Emma had difficulties with comprehending directions presented orally; finding key facts in ideas when reading; managing her time effectively; following two and three-step directions; recalling sequential steps to complete complex/long tasks; staying on-task and focused in loud/distracting situation; listening to stories without pictures for prolonged periods of time and responding to questions/directions in a timely manner. Emma received Speech and language services and occupational therapy services. During the school year a categorical re-evaluation was completed to determine Emma's continued needs for special education services. Emma qualified under the category of Autism Spectrum Disorder (ASD).

Patrick is an English Language learner who knew and used minimal social language and minimal academic language with visual support at the time of starting kindergarten. Patrick also

received special education services under non-categorical developmental delay in the areas of academics, speech and language, and social language. In addition to these, he also received English Language services. Patrick demonstrated difficulty understanding concepts and he used very limited vocabulary to request and self-advocate for his needs. Patrick demonstrated difficulty initiating and maintaining interactions with peers/adults. He did not consistently ask, and answer questions and he demonstrated difficulty participating in structured activities. Patrick was able to follow routine multi-step directions. He did not use his language to clarify a direction or to comment and carry out a conversation with peers. Patrick was easily distracted by other peers or other classroom activities which impacted his ability to maintain his attention during instruction time.

Aiden was a kindergarten student who was also identified as an English Language learner. He received special education services under a non-categorical developmental delay (DD) in the areas of academics, social skills, language development, and fine motor skills. At the time of his initial evaluation in 2019, Aiden demonstrated difficulty with recalling information, following directions, responding to questions, and demonstrating early reading and math skills. Aiden also demonstrated difficulty handling separation from his parents, engaging in interactive play that included sharing and turn-taking, and often had temper tantrums and became aggressive toward others. In the fall of 2020, Aiden was identified as an ELL student who used minimal social language and minimal academic language with visual support. Aiden continued to receive English Learner services.

Universal Screening Benchmark Scores

Students were identified as subjects for the study based on their Fall Universal Screening data. The tasks students were to complete were based on a timed score – one minute/section. The following table highlights specific universal screening tools and benchmark scores for the school district in which the three students attended. It is followed by Emma, Patrick and Aiden's scores from the universal screening completed in the fall, both timed and

untimed. The untimed data is used to provide a fuller picture of the early literacy skills of the students.

Table 2

School District Universal Screening Tools and Benchmark Scores

Tool	Description	Literacy Skill(s)	Fall Screening Benchmark	Winter Screening Benchmark	Spring Screening Benchmark
Aimsweb Plus Screening Measures: Informal Letter Naming Fluency	Measures student's ability to name upper- and lower-case letters.	Letter Naming	19-43	36-58	43-68
Aimsweb Plus Screening Measures: Informal Initial Sound Identification	Measures a student's ability to identify and make the first sound of familiar words	Initial Sounds	8-11	11-12	Not Assessed
Aimsweb Plus Screening Measures: Untimed Classroom Data	Measures a student's ability to make letter and syllable sounds and to read consonant-vowel-consonant (CVC) words.	Letter/Word Sound Fluency	2-16	24-42	36-48
Aimsweb Plus Screening Measures: Untimed Classroom Data and Reading Records	Measures a student's ability to say the phonemes of words.	Phoneme Segmentation	Not Assessed	29-42	37-46

Source: 2019-20 Aimsweb Plus Norms for Kindergarten

It is important to note that the benchmark scores for initial sounds, letter names, letter word sound fluency and phoneme segmentation are based on 2019 norms, provided by Aimsweb.

The benchmark scores for sight words and the text level were created by the local school district. The scores of the three subjects are highlighted in Figure 1 and 2, with Figure 1 highlighting the timed scores of the students and Figure 2 highlighting the untimed scores.

Figure 1.

