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The Impact of Prekindergarten Intervention on Kindergarten Early Literacy Development

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Concordia University–Portland

College of Education

Doctorate of Education Program

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The Impact of Prekindergarten Intervention on Kindergarten Early Literacy Development

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Concordia University–Portland

College of Education

Dissertation submitted to the Faculty of the College of Education

in partial fulfillment of the requirements for the degree of

Doctor of Education in

Educational Administration

John Mendes, Ed.D., Faculty Chair Dissertation Committee

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Abstract

Current findings in early childhood education research document the beneficial impact of prekindergarten on the development of young learners. However, while much research notes the important role prekindergarten can play on early childhood development, there is little research on how prekindergarten intervention impacts the early literacy development of struggling learners. Therefore, this causal comparative quantitative study examines the benefits of prekindergarten intervention instruction on the early literacy development of struggling learners. A pre- and post-test design used in a one paired t-test were performed to assess the early literacy benefits of prekindergarten intervention instruction on the early literacy development of struggling learners, specifically in the areas of Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation, and Nonsense Word Fluency as assessed through kindergarten DIBELS. Within each DIBELS component, and for each assessment period in the fall, winter and spring, former prekindergarten students met and exceeded the National Norm developmental DIBELS benchmarks. Students kindergarten early literacy skills were positively impacted by the prekindergarten intervention instruction they received. The kindergarten DIBELS early literacy indicators are therefore predictive of the probability of prekindergarten students achieving future reading achievement with a level of 80%–90% confidence.

Keywords: prekindergarten, intervention, early literacy development, Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

Dedication

I would like to dedicate this spiritual journey to my Savior, Jesus Christ, who I love with all my heart, soul, and mind. Matthew 19:26, "With God all things are possible." I also dedicate this journey to my high school sweetheart, husband and friend, Frank. I love you and I am forever grateful for your love, encouragement, and support. In addition, I dedicate this journey to my precious children, who are my pride and joy. You bless me with your love and accomplishments every day and I love you all more than you know. Olon Christopher my Rocket Scientist; Jeanie Cecile my Information Technologist, Jenna Danielle my Nurse, Riels Christian my Mechanical Engineer, and Reece Christo my future Rocket Scientist. I am so very proud of you and I know you will continue to grow and serve God's kingdom. To my mother, Donna Marie, thank you for loving me and encouraging me to be a dreamer. Your spirit is one of the main reasons this journey was so important to me and accomplishing this goal has given me peace in your absence. To my baby sister, Misty, I love you and I hope you know how much you mean to me. To my baby brother, Michael, I love you and I pray daily that you find peace and joy. To my mother Donna Cecile, thank you for your love, encouragement, and kindness, you have always believed in me. To my father Danne Adair, thank you for your love, support, and encouragement on this journey. Sharing this accomplishment with you brought me great joy. I will forever be grateful for all of the love, kindness and encouragement my family has given me. This amazing journey would not have been possible without your unyielding support and encouragement. I love you all very much and I am truly blessed to have you in my life! 1 Corinthians 13:13, "And now these three remain: faith, hope and love. But the greatest of these is love."

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Chapter 1: Introduction

Introduction to the Problem

The optimal development of a child is dependent upon a nurturing and supportive early learning environment that will nourish and facilitate the child's maximum development (Lally & Mangione, 2017). Early learning research is continuously searching for the most effective strategies to impact instructional practices and increase student achievement during this critical time of early development (Phillips et al., 2017). Unfortunately, many families struggle with adequately preparing children for early learning and the children are arriving at school lacking some of the foundational prior knowledge and skill sets needed for early learning readiness (Phillips et al., 2017). Helping these young learners find success is becoming increasingly vital. There is growing importance placed on establishing and implementing the best practices of early learning that are essential to empowering children with the knowledge and skill sets they need for early learning success as well as throughout their life (Center on the Developing Child at Harvard University, 2016; Phillips et al., 2017).

Many children in the U.S. are not receiving the knowledge and skill sets they need to be successful in early learning and in life because they have not experienced a nurturing and supportive learning environment that facilitates the development of their fullest learning potential. Kindergarten teachers are finding that young children are arriving at school ill-equipped with the foundational knowledge and skill sets needed for school readiness and academic success (Early Childhood Longitudinal Study, 2011). In the school year of 2010–2011, kindergarten educators found that only 27% of their new kindergarten children were proficient in the foundational knowledge and skills sets needed for early literacy instruction (Bernstein, West, Newsham, & Reid, 2014). Research shows children reared in low-income homes have

vocabulary deficits by the age of 18 months and a 30-million-word gap by the time they are three (Fernald, Marchman, & Weisleder, 2013). The language production and IQ of a child at age 3 can predict future achievement in reading, language, and math (Walker, Greenwood, Hart, & Carta, 1994). Many young students are reporting to school almost a year behind in academic and language skills (Denton, Flangan, & McPhee, 2009; Halle et al., 2009). Additionally, poor literacy in first and third grades has been correlated with aggressive behavior in grades third and fifth (Miles & Stipek, 2006). Children who begin their educational journey with a deficit in language and literacy development are more likely to struggle with reading, and their academic achievement is more likely to persist throughout their educational career (Spira, Bracken, & Fischel, 2005).

