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Impact of an Emergent Reading Skills Intervention on Letter Recognition and Phoneme Identification in Pre-Kindergarten Children

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IMPACT OF AN EMERGENT READING SKILLS INTERVENTION ON LETTER RECOGNITION AND PHONEME IDENTIFICATION IN PRE-KINDERGARTEN CHILDREN

A Thesis

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Master of Education

in

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by

Laura Simmons
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To my family, friends, and co-teacher, words will never bring the amount of gratitude I have for each of you. Thank you for supporting me, encouraging me, and loving me throughout this process. I could not have done this without each of you walking with me every step of the way.

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ABSTRACT

Research in the field of early literacy has demonstrated that letter recognition and phoneme identification are two necessary components of emergent reading skills (Casbergue & Strickland, 2016). Emergent literacy refers to the reading and writing skills that young children develop prior to learning traditional literacy skills and has been linked to increased literacy achievement (Justice & Pullen, 2003). This study focused solely on emergent reading skills. The purpose of the present study was to determine the effects of a targeted multi-sensory intervention on the emergent reading skills of letter recognition and phoneme identification using a multiple baseline design (Kazdin, 2011). Children were observed using the discrete categorization method during informal classroom observations while interacting with emergent reading materials (Kazdin, 2011). Previous research suggests that targeted emergent reading skill development supports emergent reading abilities (Noe et. al., 2014). The Emergent Reading Skills Intervention consisted of three components: shared reading, teacher-led phonemic awareness activities, and multi-sensory letter games. Results demonstrated the effectiveness of the Emergent Reading Skills Intervention on emergent reading skills of letter recognition and phoneme identification. It should be noted that this study was conducted during the COVID-19 pandemic. Future research could examine which components of the intervention were most impactful on the emergent reading skills of the targeted children.
CHAPTER 1. INTRODUCTION

Justification

Early childhood education provides the foundation for all learning that takes place in a child’s life. In well-designed early childhood education classrooms, the environment serves as the third teacher (Copple & Bredekamp, 2009), with teachers guiding their children in their learning and development over the course of the school year. Literacy experts stress the importance of addressing literacy early, stating that “Literacy matters – even in preschool. Maybe especially in preschool” (Casbergue & Strickland, 2016, p. xiii).

Literacy includes, “oral language, concepts of print, phonological awareness, and alphabet knowledge have strong scientifically based research support as predictors of early literacy success” (Casbergue & Strickland, 2016, p.3; National Early Literacy Panel, 2009). Often, literacy is addressed in preschool through children learning the alphabet song; however, letter recognition and phoneme identification are critical skills for preschool children to master, as, “reading and writing in the first grade can be predicted by the number of alphabet letters they know in preschool and kindergarten” (McGee, 2007, p.131; National Institute of Health and Human Development, 2000). A child’s ability to identify letters is “a predictor of end-of-year achievement for kindergarten” students” (Erekson et al., 2020, p.159). The ability to identify letters aids children’s understanding of the “specific correspondence between letters and phonemes” (Erekson et al., 2020, p.159). A solid understanding of these concepts creates the foundation into formal reading. It is also noted that when children are made to “practice naming and writing the alphabet letters through rote, repetitive activities devoid of any meaningful context are not likely to retain or apply their understanding of the alphabet over time” (Casbergue & Strickland, 2016, p.3). Additionally, the use of visual images supports the process.
of writing (Schickedanz, 1999). Therefore, it is recommended that emergent literacy include both exposure to meaningful reading and writing activities. This is best done through a program, “that incorporates both direct and embedded instruction in activities that are purposeful and meaningful for children” (McGee, 2007, p.121).

**Emergent Reading Skills**

Early emergent readers are defined by Tyner (2019) as “nonreaders with little alphabet knowledge ... typically prekindergarten to mid-year kindergarten students who recognize less than half the alphabet” (p.62). Tyner states that emergent readers can range from no knowledge to little knowledge in high frequency words and ability to track text, who also lack phonemic awareness (2019). As children develop better alphabet knowledge and some phonemic awareness, they move into the *emergent reader* category and once they have mastered letter recognition, phonemic awareness, print concepts, and are working towards greater levels of meaning and comprehension they are now considered *beginning readers* (Tyner, 2019). As children develop at their own pace, a class of pre-kindergarten children may include *early emergent readers*, *emergent readers*, and *beginning readers*.

As early emergent and emergent reading skills provide the foundation for beginning reading, focusing on these skills during preschool is essential. *Early emergent reading* skills include minimal alphabet knowledge, hold books, and differentiate between pictures and text (Tyner, 2019); *emergent reading* skills include letter recognition, phonemic awareness, print concepts, print tracking, high frequency word knowledge, rhyming, blending, segmenting, and writing about reading (Casbergue & Strickland, 2016; McGee, 2007; Tyner, 2019). While it is important to understand both *early emergent reading skills* and *emergent reading skills* as a way to comprehend the reading process and how readers develop, for the purposes of this study, the
focus was solely on emergent reading skills. Recommended practices suggest that reading should be for authentic purposes, be play- and choice-based and hands-on (Casbergue & Strickland, 2016). For the present study, letter recognition and phoneme identification were targeted in the intervention through developmentally appropriate practices that included both teacher led and child choice components (Copple & Bredekamp, 2009) with multisensory activities such as letter writing, alphabet matching, and picture cards (Tyner, 2019). Previous research has indicated that play based, developmentally appropriate, targeted letter recognition and phoneme identification interventions methods can increase the emergent reading skills of young children and thus give them the foundation to be strong readers (Kruse et al., 2015).

**Purpose**

The purpose of the present study was to increase letter recognition and phoneme identification skills, the two main components of emergent reading, in six pre-kindergarten children, who scored below their class average according to the *Letter Recognition and Phoneme Assessment* (Education Software for Guiding Instruction (ESGI): Easy Progress Monitoring), through a targeted multi-sensory intervention. Specifically, the study sought to increase both letter recognition and phoneme identification through the use of a hands on, multi-sensory targeted emergent reading intervention for the six selected children.

**Theoretical Framework**

The theoretical framework for the present study is grounded in the work of Vygotsky and Bruner. Vygotsky’s sociocultural theory suggests that all environments: physical, cultural, and personal, influence the individual, while Bruner’s concept of scaffolding acknowledged the role of the more competent other in shaping development. Collectively, these two theories provide a basis for the current study. Vygotsky believed in “the collaborative, communal nature of
processes at the core of development” (Stetsenko, 2017, p.134); that people are active within their environment and that they learn through it. Miller (2016) explained, “a child’s actions occur in the context of other’s actions” (p.177). Meaning that the child creates or develops their own cognitive skills and tools. Sociocultural Theory also believes that development never ends, that is, it is lifelong, unless specifically looking at a particular goal. Furthermore, Vygotsky’s Sociocultural Theory emphasizes the impact of social interactions, specifically cultural impacts such as religious, ethnic, socioeconomic status, etc. on children’s development. As explained, “development is not just about individuals. It is also about their surroundings, including the other people in their lives” (Miller, 2016, p.154). This is where the role of teachers as another influence or environment becomes important and plays a vital role when expanding upon the concept of scaffolding.

Vygotsky also believed that play and the zone of proximal development were large factors in child development. While children play, teachers provide guidance and challenge. Teacher supported challenge refers to the encouragement and push that a teacher provides to children to further their learning and development. These challenges occur within the child’s zone of proximal development. It is supported by Vygotsky as seen in his connection and explanation of play and the zone of proximal development (Vygotsky, 1976). Through play, children encounter different challenges in which their learning occurs. Vygotsky describes a zone of proximal development, as “the distance between the child’s actual developmental level and the higher level of potential development as determined through problem solving under adult guidance or in collaboration with capable peers” (Vygotsky, 1978, p.86). “The zone of proximal development (ZPD) is the space or zone where learning and development take place. At one end of the ZPD is the child’s current ability, what he understands about some topic. At the other end of the ZPD is
what the child can learn or accomplish with the help of an adult or more competent member of the culture” (Marion, 2019, p. 41). It is through the definition of the zone of proximal development that the need for scaffolding and teacher-child interactions through play becomes evident. Vygotsky’s views on the importance of play continue to support the inclusion of play in learning today in the classroom and at home and lead to his inclusion of scaffolding and the zone of proximal development as explained in the following quotation:

It is his indirect level of intervention -hint-giving, question-asking, modeling, and other, more subtle, forms of support – to which Vygotsky attributed the greatest development benefit for children who are within the zone of proximal development. From his view, when adults provide these indirect scaffolds to children who need only some support in completing tasks, solving problems, or becoming involved with peers, intellectual advancement is more likely to occur. (Trawick-Smith & Dziurgot, 2011, p. 121)

Understanding the zone of proximal development and scaffolding provide the lens with which to look through to see how a teacher should be providing guidance throughout play in the learning experience. Vygotsky also explained the importance of the zone of proximal development and observational methodology through observations with the children in their regular context. This was taken into consideration when implementing the assessment for this study as it was done through as little obtrusion as possible. Vygotsky’s work with the Sociocultural Learning Theory provides the foundation for many teachers and the reasoning behind many school curriculums, procedures, and philosophies. Many components of the Sociocultural Theory, specifically the
zone of proximal development and scaffolding, are used to support the creation and modification of the *Emergent Reading Skills Intervention*.

Bruner’s work also provides some of the theoretical framework for this study, specifically through his work with scaffolding. Bruner worked with Wood and Ross to explain scaffolding as the, “process that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted efforts. This scaffolding consists essentially of the adult “controlling” those elements of the task that are initially beyond the learner’s capacity, thus permitting him to concentrate upon and complete only those elements that are within his range of competence. The task thus proceeds to a successful conclusion” (Wood, et. al., 1976, p.90). Moreover, “the implication is that individuals have learning potential that can be reached with scaffolding provided by tutors, parents, teachers, and peers” (Lajoie, 2005, p.542). Bruner’s work with scaffolding further goes on to explain the focus of understanding the learning or comprehension that must take place during the process rather than the completion of the task. The process matters more as this is where the child is truly learning and developing. Bruner’s contributions of scaffolding help to support and reinforce Vygotsky’s Zone of Proximal Development and together the two provide a strong foundation and theoretical framework for this study.

**Developmentally Appropriate Practice**

Developmentally appropriate practices (DAP) provided the conceptual framework for this study (Copple & Bredekamp, 2009). DAP recommends learning that is centered around play, with intentional materials that facilitate targeted skill development. For the purposes of this study, those materials and skill development focused on literacy. When designing the intervention, the lead investigator did so looking through the lens of developmentally appropriate
practice. As DAP states, “most children do not automatically acquire phonemic awareness, but they gain this awareness when preschool teachers purposefully support it and provide the degree of assistance needed by the child” (Copple, et. al., 2009. p.147). Therefore, this intervention does not include any direct or explicit instruction, rote practice or drills, or worksheets. Instead, this intervention is a combination of teacher led activities and child led activities that are play based beginning with reading books and ending with games. “Preschoolers enjoy looking at books and being read to,” which is why book reading is the first component of the intervention (Copple, et. al., 2009. p.147) This DAP lens is further reflected in the variety of materials which allowed for child interest to show through their choices and lead to higher levels of attention and engagement. DAP also recommends that the classroom be an environment with “rich variety of materials” (Copple, et. al., 2009, p.18). The classroom already provides a variety of materials so in order to motivate the intervention children further, new materials were chosen specifically for this study. The chosen materials and games each worked to target the emergent reading skills through developmentally appropriate practice. Finally, DAP explains, “engaging children in early writing also helps them learn about print and the letters and words they eventually will read and spell” (Copple, et. al., 2009. p.148). The lead investigator incorporated writing components within the intervention to aid in the development of the targeted emergent reading skills. Developmentally appropriate practices contribute the conceptual framework for this study as they provide the guidance for designing the study.