Timed Student Data – Fall Screening

Name	IS			LN			LWSF			PS			SW			Rdg Level		
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S
Emma										NA								
Patrick										NA								
Aiden										NA								

KEY: IS: Initial Sounds LN: Letter Names LWSF: Letter Word Sound Fluency
PS: Phoneme Segmentation SW: Sight Words Rdg Level: Text Level (Fall)

Color KEY: Above Average Average Below Average Well Below Average

Figure 2

Untimed Student Data – Fall Screening

Name	IS			LN			LWSF			PS			SW			Rdg Level		
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S
Emma										NA								
Patrick										NA								
Aiden										NA								

KEY: IS: Initial Sounds LN: Letter Names LWSF: Letter Word Sound Fluency
PS: Phoneme Segmentation SW: Sight Words Rdg Level: Text Level (Fall)

Color KEY: Above Average Average Below Average Well Below Average

Based on the results of the universal screening, both timed and untimed, it was clear that two of the three students (Patrick and Aiden) were below or even well below average in each area assessed. Emma was below or well below average in four of the five skills assessed.

Emma's score on the Early Reading Composite timed test was 18, which was well below average. Specifically, Emma only recognized nine uppercase letters and zero lowercase letters. She was unable to name any letter sounds and had difficulty with identifying and making the initial sound of familiar words. However, her Letter Word Sound Fluency (LWSF) score indicated an average ability to make letter and syllable sounds. She did not recognize any kindergarten sight words and was at Pre-A reading level.

Patrick's Early Literacy Composite Score was 15, which was within the below- average range. He obtained well-below average scores in initial sounds and below average in the areas of naming letters as well as letter word sounds fluency. Patrick did not recognize any kindergarten sight words and was at Pre-A reading level.

Aiden's Early Reading Composite score was well below average, with his scores from the initial sounds and letter naming fluency well-below average. His LWSF score was below average. Aiden was unable to identify any kindergarten sight words and was at Pre-A reading level.

To meet their needs, the researcher began working with the students daily during small-group time. The following section highlights teaching routines that we incorporated into each thirty-minute teaching session.

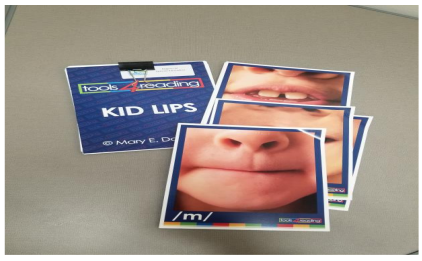
Teaching Routines

When students were identified for the researcher to work with, the intervention was intended to last for 30 minutes each day of the week – for a total of 150 minutes. The students were taught in one group of three. Six teaching routines were used to teach phonemic awareness, phonological processes, and orthography. These routines are highlighted in Figure

3, with a picture illustrating materials used. Each routine is then described in detail following the figure.

Figure 3

Daily Teaching Routines

Working with Letters	Working on Names	Phonemic Awareness	Working with Books	Writing	Sight Words
					
					

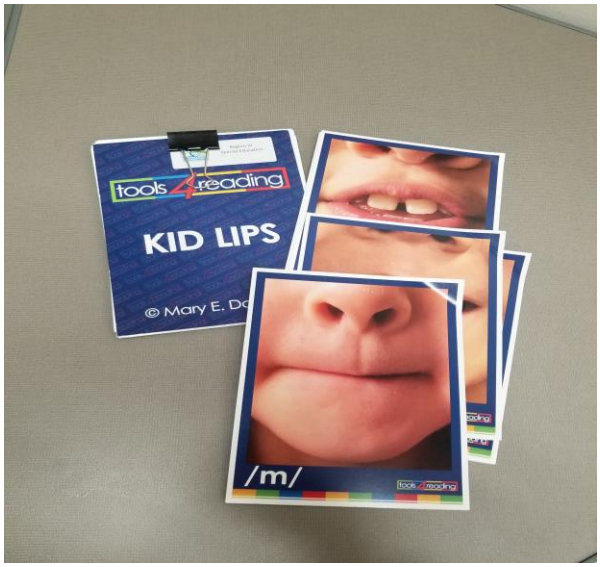
Working with Letters. The daily routine of practicing a letter of the day was used to teach letter names and letter sounds. Students were asked to name the letter of the day, write it, say the letter sound, and listen and identify words that start with the letter of the day.