**Research Question**

As early emergent reading and emergent reading skills provide the foundation for future learning, the guiding question for the present study was Would a teacher led multisensory intervention using a combination of shared reading, teacher-led phonemic awareness activities
and child choice multi-sensory letter games to increase letter recognition and phoneme identification in six pre-kindergarten children?

**Research Design**

In this study, data were collected using a single case, multiple baseline design across children to measure letter recognition and phoneme identification. Multiple baseline design has the ability to, “attribute the [changes to] the intervention rather than [to] extraneous events… if each baseline changes when the intervention is introduced” (Kazdin, 2011, p.144). Multiple baseline also creates a staircase effect in data as the participants are introduced to the treatment at different times, specifically once the previous group has achieved stability (Kazdin, 2011). Data were collected in adherence with the procedures set by the *Single Case Technical Document* (Kratochwill, et. al., 2010).

**Benefits and Limitations**

This study contributes to the literature on interventions supporting increased and proficient letter recognition and phoneme identification for prekindergarten children (Kruse et al., 2015). The implementation of letter recognition and phoneme identification intervention, which has been viewed through the lens of developmentally appropriate practice, provides children with the emergent reading skills which are linked to higher levels of literacy achievement; thus, better preparing them for future success. Another benefit of the single case, multiple baseline design is the ability to state direct causal relationships between the intervention and the behavioral change (Kazdin, 2011). Therefore, the study is able to state a direct causal relationship between the *Multi-Sensory Emergent Reading Skills Intervention* and the increase in emergent reading skills of the pre-kindergarten children who participated in the study. In
addition, the intervention does not have to be withdrawn; therefore, children who begin the treatment can remain in treatment through the course of the study.

Using the multiple baseline design, there is potential for limitation due to “withholding treatment for a prolonged period while the investigator is waiting to apply the intervention to the final behavior, person, or situation” (Kazdin, 2011, p. 166). This potential was low was the study moved swiftly to the next cohort immediately after each group achieved stability. Another limitation with single case multiple baseline design is the lack of generalizability (Kazdin, 2011). This study took place in a single regular education pre-kindergarten classroom in a suburban private elementary school with only six children. The six children were selected based on their scores on a letter recognition and phoneme identification pre-assessment given to the entire class. They scored the lowest, thus indicating the need for intervention. This intervention could have been applied to any child in the class showing need. Bias can be a potential limitation with the lead investigator being the classroom teacher, but with the systematic use of the assessment and the implementation of the reliability observer there was no room for bias in this study. This study was also conducted during the COVID-19 pandemic which provided its own limitations on the methodology of the study, the children, the home environments, the classroom environments, and overall well-being of all participants. Due to the COVID-19 pandemic, the lead investigator had to wear a mask at all times while in the classroom and during the study, some of the children in the class also wore masks. COVID-19 elevated stress levels amongst the teachers, students, families, and faculty that had social-emotional effects that carried over into the learning process. The classroom environments had to be distanced and students could not share materials as per their norm due to the COVID-19 restrictions. These are just a few of the impacts of the COVID-19 pandemic on the classroom, the students, and the study.
Assumptions

1. Children were functioning within their normal limits for their age and their letter recognition and phoneme identification was not due to a developmental delay.

2. The lead teacher and investigator had developmentally appropriate goals and expectations for the targeted subjects.

Definitions

For this study, the behavior of interest was emergent reading with focus on letter recognition and phonemic identification.

Emergent Reading

Emergent reading was defined as “the development of the association of print with meaning that begins early in a child’s life and continues until the child reaches the stage of conventional reading and writing” (Erekson et al., 2020, p. 138). Emergent reading development components include oral language, concepts of print, phonological awareness, and alphabet knowledge (Casbergue & Strickland, 2016, p. 3).

Letter Recognition

Letter recognition was defined as “identifying the letters of the alphabet” (Erekson et al., 2020, p. 159). An example of accurate letter recognition would be a child looking at the letter ‘e’ and when prompted answered saying that is the letter ‘e’. A non-example would be if a child looked at the letter ‘e’ and answered ‘a’ or making the letter sound for /e/.

Phoneme Identification

Phoneme identification was defined as accurately identifying the individual sounds of letters, as modified from McGee and Richgels’ definition of phoneme, “the smallest units of sound that are combined and contrasted in a language’s words” (2012, p.9). An example of
accurate phoneme identification would be a child looking at the letter ‘b’ and saying /b/. A non-example would be if a child looked at the letter ‘b’ and said /s/ or /be/. 
CHAPTER 2. REVIEW OF LITERATURE

Reading extends to each part of the world and is integrated throughout every moment of the day and in everything we do. With reading being such an integral part of the world, there is a societal pressure as well as a school level pressure for children to not only be able to read but read well and read as soon as possible. This pressure began with upper levels and state standardized testing grades and has since trickled all the way down to preschool. The reason being: reading begins at an early age, and the more research that has been done explains just how early this process begins and the stages in which it occurs. Thus paves the way for emergent reading skills, beginning formally in pre-kindergarten, to become a focus in the reading process. While full text, fluent reading may not occur until second or third grade, emergent reading skills are necessary for children to begin the reading process and must begin early on. “Emergent literacy, which describes the knowledge of and skills in reading and writing that young children obtain prior to achieving conventional literacy, provides a foundation for higher-level literacy skills” (Justice & Pullen, 2003, p. 99). A research study also examined the long term effects of emergent reading skills and found, “these children’s reading skills had been assessed when they were in preschool or kindergarten and again when they were in a later grade (e.g., third grade, fifth grade). The analyses identified significant continuity between children’s preschool or kindergarten reading skills and their reading achievement at the alter measurement periods” (Lonigan et al., 2013, p. 112). Therefore, emergent reading skills are the foundational blocks a child must carefully develop and continue to foster in order to set themselves up for a successful journey as a reader. The impact of emergent reading skills on young children goes far beyond the pre-kindergarten year.
The review of literature is organized into major categories which inform the research study including, recommended practices for emergent reading skills, developmentally appropriate practices, and integrating emergent reading skill development opportunities both in the classroom and at home.

**Recommended Practices for Emergent Reading Skill Development**

When considering the best practices for emergent reading skill development, there are many global, national, and regional research-based organizations who provide the framework for these guidelines. The *National Association for the Education of Young Children* (NAEYC) recommends programs that are strongly based in the inclusion and use of books for fostering early literacy skills. Specifically, recommending that books should be of a wide variety and teachers should read in an “engaging manner, sometimes to individual children, sometimes to small groups (two to six children), and sometimes to large groups” (NAEYC Early Learning Accreditation, 2018, p. 25). In continuation, there are also environmental rating scales, which exemplify how emergent reading skills and their development should be seen within the context of the classroom to support children. The *Early Childhood Environmental Rating Scale – Revised*, (ECERS-R) (Harms et al., 2005), recommends that the classroom have a “wide selection of books include: variety of topics; fantasy and factual information; stories about people, animals, and science; books that reflect different cultures and abilities” (p.22.b.). ECERS-R also supports readings to be done in both small and whole group settings and the inclusions on additional material to encourage the development of language building skills such as “posters, pictures, flannel board stories, picture card games, and recorded stories and songs” (Harms et al., 2005, p. 22.b.). Lastly, ECERS-R recommends that the materials in the classroom
should spark child interest and should be rotated out if they do not and teachers should facilitate engaging conversations around these materials (Harms et al., 2005).

Furthermore, *Teaching Strategies Gold Objective 16 a: identifies and names letters* and *Teaching Strategies Gold Objective 16 b: uses letter-sound knowledge* (Heroman & Tabors, 2017) (See Appendix C) were used for the purposes of this study to target specific learning objectives for the participants. As the objectives further breakdown by age and provide more specific detail the study was able to target the participants age range and select the more specific learning objectives such as, “identifies and names all upper- and lowercase letters when presented in random order, produces the correct sounds for 10-20 letters, shows understanding that a sequence of letters represents a sequence of sounds, [and] applies letter-sound correspondence when attempting to read and write” (Heroman & Tabors, 2017, p. 24).

The following is a list of recommendations gathered from the *NAEYC Class Observation Tool* (2019): teachers provide individualized support in their responsiveness to children, allow for child choice and autonomy within their learning, encourage movement and engaging lessons, materials are always readily available, engaging and intentional chosen, opportunities for the teacher to facilitate learning through a variety of learning styles including visual, auditory, and kinesthetic, and children should be actively participating. It is also important to note that the *NAEYC Class Observation Tool* (2019) mentions scaffolding as an entire subdomain emphasizing the importance of scaffolding within the classroom environment and the benefit that it has on child learning, especially within the early childhood years. The last environmental rating scale used for the purposes of the present study is the *Early Literacy and Language Classroom Observation* tool (ELLCO) (Smith et al., 2008). The ELLCO recommends a heavy influx of books within the classroom environment. Books should range in the genres available,
reading levels, location in the classroom, and topic focus. Children should also be able to access books within the different play areas in the classroom as well as listen to recorded books (Smith et al., 2008). The purpose of the integration of the books should be to incite interest and learning through play based exploration of the numerous books within the classroom environment.

**Selecting Targeted Emergent Reading Skills**

Children go through various stages of reading during their development. Those stages can be broken down into six stages as explained by Tyner (2019) as the emergent reader, the beginning reader, the fledgling reader, the transitional reader, the fluent reader, and the independent reader. In the start of the reading process, specifically in the emergent reader stage, which usually occurs around the pre-kindergarten time frame, the question becomes what are the emergent reading skills and which ones should be addressed (Tyner, 2019). Emergent reading skills include but are not limited to letter recognition, phonemic awareness, print concepts, print tracking, high frequency word knowledge, rhyming, blending, segmenting, and writing about reading (Casbergue & Strickland, 2016; McGee, 2007; Tyner, 2019). When selecting which skills are important factors and the most indicative of future reading success the literature states, “phonemic awareness [as] being one of the best predictors of children’s ability to read” (Kruse et al., 2015, p. 189). Fountas and Pinnell (2017) agree that emergent readers become aware of and need support in developing skills in letter awareness, letter sounds, words, and how print works. Also, Casbergue and Strickland (2016) explain, “oral language, concepts of print, phonological awareness, and alphabet knowledge have strong scientifically based research support as predictors of early literacy success (National Early Literacy Panel [NELP], 2009; Snow et al.1998)” (p.3). Additionally, it was stated in the literature that, “fundamental skills necessary for learning to read, such as phonological awareness (PA), develop early in life and are predictive of
reading outcomes” (Kruse et al., 2015, p. 189). Celano and Neuman (2019) suggested that alphabet knowledge and phonological awareness were the two most important emergent reading skills for pre-kindergarten children. Recent research has shown, “skills related to print knowledge (e.g. alphabet knowledge, concepts about print, writing/name writing) were moderate to strong predictors of all conventional literacy skills. Two of three phonological processing abilities, phonological awareness and rapid automatized naming, were moderate predictors of all conventional literacy outcomes” (Lonigan et al., 2013, p. 112). The literature also explains that, “some emergent literacy skills are code related, and others emergent literacy skills are meaning related. Code-related skills are those skills that facilitate children’s abilities to acquire the alphabetic principle successfully and become accurate and fluent decoders of text. Meaning-related skills are those skills, primarily associated with language, that allow children to comprehend text once it is decoded” (Lonigan et al., 2013, p. 112). The Teaching Strategies Gold Objectives further delineate the focus towards letter recognition, letter sounds, and print concepts (Heroman & Tabors, 2017). McGee (2007) agrees with the importance of alphabet recognition explaining, “teaching children to recognize and identify alphabet letters is a critical foundation skills” and later continues to state, “being able to name lowercase letters and match upper- and lowercase letters is a component of alphabet recognition” (p.131). Lastly, Justice and Pullen (2003) explain, “a number of studies have focused on identifying the emergent literacy skill most predictive of later reading achievement...phonological awareness and written language awareness have emerged as particularly important to models of identification and early intervention” (Justice & Pullen, 2003, p. 100). Overall, there are several emergent reading skills in which the young reader needs to master in order to prepare themselves for the successful reading journey, the most agreed upon being phonological awareness and concepts of print.
Explicit Emergent Reading Skill Instruction

While the literature clearly states the existence and lasting impact of emergent reading skills, the next point of discussion is how emergent reading skills should be taught to children since they are crucial, while also keeping in mind these children are very young, most of them in the pre-kindergarten year. The first instructional method that is discussed is intentional, explicit instruction from the teacher in either whole group or small group settings. Some emergent reading skills are easier to develop than others. As the literature explains, “phonological awareness does not develop naturally and needs explicit and intentional instructional and targeted learning opportunities and exposure (Kruse et al., 2015; Phillips et al., 2008). Celano and Neuman (2019) agree in the need for supportive educators stating, “as children grow, their daily routines in early childhood settings provide prime opportunities for developing early language and literacy skills. While many factors influence young children’s future reading proficiency, researchers have long known that early childhood educators are especially critical in reinforcing a few key concepts of early literacy, including the following: oral language (which includes listening comprehension, verbal expressions, and vocabulary development), alphabet knowledge, concepts of print, and books” (p.2) In addition, Tyner (2019) explains that emergent readers especially those struggling to build emergent reading skills will need explicit instruction in order to gain the skills to successfully move forward. Fountas and Pinnell (2017) also suggest that emergent reading skills be noticed through play, but also taught directly and supported through activities and scaffolding. McGee (2007) also agrees “direct instruction has not always been a favored method in preschool programs; however, research provides evidence of ways it can be appropriate and effective for young children (p.121). Explicit instruction allows teachers
to teach pre-kindergarten aged children the targeted skills they need in order to gain the foundational stepping stones to continue forward in their reading journey.

Explicit instruction also allows teachers to intentionally choose what is directly taught based on the needs of the class or group of children and what skills work best being taught together. For example, “researchers also suggest that PA instruction be coupled with alphabet knowledge instruction because neither alphabet knowledge nor PA learned in isolation is sufficient for learning to read and teaching alphabet knowledge in combination with PA skills results in maximum literacy outcomes for children (NELP, 2008)” (Kruse et al., 2015, p. 191). Furthermore, “early handwriting experience, in the form of printing letters, has a significant impact on early letter knowledge skills” (Zemlock et al., 2018, p. 1256). Teachers can use this knowledge to adjust and plan their explicit instruction to meet the needs of their children while covering multiple emergent reading skills in a developmentally beneficial manner.

This intentional, explicit instruction is important for children to learn specific emergent reading skills such as phonological awareness, but it should occur in small increments of time. As the literature makes, “note…the fact that the obtained effects were the results of children’s exposure to no more than 20 min of teacher-directed focused instructional activities a day” (Lonigan et al., 2013, p. 126). Other recent research even suggests as “the lessons are designed to be brief (i.e., less than 15 min) and engaging)” (Kruse et al., 2015, p. 194).

During the explicit instruction, teachers should be attentive to make the lessons engaging and incorporate meaningful activities and opportunities with text and reading (Casbergue & Strickland, 2016). The literature agrees stating, “all lessons include short games (e.g., “bingo cards, hand and body movements) to help maintain the children’s attention and engagement” (Kruse et al., 2015, p. 194). Fountas and Pinnell (2017) emphasize the use of shared reading to
teach reading skills. Fountas and Pinnell explain, “shared reading provides the opportunity for your children to build an early reading process and have a strong foundation of letters, sounds, and words, as well as enjoyment in the meaning and language of books” and it is often chosen as the main teacher led method (2017, p.61). Another research study recently conducted agreed that, “the impacts of most dialogic reasoning studies represent the effect of dialogic reading above the effect of standard shared reading, suggesting that dialogic reading may be a particularly useful intervention for promoting preschoolers’ oral language skills” (Lonigan et al., 2013, p. 113). The literature concludes that instruction following the parameters mentioned above is likely to, “produce “discernible gains” in PA (Kruse et al., 2015, p. 200). Therefore, intentional, explicit instruction is vital to the development of emergent readers and their skill development as most emergent reading skills need some form of explicit instruction in order to be fostered. This explicit instruction however is only one of the many components in developing these imperative emergent reading skills.

**Teacher Scaffolded Emergent Reading Skill Development Experiences**

Pre-kindergarten children are supported in their emergent skill development through direct, explicit instruction as well as intentional integrated learning opportunities both in the classroom and at home. This support continues with the very intentional guidance of teacher scaffolding during emergent reading skill development experiences within the classroom environment. As previously mentioned, scaffolding can be described as how a teacher “change[s] support as a child develops a new competency or skill” (Marion, 2019, p. 40). When pre-kindergarten children are developing their emergent reading skills they will need varying levels of guidance. Scaffolding is best done in either small groups or one on one settings. As the literature explains, “the small group format of delivery provides frequent opportunities for
children to practice those modeled skills. …educators [also] provide immediate feedback to the group to ensure that appropriate responses are reinforced and that inaccurate responses are corrected” (Kruse et al., 2015, p. 202). This is because, “learning to read may be one of the most important skills that children accomplish” (Kruse et al., 2015, p. 189). Children need these skills in order to be successful readers and scaffolding allows teachers to target the specific skills that children need extra assistance with before they are able to do the skill independently.

**Scaffolding through Intervention**

Scaffolding may occur in a very natural way throughout the flow of the day based on the opportunities that arise during play or activities. Other times, scaffolding will occur through preplanned targeted interventions in order to help children who are showing the need for significant assistance. The literature provides the reasoning as, “preschool children who are experiencing difficulties in emergent literacy development are at an increased risk for entering elementary school without an adequate literacy foundation. Unfortunately, children who start off slowly in literacy development rarely catch up with their peers (Juel, 1988), indicating the considerable difficulty in ameliorating literacy difficulties once they occur” (Justice & Pullen, 2003, p. 99). Teachers can work with these children through classroom-based interventions that allow for heavy amounts of scaffolding to support the child in their development. The next step as Justice and Pullen (2003) explain is “for educators… to develop effective emergent literacy interventions to reduce this reading failure spiral” (Justice & Pullen, 2003, p. 99). When considering what to include as part of these interventions and how to scaffold the literature provides research, descriptions, and exemplars. Tyner (2019) recommends lessons that are multi-component and include alphabet matching, alphabet production, sound boxes, picture scrips, letter strips, and rhyming cards (See Appendix E). Fountas and Pinnell (2017) recommend the
use of shared reading and heavy amount of print exposure. Lonigan, Purpura, Wilson, Walker, and Clancy-Menchetti (2013) reported in their study that, “teaching children about both letter names and letter sounds was more effective than teaching children about letter sounds only, and only the intervention that included both letter name and letter sound knowledge resulted in higher letter knowledge” (p.114). Additionally, small group interventions were the preferred method of choice as, “the effects of the small group interventions were beyond those produced by traditional early childhood education curricula” (Lonigan et al., 2013, p.125). “Justice and Pullen (2003) recommend, “a significant amount of supportive empirical evidence exist for three approaches: adult-child shared storybook reading, literacy-enriched play settings, and teacher-directed structured phonological awareness (PA) curricula” (p. 99). Justice and Pullen (2003) also provide three principles for intervention activities, “should address both written language awareness and phonological awareness, activities should include naturalistic, embedded opportunities for knowledge attainment as well as explicit exposure to key concepts, [and] practices should be evidence-based” (pp. 100-101). In conclusion, the interventions should be adjusted to be developmentally appropriate for pre-kindergarten children. The literature recommends the use of scaffolding throughout to support targeted interventions that are compact and filled with several emergent reading skill development opportunities. The support from the scaffolding within these intentional interventions will provide children with the necessary assistance they need to grow their emergent reading skill to continue taking steps forward as emergent readers.

**Developmentally Appropriate Practice**

With the present study being centered around early childhood participants, it is vital to consider developmentally appropriate practices. The National Association for the Education of
Young Children (NAEYC) provides a Developmentally Appropriate Practices (DAP) position statement, which provides the lens through which the present study is developed (Copple & Bredekamp, 2009). DAP explains the development of young children and the ways in which educators can facilitate and foster the skills necessary for children to be successful and life-long learners at levels that are appropriate and conducive to learning. Developmentally Appropriate Practice recommends that children have plenty of opportunities for hands on learning with various materials within the classroom that allows for movement and free choice. DAP also advocates for the necessary support of the teacher in the development of literacy skills (Copple & Bredekamp, 2009). DAP suggests that teachers may do the following to aid in the development of these skills: “attentive listening and good, extended conversation; reading books aloud and discussing them; or providing literacy materials, such as books and writing materials” (Copple & Bredekamp, 2009, p. 144). An important distinction that DAP makes is, “a fundamental goal is making literacy experiences meaningful, interesting, and satisfying for children” (Copple & Bredekamp, 2009, p.147). In agreement with many others in the review of literature, DAP recommends a wide variety of books present in the classroom as well as read alouds being done in both whole group and small group settings (Copple & Bredekamp, 2009). Lastly, DAP also notes phonological awareness as being a “strong indicator of reading success” and explains that most children will not gain this skill on their own and will need the guided instruction of educators (Copple & Bredekamp, 2009, p.147). DAP suggests teachers foster these phonological awareness skills through play-based games and books (Copple & Bredekamp, 2009). The present study was molded with the guidance of developmentally appropriate practices.