Students were presented with letter cards while they named the letter shown and, as a group, made the letter sound (Letter is--------, the sound is--------) using the “I do, you do” model. To increase recall and fluency, each day students continued to independently practice naming their learned letter names and letter sounds while I observed. If a student made an error on a given letter name or letter sound, the researcher promptly gave feedback to the student, often

using Lips cards to show students how to articulate a given sound (Figure 4). This helped to increase students' awareness of given sound characteristics.

Figure 4

Example of Lips Cards



After students learned approximately 25/52 (upper- and lower-case letters), the researcher began implementing a daily quick practice of all letters that had been taught, in addition to the letter of the day. The purpose was to increase the students' fluency in naming and providing the sounds of the letters.

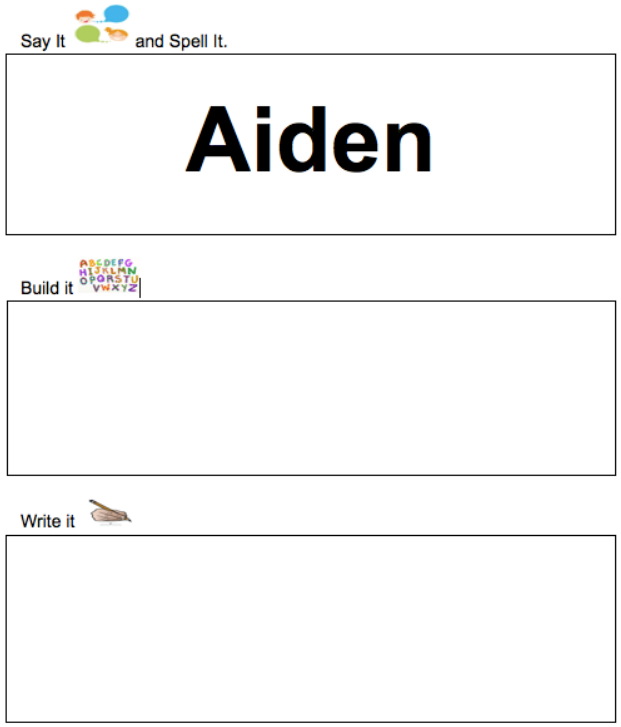
Working on Names. The purpose of this activity was for students to identify letters, beginning with their own written names and the individual letters in their names. Additionally, they put the letters in their names in the correct order and wrote their first and last names. To support students in this routine, they were given a sample of their first name or last name and corresponding magnetic letters.

During this activity, students put the letters in their names in the correct order while naming those letters. When students practiced writing their first and last names, they first traced their names followed by fading the sample prompts. Students were also introduced to

syllabication by clapping their names and those of their peers to show the number of syllables in their names. Figure 5 is an example of a “Working with Names” activity.

Figure 5

Working with Names Activity Sheet



Heggerty Phonemic Awareness Activities. Building phonemic awareness skills is important for young students as it forms the foundation for early reading skills (Heggerty and VanHekken, 2020). Phonemic awareness activities help students understand that spoken words are made up of individual sounds called phonemes. To become fluent readers, young students need to learn how to isolate and blend sounds, segment a word into sounds, and manipulate sounds in words, therefore, lessons from the Heggerty curriculum are auditory – without any visuals. Students use hand motions and gestures to demonstrate what sound is identified, deleted, or manipulated.

For example, while students are practicing isolating the ending sound of a consonant-vowel-consonant (CVC) words, teacher will model isolating the ending sound by making a fist with one hand, then moving that fist across the body slowly while producing the first and middle sound of the word. When reaching the ending sound, the teacher will ask students to “punch out” the ending sound with their fists. It is thought that using kinesthetic hand motions while working on phonemic awareness will help students learn the skills. The Heggerty (2020) curriculum includes the following phonological and phonemic awareness skills: rhyming, onset fluency, blending, isolating final and medial phonemes (sounds), segmenting, adding phonemes, deleting phonemes, and substituting phonemes.

Sight Words. The purpose of teaching sight words is to increase student’s ability to recognize irregularly spelled words and to increase their fluency in reading high-frequency words. The researcher taught one to two kindergarten sight words each week. She modeled spelling and reading the sight word for the student, then the students practiced reading the words on their own. Magnetic letters were used to complete the following sight word activities: build the sight word, mix then fix the sight word and find the missing letter in the sight word. To increase students’ ability to recall sight words, students practiced writing the sight word with an example, then students were asked to write the new sight word without looking at the example.

Working With Books. The purpose of this activity was to introduce young students to the joy of reading, to practice reading sight words in a text, to teach the concept of print, to practice isolating and blending words, and to practice reading comprehension skills. Throughout the Working with books routine the researcher followed the format of Richardson's *The Next Step Forward in Guided Reading, (2009)* Pre-A lessons for students who knew less than 40 letters. If students knew more than 40 letters, the researcher used the Emergent Reading Plan (Richardson, 2009). These plans differed in that the Pre-A is included teaching letter names, letter sounds and phonemic awareness skills while the Emergent Reading Plan included teaching sight words and decoding skills.

While working with books, the researcher focused on teaching one or two of the following skills each day for students who were at Pre-A level:

- one-to-one matching
- the concept of a word
- identifying the first/last word
- the concept of a letter
- identifying the first, then last letter
- identifying the period and
- locating upper/lowercase letters.

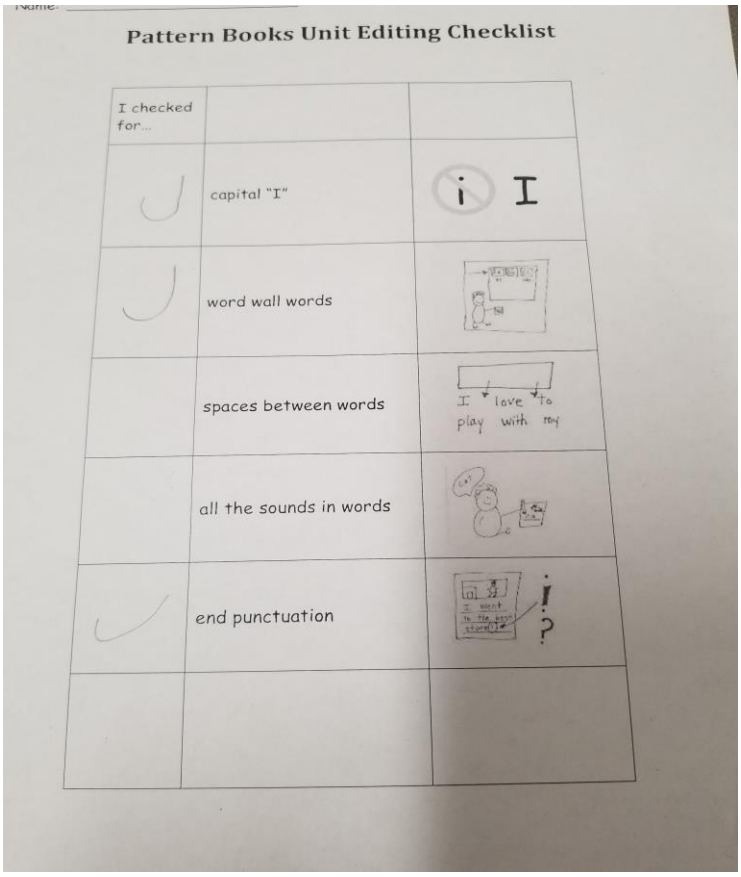
When students progressed from the Pre-A level to Emergent Readers level, the focus moved toward reviewing sight words and teaching new sight words, teaching new vocabulary in the book, teaching word solving skills, and encouraging fluency and comprehension skills.

Working on Writing. While teaching writing to students at the Pre-A level, the researcher focused on letter formation daily. The purpose of this was to help students recall letter forms and letter names. Students also practiced writing their newly learned sight word to increase their ability to recall the word. Once students mastered forming their letters and

corresponding sounds and were at the Emergent Readers level, the students wrote three to four sentences. Figure 6 highlights an editing checklist student used while working on writing.

Figure 6

Editing Checklist



Changes in Teaching

As the researcher participated in LETRS training, she also implemented changes in her teaching. Specifically, she began to focus more on explicit teaching utilizing a published scope and sequence for phonemic awareness, she increased her own, and subsequently her students' awareness of similar sounds as well as key words to use when teaching vowel sounds, she incorporated more writing into her daily lessons, and used decodable books for reading practice. The following sections highlight each of these themes.