**Integrating Emergent Reading Skill Development Opportunities**
In the Classroom

While direct explicit instruction is good, one of the many other roles of the classroom teachers is to integrate learning through a variety of materials throughout all areas in the classroom. Emergent reading skill development can also be taught through integrating learning opportunities into the classroom by incorporating literacy-based materials, providing a wide range of books, and having teachers that are actively listening and participating within the classroom environment. As McGee (2007) states, “the most effective preschool program is one that incorporates both direct and embedded instruction in activities that are purposeful and meaningful for children” (p.121). Celano and Neuman (2019) agree, “preschool teachers support this learning by ensuring children have lots of exposure to the alphabet through books, blocks, magnets, and other materials that encourage playing with letters. They also share rhyming poems and songs that immerse children in carefully listening to the sounds that make up words” (p.2). Many in the literature have also agreed with Celano and Neuman (2019) that, “children pick up critical skills engaging with books at a young age” (p.2) (Casbergue & Strickland 2016; Fountas & Pinnell 2017; McGee, 2007; McGee & Richgels 2012). Early childhood classrooms are inundated with a wide variety of books to support the development of emergent reading skills through integrating learning opportunities. Through interacting with books, children can learn print concepts, letter recognition skills, first letter sounds, rhyming words, increase their vocabulary, build dexterity and fine motor skills, develop comprehension skills (Casbergue & Strickland 2016; Fountas & Pinnell 2017; Tyner, 2019).

Research in the literature states connections found between movement and play with learning specifically with academic achievement. As explained, “movement requires and provides the opportunity to transfer information between the two brain hemispheres. The more
children more, the more information they obtain from the environment and the more they learn” (Botha & Africa, 2020, p. 727). Botha and Africa (2020) best explain this reasoning with the following thought:

*an important feature for a child’s literacy development is the acquisition of letter knowledge, which is comprised of two interacting skills known as letter recognition and formation. Letter recognition requires the child to process and apply visual information such as size, location, orientation, and angles of the letter. Handwriting, or letter formation, is a multifaceted skill, which requires a complex integration of cognitive, perceptual-motor and motor proficiency components. It involves an integrated pattern of coordinated movements, which depend on visual perception, as well as sensorimotor feedback. Both perceptual and motor components have to be stimulated to improve reading and spelling. By adding a sensorimotor stimulation to reading and spelling, learning is enhanced. (p. 728)*

Therefore, integrating learning opportunities throughout the classroom’s play-based environments such as centers that allow for movement are more likely to produce great academic success. The literature also makes the connection between fine motor work and literacy learning (McGee & Richgels 2012; Zemlock et al., 2018). Botha and Africa (2020) agree as they, “have found positive associations between fine motor proficiency and academic achievement” (p.728). Further research states, “our current findings suggest that perhaps any visually guided fine-motor practice will help children learn letters” (Zemlock et al., 2018, p. 1267). But “results demonstrated that handwriting practice facilitates letter recognition as tested with a forced-choice task more than visual-only practice” (Zemlock et al., 2018, p. 1264). Therefore, depicting the greater benefit of hands-on fine motor work in direct correlation with letter recognition knowledge growth. Teachers can use this information to include fine motor choices within the
literacy materials in an effort to further increase the development of emergent reading skills. This inclusion could be writing materials in the library center, small letter tiles or letter beads that require greater finger strength, sand boxes for letter or word writing, peg board letters for pinch activities. In conclusion, these small but intentional classroom integrations are necessary for the continued and successful development of emergent reading skills for prekindergarten children.

In the Home

Teachers are a vital part of a child’s learning, but they are not the sole provider. Parents, caregivers, and families should work with teachers as a unified team to best support children in their learning both at school and at home as learning never ceases. As Celano and Neuman (2019) explained, “children need their families to reinforce early literacy skills during out-of-school time as well. When it comes to children’s oral language development, alphabet knowledge, and concepts of print, families play a key part” (p.3). Taylor (2020) explains that parents do not need to be overwhelmed when taking on this role of being another teacher for their child as the ways to support learning at home are simple: tell stories, expand vocabularies, have rich print environments, provide lots of books, and read whenever possible. In agreement, “a wealth of research shows that the time families spend interacting with their children during routine activities, such as singing, drawing, and playing games, is critical to a child’s vocabulary development” (Celano & Neuman, 2019, p.3) Parents can play such an impactful role in a child’s development, especially their literacy development just by making small intentional choices in their routines at home to spend time increasing conversation and vocabulary, looking at different types of print, and reading together whether it be before bed or at any point in the day.
Summary

This review of literature examined the range in which emergent reading skills are developed to best support pre-kindergarten children. The literature explained the best practices for emergent reading skills development and the developmentally appropriate practices in which to do so for early childhood. It was also noted in the literature that selecting targeted emergent reading skill specific interventions can be impactful as children go through phases and need all skills and some can be learned together. The research then addressed the importance of explicit emergent reading skill instruction and integrating emergent reading skill development opportunities both in the classroom and at home. Teachers, parents, and caregivers must work together to be a team to consistently be supporting the development of emergent reading skills. Finally, the literature discussed the benefits and inclusion of teacher scaffolded emergent reading skill development experiences through targeted interventions. It is through this review of literature that the present study gains its ground and the lens through which the parameters were developed.
CHAPTER 3. METHODOLOGY

Purpose

The purpose of the present study was to increase emergent reading skills. Previous research has suggested that multisensory interventions can enhance children’s letter recognition and phonemic awareness (Kruse et al., 2015). Specifically, the guiding research question sought to determine if a multi-sensory intervention would increase letter recognition and phoneme identification in six preschool children.

Setting

The study took place in a pre-kindergarten classroom in a suburban private elementary school, located in a major city in a southern state. The pre-kindergarten children in this classroom ranged in age from three years and seven months to age five years and two months at the start of the study. The targeted classroom served 20 (10 boys and 10 girls) regular education children; no children in the classroom had an Individualized Education Plans (IEP). Five children were currently participating in speech therapy services in school once a week for an hour.

The classroom teaching staff included two adults, a lead teacher, and a teaching assistant. The lead teacher was a second-year teacher with a bachelor’s degree and PK-3 teacher certification. The assistant was a first-year teaching assistant with a nursing background, who had previously worked in a school setting and was working towards a degree in education.

The classroom had a large whole class space where each child had their own chair and lap desk with activity-specific centers located around the perimeter of the room. The classroom was organized according to the Early Childhood Environmental Rating Scale – Revised (ECERS-R; Harms et al., 2003); however, in consideration of coronavirus health and safety procedures, children were required to remain six feet apart during the hour-long center time.
Therefore, while children were free to choose materials from any center that interested them, they were required to bring the materials back to their designated space in the classroom. At this time, they were not allowed to share their center materials, but children were able to talk with their neighbors about their centers and their creations.

The classroom also adhered to the Early Childhood Language and Literacy Classroom Observation tool (ELLCO; Smith & Dickinson, 2002). Overall, the classroom scored a 29 out of 34 on the book area, book selection, book use, writing materials, and writing around the room components of the “Literacy Environment Checklist” (Smith & Dickinson, 2002). The classroom lost points for the inability to have a designated reading area with soft furnishings as this went against this school’s coronavirus policies (Appendix A). The classroom had emergent reading skill materials, such as letters, picture identification cards, writing materials, labels, paper, etc. throughout the classroom and embedded in all of the centers available to children. The classroom had three emergent literacy skill-focused centers: a library, a writing center, and a language center. The library had a book box that each child could use to select three to five books for the week. Children were allowed to read from their book box during centers, during morning work, and in any extra time following the completion of assigned tasks. The writing center provided a variety of emergent literacy materials such as paper, multi-colored construction paper, pencils, markers, crayons, dot markers, paint, paintbrushes, stencils, stamps, sight words, alphabet cards, etc. The language center had seven different variations of letter puzzles, one set of magnetic letters, dry erase boards and markers, letter strings, books about letters, letter stamps, and writing materials.
**Subjects**

Six children were targeted for participation in the present study based on the results of a letter recognition and phoneme identification assessment given to the entire class. All six children were functioning within the normal limits for their age according to the Ages and Stages Questionnaire screening tool (ASQ; 2009). However, these six children did not have the same level of alphabetic principle as compared to other children in the class. Their performances on the assessment were the lowest scoring in the class, scores ranging from 19%-69% of uppercase letters recognized, which was below the class average of 87% uppercase letters recognized. Their performances were also the lowest scoring in the class for phoneme identification with scores ranging from 0%-77% of uppercase phonemes identified, which was below the class average of 85% of uppercase phonemes identified. Pseudonyms were used to protect the identity of the participants. Cindy was a 4 year and 4-month-old White female; Tim was a 4 year and 1-month-old White male; Mindy was a 4 year and 8-month-old White female; Patty was a 4 year and 2-month-old White female; Jane was a 4 year and 2-month-old White female; Emily was a 4 year and 1-month-old White female.

For the purposes of the intervention, the children were combined into three cohorts to fix the constructions of the single case multiple baseline research design parameters. These cohorts were chosen based on the child's scores on the *Letter Recognition and Phoneme Assessment*. Cohort A were the two lowest children, cohort B were the third and fourth lowest, and Cohort C were the highest of the intervention children. These cohorts were intentionally set this way in order for the lowest children, in Cohort A, to receive the most amount of time in the intervention sessions, as they start the intervention first and remain in intervention as Cohorts B and C join in throughout the process of the study. Therefore, the children with the most need received the most
amount of intervention time. Approval for this study was granted from the Institutional Review Board at the researcher’s university (Appendix B). Administrative consent, parent consent, and child assent were obtained prior to the start of the study.

**Letter Recognition and Phoneme Assessment**

The letter recognition and phoneme assessment was conducted at the beginning of September for all 20 children within the target classroom. The lead teacher conducted the assessment using Education Software for Guiding Instruction (ESGI): Easy Progress Monitoring, which displayed the letter on a computer screen, the teacher then pointed to the letter and asked the child to identify the letter and the sound. This process was completed for both upper and lowercase letters, in alignment with the *Teaching Strategies Gold Objective 16a: identifies and names letters* and *Teaching Strategies Gold Objective 16b: uses letter-sound knowledge* (Appendix C). This assessment was given to all pre-kindergarten children in the school within the normal routine of the classroom. As the entire class participated in the assessment process, the process to identify the targeted children was unobtrusive. The six lowest performing children were selected to participate in this study.

**Behavior Definitions**

For this study, the behavior of interest was *emergent reading* development with specific focus on *letter recognition* and *phoneme identification*.

**Emergent Reading**

Emergent reading was defined as “the development of the association of print with meaning that begins early in a child’s life and continues until the child reaches the stage of conventional reading and writing” (Erekson et al., 2020, p. 138). Emergent reading development
components include oral language, concepts of print, phonological awareness, and alphabet knowledge (Casbergue & Strickland, 2016, p. 3).

**Letter Recognition**

Letter recognition was defined as “identifying the letters of the alphabet” (Erekson et al., 2020, p. 159). An example of accurate letter recognition was a child looking at the letter ‘e’ and when prompted answered saying that is the letter ‘e’. A non-example was a child looking at the letter ‘e’ and answered ‘a’ or making the letter sound for /e/.

**Phoneme Identification.** Phoneme identification was defined as accurately identifying the individual sound of letters, as modified from McGee and Richgels’ definition of phoneme, “the smallest units of sound that are combined and contrasted in a language’s words” (2012, p. 9). An example of accurate phoneme identification was a child looking at the letter ‘b’ and saying /b/. A non-example was a child looking at the letter ‘b’ and saying /s/ or /be/.