Explicit Teaching. LETRS increased the researcher's understanding of the importance of teaching phonemic awareness activities in a more explicit, systematic, and sequential manner. As a result, she spent more time teaching foundational skills of phonemic awareness during daily small group instruction. Implementing the Heggerty curriculum in small group lessons provided her with the scope and sequence of those foundational early reading skills and it also provided the students with an established, daily, small-group routine that helped them focus on the skills being taught.

Heggerty's phonemic awareness curriculum provided many opportunities for daily explicit instruction following the sequential order the "I Do, We Do, You Do" model. As the students in this study were already identified with having special needs, the researcher did, however, implement some modifications to the daily phonemic awareness explicit instructions in order to accommodate students' skill levels. For example, she adjusted the length and content based on students' current level in phonemic awareness activities and their progression.

Increased awareness of confusion caused by similar sounds. LETRS training increased the researcher's awareness of the students' confusion caused by similar sounds. As a teacher, she became more intentional in directing her students' attention to what the mouth is doing when articulating a phoneme, providing many opportunities to practice so they could hear the differences among similar sounds. For students such as Emma, the researcher used the LIPS Cards each time the letter of the day was introduced. Additionally, she modeled the phoneme articulation and brought her a mirror to look at while she learned the nasals sounds /m/ and /n/.

Vowel and Consonant Sounds. Learning about vowels and consonant is often confusing for kindergartners, but the LETRS training increased the researcher's awareness of recommended keywords for short vowel sounds. For example, use the word "up" to highlight the /u/ sound, but don't use the word "umbrella" as it is nasalized. This is important to know because in some words, phonemes overlap with one another resulting in slight changes to the

phoneme characteristic and pronunciation. Appendix A lists recommended keywords for short vowels and Appendix B lists recommended keywords for consonants.

Importance of Incorporating Writing. LETRS training helped increase the researcher's intentions of including writing activities daily to increase students' recall and memory skills. The following six activities were incorporated.

Gross and Fine Motor Practice. While teaching letter names, the researcher included letter formation practice to support orthographic (letter recognition) skills. Students who struggled with their fine motor skills were provided with extra practice of pre-writing motor skills such as making large circles and small circles in the air with their arms extended, followed by making large circles and straight lines on the carpet or on their knees to increase spatial awareness.

Writing by Hand. After students learned to form single letters, they also practiced writing sight words and single-syllable words to improve orthographic memory and recall.

Letter names. Students worked on letter formation each day to increase their spatial and visual-motor memory skills. The researcher provided students with spatial guidelines so they could identify differences between short letters, long letters and letters below the baseline.

Dictation Routine. An interactive writing routine was helpful for students as it provided them an opportunity to formulate their own sentences using proper sentence structure and correct vocabulary.

Correct examples. After students attempted to practice writing their letters, words or sentences, a correct example was presented to them to increase their future recognition to the correct form of words.

Mechanics of writing. An interactive writing routine was established for students as it provided them with opportunities to practice writing simple consonant-vowel-consonant words and/or three-four-word sentences while learning writing mechanics.

Decodable Books. LETRS also was eye-opening for the researcher with the idea of using decodable books in daily reading instruction. Decodable books lack illustrations or pictures that explain certain vocabulary or concepts and they provided her students daily opportunities to isolate, blend and read consonant-vowel-consonant words. However, she was cautious in using only decodable books with students who were English Learners and students with limited vocabulary skills. The researcher ultimately used a combination of decodable books and leveled textbooks to encourage student's language development, reading comprehension skills, and reading skills.

Data Analysis

The students continued to work with the researcher from September to the May. In January, the winter universal screening was completed and the data from that screening, as well as untimed assessments, were analyzed. Figure 7 highlights the timed winter screening scores for each of the three students, while Figure 8 is comprised of the untimed student data.