**Data Collection**

Data were collected after each session using discrete categorization on both uppercase and lowercase letter recognition and phoneme identification for each child daily during centers (Kazdin, 2011). Letters were presented to the child using flashcards of uppercase and lowercase letters, presented in random order, until the teacher had presented every letter. The child was asked to identify either the letter name or the letter sound (i.e., while holding up the letter ‘h’, the child was asked, “What letter is this?” or “What sound does this letter make?”). When the child answered correctly a check mark was placed next to the letter on the assessment checklist paper (Appendix D). Data were summarized by counting all correctly identified letters and phonemes and dividing by the total number of possible correct identifications and multiplying by 100 to generate a percentage. The data were graphed daily to check for stability with a minimum of 5-7
data points before starting the child in the intervention. The assessment was given within 10 to 30 minutes after each session.

**Observation Procedure**

For the purposes of this research, the lead teacher served as the primary researcher. During free choice centers, which occurred in the afternoon each day, the lead teacher pulled individual children to a table in the back of the classroom to implement the intervention and conduct the assessment. During baseline, the data were collected during the first thirty minutes of centers. During the intervention phase, the teacher pulled small groups consisting of two children to the teacher table at the back of the room within the first ten minutes of centers. During the intervention, the teacher led the small group through a shared reading, a teacher led phonemic awareness activity, and a child choice letter recognition or phoneme identification game for a ten-minute interval. After the session was completed, the checklist assessment procedure was then followed with 10-30 minutes for the children in intervention. Letters were presented to the child using flashcards of uppercase and lowercase letters, presented in random order, until the teacher had presented every letter. The child was asked to identify the letter name and the letter sound (i.e., while holding up the letter ‘h’, the child was asked, “What letter is this?” followed by “What sound does this letter make?”). The checklist assessment was placed on a clipboard and out of sight of the targeted child. During the collection of data, the teaching assistant continued the normal routines of the classroom and monitored classroom behavior as well as assisted any children with problems or questions as to keep the normalcy of the classroom flow.
Experimental Conditions

Baseline

The pre-kindergarten classroom had a variety of literacy materials throughout the room that could be used during the regular school day. The class moved through a schedule of teacher-directed whole group work in the morning, followed by recess, enrichment, and lunch. In the afternoon, children had an hour of free choice center time. During center time, children had access to all centers: literacy, writing, math, science, dramatic play, art, fine motor, and sensory. The children were allowed to choose their center and bring the selected center materials back to their seat to play. During this time, the teacher provided support to children around the room by answering questions, prompting thought, extending learning, and helping those who needed scaffolding. Those who chose the literacy or writing center were given time to work on their own with the center materials they had chosen. Then the lead teacher would assist those trying to write their name or model literacy with any of the children who had chosen the writing or literacy center. During baseline data collection, the teacher started the center time and waited for children to be settled, then she called the six children over to the classroom teacher table individually to complete the letter recognition and phoneme identification assessment (see Letter Recognition and Phoneme Assessment, above). During baseline and intervention, no praise or correction was given for any answer during the checklist assessment. Baseline data were collected until stability was achieved with a minimum of 5-7 data points (Kratochwill et. al., 2010). Once stability was achieved in baseline, then two children, functioning as one cohort were introduced to the intervention, while the others remained in baseline.
Multi-Sensory Emergent Reading Skills Intervention

During the intervention phase, the targeted children participated in the small group intervention for ten minutes daily during center time. The intervention followed developmentally appropriate practice for pre-kindergarten children as it allows for some free choice and play based learning (Copple & Bredekamp, 2009). The intervention fits within the natural flow of the preschool day as it occurs during centers and does not disturb or take away from the classroom learning. Internal validity in this study was achieved through the lead teacher’s ability to control the consistency of the classroom practices. As Kazdin explains, “internal validity refers to the extent to which an experiment rules out alternative explanations of the results” (Kazdin, 2011, p.29). The intervention began with the two children who performed the lowest on the letter recognition assessment. The emergent reading skills intervention consisted of three components: a teacher led shared reading, teacher led structured phonemic awareness activity, and a child choice letter recognition or phoneme identification game modified from Justice and Pullen (2003), Bailet et al., (2009), Lonigan et al. (2012), and Zemlock et al. (2018). The intervention lesson plans were modified from the Early Literacy Foundational Skills Lesson Plan (Appendix E) (Tyner, 2020, p.67).

The intervention began with the teacher-child shared storybook reading focusing on dialogic reading and print referencing (Justice & Pullen, 2003). Each child had a copy of the text, and the teacher completed the first read, then had the children join in, and then focused in on a specific strategy, in this instance, letter recognition and phoneme identification (Fountas & Pinnell, 2017). During the shared reading, the teacher drew the children’s attention to the print letters and the letter sounds heard. For example, the teacher may have said, “My eyes see the letter a at the beginning of this word (while pointing to the letter a) I know that this word must
start with the sound /a/.” Then after 5-6 minutes the teacher began the phonemic awareness activity including but not limited to verbal letter sound identification, beginning sound identification, and picture matching (Bailet et al., 2009 & Tyner, 2020). During this time, the teacher prompted the children with questions focused on letter recognition and phoneme identification. After 2-3 minutes, the teacher then allowed children to choose one out of ten possible letter recognition or phoneme identification games modified from The Florida Center for Reading Research and Lonigan et al. (2012), and Zemlock, Booher, and James (2018). The children were allowed to choose their own game to play for 2-3 minutes while the teacher listened in and provided scaffolding as necessary.

**Fidelity Check.** A fidelity check was implemented to ensure the investigator was implementing the intervention while adhering to the protocol with each use (Kazdin, 2011). A fidelity check was completed for 38% of the sessions (n=6) in accordance with the Single Case Technical Document (Kratochwill et. al., 2010). The lead investigator followed a set schedule of teacher guided shared reading, teacher led phonemic awareness activity, and child choice letter recognition or phoneme identification game when implementing the intervention procedures. The fidelity check was conducted simultaneously with interobserver agreement and was conducted by the reliability observer. The observer determined that study procedures were implemented with 100% fidelity for all targeted children.
<table>
<thead>
<tr>
<th>Activity:</th>
<th>Objective:</th>
<th>Emergent Reading Skill:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand Letter Writing</td>
<td>The child will use their finger to write letters in the rough textured sand. After writing the letter they will state the letter sound.</td>
<td>Letter Recognition, Phoneme Identification</td>
</tr>
<tr>
<td>Shaving Cream Letter Writing</td>
<td>The child will use their finger to write letters in the smooth, soft textured shaving cream. After writing the letter they will state the letter sound.</td>
<td>Letter Recognition, Phoneme Identification</td>
</tr>
<tr>
<td>Fly swat letter hunt</td>
<td>The child will use a fly swatter to swat the letter that matches the sound the teacher makes.</td>
<td>Letter Recognition, Phoneme Identification</td>
</tr>
<tr>
<td>Letter Arc (Florida Center for Reading Research)</td>
<td>The child will match lowercase foam letters to uppercase letters on the letter arc as they state the letter name.</td>
<td>Letter Recognition</td>
</tr>
<tr>
<td>Letter Critter (Florida Center for Reading Research)</td>
<td>The child will place the lowercase letters with the uppercase letters in alphabetical order to string together the body of the letter critter. The child will state the letter names while constructing the critter.</td>
<td>Letter Recognition</td>
</tr>
<tr>
<td>Letter Tree (Florida Center for Reading Research)</td>
<td>The child will pull an apple from the letter tree and state the letter name. The child will then write the letter using a dry erase marker their tabletop.</td>
<td>Letter Recognition</td>
</tr>
<tr>
<td>Sound Bags (Florida Center for Reading Research)</td>
<td>The child will sort picture cards by initial letter sounds into labeled bags with pictures and letters.</td>
<td>Letter Recognition, Phoneme Identification</td>
</tr>
<tr>
<td>Sound Match (Florida Center for Reading Research)</td>
<td>The child will match picture cards and uppercase and lowercase cards based on the initial sound.</td>
<td>Letter Recognition, Phoneme Identification</td>
</tr>
<tr>
<td>Picture Boards</td>
<td>The child will match picture cards to picture boards that have pictures that begin with the same letter and sound.</td>
<td>Letter Recognition, Phoneme Identification</td>
</tr>
<tr>
<td>Felt board Letter Game</td>
<td>The child will pull felt letters out of a basket and place them on felt board and while doing so identify the letter name and sound.</td>
<td>Letter Recognition, Phoneme Identification</td>
</tr>
</tbody>
</table>
Experimental Design

In this study, data were collected using a single case, multiple baseline design through a discrete categorization method to measure letter recognition and phoneme identification in pre-kindergarten children. Overlapping baselines were used with this experimental design (Kazdin, 2011). Data were collected in line with the procedures put forth by Kratochwill et al., (2010) in the Single Case Technical Document.

Interobserver Agreement

The reliability observer was a certified first grade teacher with a bachelor’s degree in early childhood education. The reliability observer was trained by the investigator through review of the behavior definitions, discussion using both examples and non-examples of target behaviors. All sessions were scored via video recording, which allowed the data collection to be less obtrusive. Reliability was calculated by total count interobserver agreement formula, taking the smaller number and dividing by the larger number and then multiplying one hundred to determine the percentage of reliability (Cooper et al., 2007). Interobserver agreement was collected on 38% (n=6) of sessions across baseline and intervention for all children, which is considered the standard (Kratochwill et al., 2010). Interobserver agreement for uppercase letter recognition was 92% (range, 83 - 100 %); interobserver agreement for uppercase phoneme identification was 94% (range, 83 - 100 %); interobserver agreement for lowercase letter recognition was 100% (range, 100 - 100 %); lowercase phoneme identification was 92% (83 - 100 %).
CHAPTER 4. FINDINGS

The purpose of the present study was to increase the emergent reading skills in pre-kindergarten children who were functioning below their peers. Specifically, the study sought to determine if the Multi-Sensory Emergent Reading Skills Intervention would increase the letter recognition and phoneme identification for the six targeted children as measured by the Letter Recognition and Phoneme Assessment.

Results indicated that the Multi-Sensory Emergent Reading Skills Intervention increased the percentage of correctly identified letters and phonemes identified across all six targeted children. The Letter Recognition and Phoneme Assessment given at the end of the intervention depicted significant growth from the baseline assessments.

Multisensory Emergent Reading Skill Intervention

Figure 1. Number of Sessions.

Percentage of correctly letters and phonemes during baseline and the Multisensory Emergent Reading Skill Intervention across all three cohorts
Results indicated that the *Multi-Sensory Emergent Reading Skill Intervention* increased children’s letter recognition and phoneme identification across all three cohorts (Figure 1). At the end of intervention, all children scored 92% or higher on letter recognition and phoneme identification. Eighty three percent of children achieved 100% accuracy for letter recognition and phoneme identification by the end of intervention.

**Cohort 1**

During baseline, Cohort 1 correctly identified 39% (34-42%) of the letters presented; when the *Multisensory Emergent Reading Skill Intervention* was implemented, Cohort 1 correctly identified 74% (47-96%) of the letters presented. This represents a 35-percentage point increase in letter recognition. During baseline, Cohort 1 correctly identified 11% (8-13%) of the phonemes from the letters presented; when the *Multisensory Emergent Reading Skill Intervention* was implemented, Cohort 1 correctly identified 74% (47-96%) of the phonemes from the letters presented. This represents a 63-percentage point increase in phoneme identification.

**Cohort 2**

During baseline, Cohort 2 correctly identified 59% (56-63%) of the letters presented; when the *Multisensory Emergent Reading Skill Intervention* was implemented, Cohort 2 correctly identified 94% (78-100%) of the letters presented. This represents a 35-percentage point increase in letter recognition. During baseline, Cohort 2 correctly identified 43% (38-47%) of the phonemes from the letters presented; when the *Multisensory Emergent Reading Skill Intervention* was implemented, Cohort 2 correctly identified 93% (67-100%) of the phonemes from the letters presented. This represents a 50-percentage point increase in phoneme identification.
**Cohort 3**

During baseline, Cohort 3 correctly identified 71% (67-75%) of the letters presented; when the intervention was *Multisensory Emergent Reading Skill Intervention* was implemented, Cohort 3 correctly identified 94% (85-100%) of the letters presented. This represents a 23-percentage point increase in letter recognition. During baseline, Cohort 3 correctly identified 59% (51-63%) of the phonemes from the letters presented; when the *Multisensory Emergent Reading Skill Intervention* was implemented, Cohort 3 correctly identified 88% (72-100%) of the phonemes from the letters presented. This represents a 29-percentage point increase in phoneme identification.

Table 1. Emergent Reading Skills Intervention averages during baseline, intervention and difference by children

<table>
<thead>
<tr>
<th></th>
<th>Uppercase LR</th>
<th>Uppercase PI</th>
<th>Lowercase LR</th>
<th>Lowercase PI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cohort 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jane</td>
<td>68%</td>
<td>91%</td>
<td>23</td>
<td>26%</td>
</tr>
<tr>
<td>Cindy</td>
<td>16%</td>
<td>64%</td>
<td>48</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Cohort 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patty</td>
<td>65%</td>
<td>95%</td>
<td>30</td>
<td>38%</td>
</tr>
<tr>
<td>Tim</td>
<td>65%</td>
<td>94%</td>
<td>29</td>
<td>53%</td>
</tr>
<tr>
<td><strong>Cohort 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mindy</td>
<td>74%</td>
<td>94%</td>
<td>20</td>
<td>53%</td>
</tr>
<tr>
<td>Emily</td>
<td>81%</td>
<td>98%</td>
<td>17</td>
<td>71%</td>
</tr>
</tbody>
</table>

*Note. The percentages shown are the average of letter recognition and phoneme identification across baseline and intervention to show the growth in percentage points.*

**Jane**

*Letter Recognition.* On average, during the baseline sessions, Jane correctly recognized 68% (range, 61 - 73 %) of uppercase letters; when the *Multisensory Emergent Reading Skills*
Intervention session was implemented, Jane correctly recognized on average 91% (range, 81 - 100 %) of uppercase letters. This represents a 23-percentage point increase. On average, during the baseline sessions, Jane correctly recognized on average 53% (range, 50 - 58 %) of lowercase letters; when the Multisensory Emergent Reading Skills Intervention was implemented, Jane correctly recognized on average 86% (58 - 100 %) of lowercase letters. This represents a 33-percentage point increase.

**Phoneme Identification.** On average, during the baseline sessions, Jane correctly identified 26% (range, 19 - 31 %) of uppercase phonemes; when the Multisensory Emergent Reading Skills Intervention session was implemented, Jane correctly identified on average 73% (range, 27 - 100 %) of uppercase phonemes. This represents a 47-percentage point increase. On average, during the baseline sessions, Jane correctly identified on average 13% (range, 8 - 19 %) of lowercase phonemes; when the Multisensory Emergent Reading Skills Intervention was implemented, Jane correctly identified on average 72% (range, 19 - 100 %) of lowercase phonemes. This represents a 59-percentage point increase (See Table 1).

**Cindy**

**Letter Recognition.** On average, during the baseline sessions, Cindy correctly recognized 16% (range, 15 - 19 %) of uppercase letters; when the Multisensory Emergent Reading Skills Intervention session was implemented, Cindy correctly recognized on average 64% (range, 31 - 92 %) of uppercase letters. This represents a 48-percentage point increase. On average, during the baseline sessions, Cindy correctly recognized on average 16% (range, 8 - 19 %) of lowercase letters; when the Multisensory Emergent Reading Skills Intervention was implemented, Cindy correctly recognized on average 54% (19 - 92 %) of lowercase letters. This represents a 38-percentage point increase.
**Phoneme Identification.** On average, during the baseline sessions, Cindy correctly identified 2% (range, 0 - 4 %) of uppercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* session was implemented, Cindy correctly identified on average 54% (range, 8 - 92 %) of uppercase phonemes. This represents a 52-percentage point increase. On average, during the baseline sessions, Cindy correctly identified on average 1% (range, 0 - 4 %) of lowercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* was implemented, Cindy correctly identified on average 50% (range, 8 - 92 %) of lowercase phonemes. This represents a 49-percentage point increase (See Table 1).

**Patty**

**Letter Recognition.** On average, during the baseline sessions, Patty correctly recognized 65% (range, 62 - 69 %) of uppercase letters; when the *Multisensory Emergent Reading Skills Intervention* session was implemented, Patty correctly recognized on average 95% (range, 85 - 100 %) of uppercase letters. This represents a 30-percentage point increase. On average, during the baseline sessions, Patty correctly recognized on average 46% (range, 42 - 50 %) of lowercase letters; when the *Multisensory Emergent Reading Skills Intervention* was implemented, Patty correctly recognized on average 94% (81 - 100 %) of lowercase letters. This represents a 48-percentage point increase.

**Phoneme Identification.** On average, during the baseline sessions, Patty correctly identified 38% (range, 27 - 42 %) of uppercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* session was implemented, Patty correctly identified on average 93% (range, 69 - 100 %) of uppercase phonemes. This represents a 55-percentage point increase. On average, during the baseline sessions, Patty correctly identified on average 34% (range, 23 - 38 %) of lowercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* was
implemented, Patty correctly identified on average 93% (range, 69 - 100 %) of lowercase phonemes. This represents a 59-percentage point increase (See Table 1).

Tim

**Letter Recognition.** On average, during the baseline sessions, Tim correctly recognized 65% (range, 62 - 69 %) of uppercase letters; when the *Multisensory Emergent Reading Skills Intervention* session was implemented, Tim correctly recognized on average 94% (range, 77 - 100 %) of uppercase letters. This represents a 29-percentage point increase. On average, during the baseline sessions, Tim correctly recognized on average 59% (range, 54 - 62 %) of lowercase letters; when the *Multisensory Emergent Reading Skills Intervention* was implemented, Tim correctly recognized on average 93% (69 - 100 %) of lowercase letters. This represents a 34-percentage point increase.

**Phoneme Identification.** On average, during the baseline sessions, Tim correctly identified 53% (range, 46 - 58 %) of uppercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* session was implemented, Tim correctly identified on average 93% (range, 69 - 100 %) of uppercase phonemes. This represents a 40-percentage point increase. On average, during the baseline sessions, Tim correctly identified on average 46% (range, 42 - 50 %) of lowercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* was implemented, Tim correctly identified on average 91% (range, 62 - 100 %) of lowercase phonemes. This represents a 45-percentage point increase (See Table 1).

Mindy

**Letter Recognition.** On average, during the baseline sessions, Mindy correctly recognized 74% (range, 69 - 77 %) of uppercase letters; when the *Multisensory Emergent Reading Skills Intervention* session was implemented, Mindy correctly recognized on average
94% (range, 85 - 100 %) of uppercase letters. This represents a 20-percentage point increase. On average, during the baseline sessions, Mindy correctly recognized on average 58% (range, 54 - 62 %) of lowercase letters; when the Multisensory Emergent Reading Skills Intervention was implemented, Mindy correctly recognized on average 88% (73 - 100 %) of lowercase letters. This represents a 30-percentage point increase.

*Phoneme Identification.* On average, during the baseline sessions, Mindy correctly identified 53% (range, 42 - 58 %) of uppercase phonemes; when the Multisensory Emergent Reading Skills Intervention session was implemented, Mindy correctly identified on average 85% (range, 65 - 100 %) of uppercase phonemes. This represents a 32-percentage point increase. On average, during the baseline sessions, Mindy correctly identified on average 51% (range, 42 - 54 %) of lowercase phonemes; when the Multisensory Emergent Reading Skills Intervention was implemented, Mindy correctly identified on average 85% (range, 65 - 100 %) of lowercase phonemes. This represents a 34-percentage point increase (See Table 1).

**Emily**

*Letter Recognition.* On average, during the baseline sessions, Emily correctly recognized 81% (range, 73 - 85 %) of uppercase letters; when the Multisensory Emergent Reading Skills Intervention session was implemented, Emily correctly recognized on average 98% (range, 92 - 100 %) of uppercase letters. This represents a 17-percentage point increase. On average, during the baseline sessions, Emily correctly recognized on average 73% (range, 69 - 77 %) of lowercase letters; when the Multisensory Emergent Reading Skills Intervention was implemented, Emily correctly recognized on average 97% (88 - 100 %) of lowercase letters. This represents a 24-percentage point increase.
**Phoneme Identification.** On average, during the baseline sessions, Emily correctly identified 71% (range, 65 - 77%) of uppercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* session was implemented, Emily correctly identified on average 92% (range, 81 - 100%) of uppercase phonemes. This represents a 21-percentage point increase. On average, during the baseline sessions, Emily correctly identified on average 59% (range, 54 - 62%) of lowercase phonemes; when the *Multisensory Emergent Reading Skills Intervention* was implemented, Emily correctly identified on average 89% (range, 77 - 100%) of lowercase phonemes. This represents a 30-percentage point increase (See Table 1).
CHAPTER 5. DISCUSSION

The purpose of the present study was to improve emergent reading skills through focus on letter recognition and phoneme identification in pre-kindergarten children. Specifically, the study examined the effects of a multisensory targeted intervention that included both teacher and child choice to address letter recognition and phoneme identification in an effort to increase overall emergent reading skills (Tyner, 2019). The results of this intervention suggest that the targeted emergent reading skills intervention were beneficial in increasing all of the children's letter recognition and phoneme identification as indicated by the scores on the Letter Recognition and Phoneme Identification Assessment.

As the literature states, targeted phoneme identification led by the teacher is necessary for the development of children’s emergent reading skills (Tyner 2019). Developmentally appropriate practice and further research also explains the recommendation for multisensory intervention practices as well as child choice (Zemlock et al., 2018). Furthermore, the literature states the need for teacher scaffolding to enhance and foster letter recognition and especially phoneme identification skills (Kruse et al., 2015). Celano and Neuman continue the need for teacher support and the inclusion of some direct teacher guidance to learn specific skills such as phoneme identification (2019). Lastly, the literature focuses on addressing letter recognition and phoneme identification as the main concepts for emergent reading skills for pre-kindergarten children (Celano & Neuman 2019).