Figure 7

Timed Student Data – Fall and Winter Screening

Name	IS			LN			LWSF			PS			SW			Rdg Level		
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S
Emma										NA								
Patrick										NA								
Aiden										NA								

KEY: IS: Initial Sounds LN: Letter Names LWSF: Letter Word Sound Fluency
PS: Phoneme Segmentation SW: Sight Words Rdg Level: Text Level (Fall)

Color KEY: Above Average Average Below Average Well Below Average

Figure 8

Untimed Student Data – Fall and Winter Screening

Name	IS			LN			LWSF			PS			SW			Rdg Level		
	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S	F	W	S
Emma										NA								
Patrick										NA								
Aiden										NA								

KEY: IS: Initial Sounds LN: Letter Names LWSF: Letter Word Sound Fluency
PS: Phoneme Segmentation SW: Sight Words Rdg Level: Text Level (Fall)

Color KEY: Above Average Average Below Average Well Below Average

As evidenced by the charts, each of the students made gains in their reading. In looking at the timed data, it is clear that all three students improved on initial sounds, sight words and text level and two of them also improved in letter names. The untimed data highlights an improvement in all areas for all the students.

Emma's winter Aimsweb data that was collected in January 2021 indicate that she has made progress in her early reading skills. With higher expectations during winter Aimsweb probes, Patrick winter scores showed little progress in his early reading skills; however, untimed data collected by Patrick's teacher indicates gains in the areas of early reading skills. Aiden's winter Aimsweb data that was collected in January 2021 indicates that Aiden has made significant progress in his early reading skills. Aiden's winter early literacy composite national percentile score is 32, which is within average range for kindergarten students. While the researcher is unable to state the gains were solely a result of increased learning on her part, it is important to note her LETRS professional development did indeed impact her teaching.

Recommendations

LETRS training has increased the researcher's knowledge of the importance of implementing daily explicit and systematic reading instruction that targets phonological skills and writing skills, while providing meaningful context through texts. Teaching phonological skills

without providing daily writing practice opportunities will not benefit students with recall or memory problems. Teaching phonology without teaching the meaning and providing meaningful context will not benefit students with limited language or with weak vocabulary. Those students will continue to demonstrate difficulty with decoding because they are limited with their language. They will also continue to demonstrate difficulty with reading comprehension.

Like other professions, teachers should seek formal and informal professional development opportunities to improve their students' outcomes. The researcher recommends educators and interventionists take the LETRS professional development course as it increases the educator's ability to plan and implement reading instruction that supports decoding and reading comprehension skills. However, she also realizes that not every educator has access to such training. In that case, the researcher suggests educators can improve their knowledge by reading the current peer-reviewed journal articles about teaching reading, found in local databases. Educators also can participate in a book study with a group of others, discussing new strategies in teaching reading, followed by the implementation and reflection of these strategies. Asking questions such as "What helped the lesson be successful?" or "What barriers did I find?" will help them grow. As teachers grow by implementing research-based reading strategies, they will be able to tailor their instruction to fit each students' individual needs.

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APPENDIX A

Recommended Keywords For Short Vowels

Short Vowel Sound	Recommended Key Word	Words to Avoid
/a/	**apple**	**And (nasalized)**
/e/	**Echo** **Ed** **exit**	**egg/sounds like/a/** **engine (nasalized)** **eye (long /i/)** **hen (nasalized)**
/i/	**Itch** **icky**	**Indian (nasalized)** **Igloo (sounds like long vowel /e/)**
/o/	**octopus**	**On, off (sounds like /aw/** **Dog (sounds like /aw/**
/u/	**up**	**Umbrella (nasalized**

Source: Sounds Spelling Cards from Spelling by Pattern, Level 1 (Jacernick & Moats,2007)

APPENDIX B

Recommended Key Words for Selected Consonants

Consonant phonemes	Recommended Key Word	Words to Avoid
/d/	**dog**	**Dress (affricated /d/)**
/t/	**tent , ten**	**Train (affricated /t/)**
X (/ks/)	**box**	**Xylophone (sounds like /z/)**
/g/	**goat**	**Grape (consonant blend)**
/r/	**Rabbit, rope**	**Bird (vowel sound here)**
/wh/	**whale**	**Not distinctive for American speakers as it is for British)**
/th/	**thimble**	**Avoid voiced /th/ as in them, those the.**

Source: Sounds Spelling Cards from Spelling by Pattern, Level 1 (Jacernick & Moats,2007)