The intervention in the present study was designed to engage the pre-kindergarten children with targeted letter recognition and phoneme identification activities that allowed for integration within the normally occurring routines and activities of a developmentally appropriate classroom (Copple & Bredekamp, 2009). In agreement with the recommendations
from Tyner (2019), the intervention consisted of a multicomponent approach that allowed for several skills to be addressed while using activity-based methods. The intervention was also consistent with Copple and Bredekamp (2009) with the inclusion of child choice and limiting the intervention time frame to be within developmentally appropriate practice standards. The intervention was also designed to address both letter recognition and phoneme identification, which was in accord with previous literature that stated letter recognition and phoneme identification as necessary emergent reading skills that needed targeted instruction (Kruse et al., 2015; Phillips et al., 2008). The results of the intervention were congruent with the previous research and indicate that more hands-on materials and play based learned are more beneficial in the development of emergent reading skills.

Limitations

One limitation with the study is the population size and demographics of participants. For the purposes of the study, one regular education pre-kindergarten classroom in a private, suburban classroom was chosen. Six children, placed into three cohorts, were selected based upon their assessment scores, as they scored the lowest in the class, revealing their need for intervention. The classroom was also chosen as the lead investigator is the lead teacher in the classroom which allowed for the internal validity within the study (Kratochwill, et al., 2010). Additionally, this also raised potential for bias with the lead investigator being the lead teacher of the classroom in which the present study occurred. However, with the systematic use of the intervention implementation and the Emergent Reading Skills Assessment for data collection, this potential limitation did not interfere with the study as all components were completed with full fidelity and validity. The six children did not provide a wide range among demographic thus providing another limitation of the present study. Following the single case, multiple baseline,
the results show data for a limited population size and are generalized for external validity which leads to another potential limitation. History and maturation can be another concern for limitation within the study, but since the data were collected in a short six-week time period this limitation was minimized. Another possible limitation is the impact of and inability to control the home environment which also poses a threat to internal validity. At any point during the study, parents may increase or decrease the attention they provide to their child’s emergent reading skills. The parents were made aware that the study was taking place as they signed the consent forms prior to the start of the study and discussed it with the lead investigator.

Clinical Implications

The results from the study indicated large increases in emergent reading skills through the targeted multi-sensory intervention, which suggests that educators should be implementing similar methods into their routine literacy instruction and especially into their emergent reading skill instruction and intervention. The results indicate the need for a blended style of support and learning through teacher guided instruction and scaffolding, as well as child choice to support letter recognition and phoneme identification development through multisensory, meaningful, play based activities.

For this study, the results can be generalized and extended to all pre-kindergarten children. The Emergent Reading Skills Assessment is already designed in a generalized manner and is not child specific and could be used as an assessment tool for any pre-kindergarten child or classroom. The intervention activities are simple, easily replicated, and cost effective, making them externally valid for other educators to use with pre-kindergarten children or any children that may need intervention with letter recognition and phoneme identification. External validity “refers to the extent to which the results of the experiment can be generalized or extended
beyond the conditions of the experiment” (Kazdin, 2011, p.32). In continuation, with adaptations the intervention and *Emergent Reading Skills Assessment* can be applied to kindergarten and first grade children as well. Simple adaptations such as adding on rhyming or letter blends would increase the difficulty and skill level of the intervention and assessment thus making it suitable for older grades.

Furthermore, the present study paves the way for new, effective, developmentally appropriate practices to be considered when educators, specialists, and administrators are implementing emergent reading skill development lessons and activities. This study demonstrates that effective emergent literacy interventions can be integrated into developmentally appropriate activities within the early childhood classroom. The results from the study recommend that teachers incorporate multisensory letter recognition and phoneme identification activities such as felt boards and sounds bags so that children can play an active role in their learning. Casbergue & Strickland (2016) agree that children should have meaningful, hands-on opportunities. Tyner (2019) agrees in the use of activities and games embedded in the learning of emergent reading skills. The intervention was intentionally designed within the lens of developmentally appropriate practices and incorporated multisensory components to include all learning styles and meet the needs of the whole child and whole brain learning. The data show the effectiveness of the use of developmentally appropriate practices (Copple & Bredekamp, 2009) and the implementation of a multisensory intervention (Kruse et al., 2015; Tyner, 2019). Therefore, more emergent reading skill lessons and interventions should incorporate more developmentally appropriate practices with multisensory components that allow for child choice (Tyner, 2019) now that there is yet more data to support the use of this intervention method.
In the classroom, teachers should work to include the methods used in the intervention within their daily literacy instruction especially when targeting letter recognition and phoneme identification. Teachers should include periods of explicit, direct instruction to provide the necessary foundational skills, then allow for times in which the children can lead their learning and have choices in which activities they wish to do. During this time, teachers should be intentional as to the materials they provide, they should be multi-sensory, play based, centered on letter recognition and phoneme identification, and be able to be played independently. While children are playing independently, with partners, or in small groups, teachers can work with children to scaffold and provide the extra assistance needed. The knowledge of the effectiveness of these simple, developmentally appropriate, updated, multisensory, play based approaches to targeting emergent reading skill development should be disseminated to all early childhood educators as every child should work to develop a strong sense of letter recognition and phoneme identification to best prepare them to be successful readers. This study is socially valid as all children need letter recognition and phonemic identification skills in order to achieve emergent reading skills and thus succeed in their later reading. Social validity “is designed to ensure that interventions take into account the concerns of society and the consumers of interventions” (Kazdin, 2011, p. 53). Therefore, this research is necessary for other educators, parents, administrators, and all of those in the field of early childhood education as knowing the best developmentally appropriate practices for this intervention could help any children who are struggling with emergent reading skills. It is also important that those in the field of education stay up to date on current, most effective practices. There have been previous studies done that have focused on similar topics, but they are very outdated and use non developmentally appropriate methods. This study allows for current research, developmentally appropriate
methods, and an easily applicable and adaptable intervention and opens the door for future research to continue on this path.

**Future Research**

The present study consisted of a multicomponent intervention plan which included teacher led shared reading, teacher led phonemic awareness activities, then concluded with child choice letter recognition and phonemic awareness activities. Future research should examine the effectiveness of each component of the intervention to determine which part is the most beneficial for children or if it is necessary to have all components in order for development of the skills to be successful. Teachers in the classroom are also limited on the instructional time that is available each day; therefore, being able to pinpoint the most effective component would aid teachers in selecting which methods to give greater attention and planning to. Future research should also examine the impact on child confidence.

Although the present study did examine both lowercase and uppercase letters, future research could further explore the reasoning for the gap during the baseline assessments. In continuation, future research could investigate the necessity to target both uppercase and lowercase or if just uppercase or lowercase letters would suffice for the intervention. There are many variations that could be assessed within future research in terms of the targeted letters used.

With limited participants and only one classroom utilized, the present study also warrants further research into targeted interventions for a wider range of children and demographics as well as for a longer duration. Data with a wider range of children over a longer period of time could produce more insight especially in regard to the multiple components of the intervention methods and their varying levels of importance as well as the possibility of targeting just
uppercase or lowercase letters. Extending the duration of the study could also allow future researchers the opportunity to include other emergent reading skills such as rhyming or blending phonemes to determine how many skills should or can be targeted at one time.

The present study worked to address the emergent readings skills of letter recognition and phoneme identification. While these skills are vital to the foundation of emergent readers and predictors of their later success, letter recognition and phoneme identification are not the only emergent reading skills that need to be addressed and developed (Kruse et al., 2015). Thus, begs the question: which other emergent reading skills are lacking in pre-kindergarten children that may need to be re-evaluated through the same developmentally appropriate lens as the present study and given new modifications to the ways in which they are being fostered within the classroom. If future researchers are able to present more findings on emergent reading skills and renovated, developmentally appropriate methods to be used within the classroom, emergent readers will not only be given good foundations but will be carving the way for their own strong, successful reading.

Conclusion

In conclusion, this present study contributes research to the field of early childhood education on the need for more developmentally appropriate, multisensory, play based learning methods for emergent reading skill development for pre-kindergarten children. These skills, along with other emergent reading skills, provide the critical foundation that is necessary for children to succeed in their later reading endeavors. Results from the present study suggest that teachers should attend to child's letter recognition and phoneme identification skills in order to increase their emergent reading skills, thus better preparing children to become readers. The results of the study overall were positive and exhibited increases amongst all children and were
in agreement with previous research on emergent reading skill development (Noe, et. al., 2014). Through supporting children in an updated, developmentally appropriate method, teachers can foster the emergent reading skill development that children need to reach their ultimate goal of being a successful reader.
Appendix A. ELLCO Literacy Environment Checklist

**ELLCO: Literacy Environment Checklist**

<table>
<thead>
<tr>
<th>Classroom: PK</th>
<th>Observer(s): Laura Simmons</th>
<th>Date: 9/1/2020</th>
</tr>
</thead>
</table>

### Book Area

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is an area set aside just for book reading? (If this area is used for other activities, such as for circle time or as a block area, score this item No.)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2. Is the area where books are located orderly and inviting? (Are the books displayed on a bookshelf or bookcase: Are they oriented properly-front covers or spines facing out and right side up? Are they neatly organized?)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3. Does the area where books are located have soft materials? (Are there pillows, cushions, or comfortable furniture in the area so that children can look at books comfortably?)</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Book Area Total**: 1

### Book Selection

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Do the books in the classroom range in difficulty level? (This item refers to all books that are accessible to children, not only those books in the book area. Do some books have no words or very few words per page, whereas others have one or two paragraphs per page? Do some books include simple language, where others incorporate more sophisticated vocabulary?)</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5. How many books are easily available to children? (Count all books that are accessible to children, not only those in the book area.)</td>
<td>Fewer than 15: 1</td>
<td>16-25: 2</td>
</tr>
<tr>
<td>6. How many varieties of genres do you have? (i.e.: fiction, non-fiction, poetry, letters, magazines, child-made books, wordless books, recipes, culturally diverse)</td>
<td>Fewer than 4: 1</td>
<td>4-6: 2</td>
</tr>
</tbody>
</table>

**Book Selection Total**: 5

### Book Use

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Are there books available in all interest areas? List areas: art, writing, puzzles, kitchen, science</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>9. Is there a place for children to listen to recorded books/stories? (The listening center does not have to be a permanent area in the classroom. However, it must be in working order and available to children without adult assistance on the day of your observation.)</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Book Use Total**: 2

### Front Page Results

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book Area Total</td>
<td>1 / 3</td>
<td></td>
</tr>
<tr>
<td>Book Selection Total</td>
<td>9 / 8</td>
<td></td>
</tr>
<tr>
<td>Book Use Total</td>
<td>1 / 2</td>
<td></td>
</tr>
<tr>
<td>Front Page Total</td>
<td>10 / 13</td>
<td></td>
</tr>
</tbody>
</table>

### Back Page Results

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<thead>
<tr>
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<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing Materials</td>
<td>8 / 8</td>
<td></td>
</tr>
<tr>
<td>Writing Around the Room Total</td>
<td>11 / 13</td>
<td></td>
</tr>
<tr>
<td>Back Page Total</td>
<td>19 / 21</td>
<td></td>
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### ELLCO Results

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<thead>
<tr>
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<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Page Total</td>
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<td></td>
</tr>
<tr>
<td>Back Page Total</td>
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<td></td>
</tr>
<tr>
<td>ELLCO Total</td>
<td>3 / 34</td>
<td></td>
</tr>
</tbody>
</table>

29/34
### Writing Materials

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Is an alphabet visible?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(This includes but is not limited to alphabet posters, stencils, and letter shapes. The alphabet must be at children's eye level or readily used by children)</td>
<td>Yes</td>
<td>0</td>
</tr>
<tr>
<td>11. Are there word cards with names or familiar words?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Are there cards with children's names held together on a ring or cards with familiar words posted on the wall next to or above the writing area? Word cards must be in a place intended to support children’s writing. Word cards do not include labels on objects around the room.)</td>
<td>Yes</td>
<td>0</td>
</tr>
<tr>
<td>12. Are there templates or tools to help children form letters?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Are there alphabet stencils, sandpaper letters, rubber stamps, and so forth.)</td>
<td>Yes</td>
<td>0</td>
</tr>
<tr>
<td>13. How many varieties of paper are available for writing?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Is there construction paper, white lined and unlined paper, tracing paper and so forth?)</td>
<td>0 kinds: 0</td>
<td>1-2: 1</td>
</tr>
<tr>
<td>14. How many varieties of writing tools are available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Are there pens, pencils, markers, crayons, colored pencils, magnetic letters, a chalkboard, a whiteboard, a typewriter, rubber stamps, and so forth)</td>
<td>0 kinds: 0</td>
<td>1-2: 1</td>
</tr>
<tr>
<td>15. Is a distinct area set up and functioning for writing?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(In order to score this item YES, the area must be used only for writing. It cannot be combined with an art area, book area or any other area.)</td>
<td>Yes</td>
<td>0</td>
</tr>
</tbody>
</table>

### Writing Materials Total

| Total | 0 |

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. How many varieties of teacher dictation are on display in the classroom?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(This item is designed to determine the variety rather than the number of dictations. If the display of teacher dictation consists of work from a one-time, teacher-led activity completed by all children, count it as one example. If a single display consists of unique or spontaneous work from each child or the works were completed over a longer period of time, count each item as a separate example.)</td>
<td>0 kinds: 0</td>
<td>1-2: 1</td>
</tr>
<tr>
<td>17. How many charts, big books, or other evidence of full-group literacy are there in the classroom? (Include teacher-created charts that show evidence of group discussion.)</td>
<td>0 kinds: 0</td>
<td>1-2: 1</td>
</tr>
<tr>
<td>18. How many varieties of children's writing are on display in the classroom?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(This item is designed to determine the variety, rather than the number of child writing samples on display. If the display of children's writing consists of work from a one-time, teacher-led activity completed by all children, count it as one example. If a single display consists of unique or spontaneous work from each child, or the works were completed over a longer period of time, count each item as a separate example.)</td>
<td>0 kinds: 0</td>
<td>1-2: 1</td>
</tr>
<tr>
<td>19. Are there writing tools in the dramatic play and block area? Are children and adults using them?</td>
<td>Yes</td>
<td>0</td>
</tr>
<tr>
<td>20. Are there props that prompt children to write in the dramatic play or block area? Props include items such as clipboards, telephones, menus, grocery lists, recipes, phone books, calendars.</td>
<td>Yes</td>
<td>0</td>
</tr>
<tr>
<td>21. Are there alphabet puzzles available for children's use? (Alphabet puzzles must include all letters of the alphabet. Puzzles must be available without adult assistance.)</td>
<td>Yes</td>
<td>0</td>
</tr>
<tr>
<td>22. Are there puzzles with words available for children's use? (Puzzles with words must include several short words, and meanings must be clearly indicated by pictures. Puzzles must be available without adult assistance.)</td>
<td>Yes</td>
<td>0</td>
</tr>
</tbody>
</table>

### Writing Around the Room Total

| Total | 11 |

7/20 (Rev. 7/19)
Appendix B. Institutional Review Board Approval

TO:
DiCarlo, Cynthia F.
LSUAM | Col of HSE | Education

FROM:
Alex Cohen
Chair, Institutional Review Board

DATE:
23.0 ct. 2020

RE:
IRBAM.20-0436

TITLE:
Impact of Targeted Emergent Reading Skills Interventions on Increasing Letter Recognition and Phoneme Identification in Pre-Kindergarten Aged Students for Lauren Simmons on 01.0 ct. 2020 8:59 PM

SUBMISSION TYPE: Initial Application
Review Type: Expedited Review
Risk Factor: Minimal
Review Date: 23.0 ct. 2020
Status: Approved
Approval Date: 23.0 ct. 2020
Approval Expiration Date: 22.0 ct. 2021
Re-review Frequency: Annually
Number of subjects approved: 6
LSU Proposal Number:

By: Alex Cohen, Chairman

Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU’s Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of any change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.
5. Continuing attention to the physical and psychological well-being and informed consent of the individual participants, including notification of new information that might affect consent.
6. A prompt report to the IRB of any adverse event affecting a participant potentially arising from the study.
8. SPECIAL NOTE: When emailing more than one recipient, make sure you use bcc. Approvals will automatically be closed by the IRB on the expiration date unless the PI requests a continuation.

* All investigators and support staff have access to copies of the Belmont Report, LSU's Assurance with DHHS, DHHS (45 CFR 46) and FDA regulations governing use of human subjects, and other relevant documents in print in this office or on our World Wide Web site at http://www.lsu.edu/research

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Appendix C. Teaching Strategies Gold 16a And 16b Dimensional Progression

**Objective 16** Demonstrates knowledge of the alphabet

### a. Identifies and names letters

<table>
<thead>
<tr>
<th>Not Yet</th>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
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<td></td>
<td>Recognizes and names a few letters in own name</td>
<td>Recognizes and names as many as 10 letters, especially those in own name</td>
<td>Identifies and names 11-20 upper- and 11-20 lowercase letters when presented in random order</td>
<td>Identifies and names all upper- and lowercase letters when presented in random order</td>
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</table>

### b. Uses letter-sound knowledge

<table>
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<th>Not Yet</th>
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<td>Identifies the sounds of a few letters</td>
<td>Produces the correct sounds for 10-20 letters</td>
<td>Shows understanding that a sequence of letters represents a sequence of spoken sounds • Asks when writing, “How do you spell cough?”</td>
<td>Applies letter-sound correspondence when attempting to read and write • Sees the word cat; begins to sound out the word: /k/ /a/ /t/ • Makes an open sign for the doctor’s office by writing “open”</td>
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</tbody>
</table>

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Appendix D. Data Collection Sheet

Data Sheets
Child’s Name ___________________ Age: _____ Date: ___________________  
Observer: ___________________ Reliability Observer: ___________________  

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<tr>
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*Letter Recognition. (LR)* Letter recognition was defined as “identifying the letters of the alphabet” (Erekson, et al., 2020, p. 159). An example of accurate letter recognition would be a child looking at the letter ‘e’ and when prompted answered saying that is the letter ‘e’. A non-example would be if a child looked at the letter ‘e’ and answered ‘a’ or making the letter sound for /e/.

*Phoneme Identification. (PI)* Phoneme identification was defined as accurately identifying the individual sounds of letters, as modified from McGee and Richgels’ definition of phoneme, “the smallest units of sound that are combined and contrasted in a language’s words” (2012, p.9). An example of accurate phoneme identification would be a child looking at the letter ‘b’ and saying /b/. A non-example would be if a child looked at the letter ‘b’ and said /s/ or /be/.
# Appendix E. ELFS Lesson Plan

## Figure 4.2

**ELFS Lesson Plan 1**

<table>
<thead>
<tr>
<th>Focus Letters: B</th>
<th>S</th>
<th>M</th>
<th>A</th>
<th>C</th>
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</thead>
</table>

1. **Alphabet Matching** (uppercase and lowercase letters and their sounds):
   - Using only the teacher’s set of letters, go over the name and the sound of each uppercase letter as you place them on the board.
   - Present the lowercase letters while placing each under the related uppercase letter. Ask if it matches. The students give thumbs up or thumbs down.
   - The name and sound for each letter should be repeated as the uppercase and lowercase letters are matched.

2. **Alphabet Production**:
   - Model the letter formation on a whiteboard, then write it again as students make the letter in the air.
   - Students use a whiteboard to form the uppercase B and lowercase b.
   - Make sure students continue to make the /b/ sound every time they write the letter.

3. **Guess My Word** (segmenting and blending onsets and rimes):
   - Begin by saying, “Guess my word.”
   - Vocaically segment the word. Students should then say the word.
   - Show the picture of the word and ask a volunteer to use the word in a sentence.

*Words: ball, cake, man, saw, map*

4. **Sound Boxes** (phoneme segmentation and blending):
   - Each student will need a sound box strip and a magic button.
   - Say, “Now we are going to listen for sounds in some words. Our first word is cab. Say cab. Let’s touch the sounds in cab.” (Hold up your hand and touch one finger for each sound: /k/ /a/ /b/.)
   - Say, “Watch me write the sounds.” Write the letters in your sound boxes. (The students do not write the letters in the box until they can write them quickly and correctly.)
   - Say, “Put your magic button in the starting box. Put one finger on your magic button. Let’s say the sounds in cab the bumpy way.” Demonstrate moving your magic button into each of the boxes on the sound box, sound by sound, moving from left to right (i.e., the bumpy way).
   - Say, “Now we will say the word the smooth [or fast] way.” With a sweeping motion from left to right, have students chorally read with you and say the sounds more connected. Students should move their magic buttons across the words.

*Words: cab, Sam, bam, Mac*

5. **Picture Strips** (phoneme matching and initial sound fluency):
   - Each student will need a picture strip and a magic button.
   - Say, “Cover the picture that starts with ________.”

*Sounds: /b/, /m/, /l/, /k/, /s/ *

6. **Letter Strips** (initial sound fluency and initial sound isolation):
   - Each student needs a letter strip and a magic button.
   - Say, “Cover the letter sound that begins ________.”

*Words: sandwich, bird, matches, ant, comb*

7. **Rhyming Bingo Cards**:
   - Each student needs a bingo card and tokens.
   - Say, “Cover the picture that rhymes with [say the first word of the pair].”

*Words: mall/ball, make/cake, draw/saw, cap/map, tank/bank, track/seck, takes/lake, trap/cap, pan/fan*
References


VITA

Laura Simmons was born in New Orleans, Louisiana. She resided in the state of Louisiana for the entirety of her upbringing. Upon completion of high school, she chose to attend Louisiana State University where in May 2019, she received her Bachelor of Science in Early Childhood Education and a teaching certification for pre-kindergarten through third grade. Since earning her degree, she has taught pre-kindergarten at the LSU Early Childhood Education Laboratory Preschool and Saint Jude the Apostle School in Baton Rouge, Louisiana. After Laura graduates with her Masters of Education in Curriculum and Instruction with a focus in early childhood in August 2021, she plans to continue teaching in the early childhood classrooms in Louisiana.