Early literacy learning impacts a child's physical, social-emotional, and cognitive development, as all domains of a child's early learning development are interdependent and interrelated (National Institute for Early Education Research, 2006). Because all domains of learning are connected, a weak foundation in one area of development will impact learning in other areas. An astounding 44% of American children enter kindergarten with one or more risk factors for decreased educational success based on their home environment according to the finding of the Early Childhood Longitudinal Study of Kindergarten (ECLS, 2011). At risk children, must make twice the academic progress in kindergarten to catch up to their low-risk peers.

Statement of the Problem

Disadvantaged children struggle academically, specifically with early literacy development. Measuring the academic benefit that prekindergarten instruction has on the early literacy skills of young students could impact future early learning educational practices in

prekindergarten. Within the current body of literature on the impact of prekindergarten instruction on early literacy skills, there is limited research that focuses on how prekindergarten students perform on the kindergarten Dynamic Indicators of Early Literacy (DIBELS) early literacy assessment. Measuring the beneficial skill sets acquired by young learners will provide insights into the success of prekindergarten instruction as a strong predictor of early reading achievement. The goal of this study is to determine the level of impact of prekindergarten instruction by assessing kindergarten students' performance in the DIBELS assessment. DIBELS is an effective research based-criterion referenced assessment that serves to help predict the early literacy success of young students.

Significance of the Problem

Early childhood education and the impact of prekindergarten instruction on early literacy development has become an increasingly important topic in the world of education, science, and government (Phillips et al., 2017). Finding the most beneficial and effective teaching and assessment practices is important to ensure students are on the path to educational success. One significant tool to guide early literacy development is the DIBELS assessment. DIBELS are a set of scientifically research-based procedures and measurements to assess the acquisition of early literacy skills that can be used to guide instructional practices and student achievement (UO DIBELS Data System, 2016). Through utilizing the DIBELS assessment to gauge the impact of prekindergarten instruction on kindergarten early literacy skills, the findings can impact future educational practices and student achievement.

Early childhood intervention for struggling students is more effective and less costly as opposed to later intervention services that are less effective and more expensive. Children who attend prekindergarten programs are less likely to repeat, less likely need remediation

services, more likely to graduate high school, more likely to attend college, more likely to earn higher wages and less likely to be incarcerated (Heckman, 2017). Providing young children with the opportunity to attend prekindergarten can help close the achievement gap, be beneficial for our economy and is the humanitarian thing to do.

Purpose of the Study

The purpose of this causal comparative quantitative study was to determine the impact of prekindergarten intervention instruction on kindergarten early literacy skills. Within this causal comparative study, the central focus was to assess the impact of prekindergarten instruction on the early literacy skills of kindergarten students, through the utilization of a nonrandom sample, through a predetermined purposeful selection, where the student population included former prekindergarten students. Through identifying former prekindergarten students' achievement on DIBELS, educators could utilize these findings to drive instructional practices and student achievement. It is intended that the research findings from this thesis will be shared with prekindergarten educators and administrators so as to support future early childhood literacy education.

Research Questions

The central focus of this study revolved around these four research questions:

RQ1. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Initial Sound Fluency as measured through the DIBELS assessment, compared to the National Norm?

RQ2. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Letter Naming Fluency as measured through the DIBELS assessment, compared to the National Norm?

RQ3. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Phoneme Segmentation Fluency as measured through the DIBELS assessment, compared to the National Norm?

RQ4. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Nonsense Word Fluency as measured through the DIBELS assessment, compared to the National Norm?

Hypotheses

The central focus of this study revolved around these four hypotheses:

H1. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Initial Sound Fluency and the learning gains that occur in the National Norm.

H2. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Letter Naming Fluency and the learning gains that occur in the National Norm.

H3. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Phoneme Segmentation Fluency and the learning gains that occur in the National Norm.

H4. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Nonsense Word Fluency and the learning gains that occur in the National Norm.

Definition of Terms

School readiness. This term is defined as a multi-dynamic concept that includes the cognitive, executive functioning, language, socioemotional, behavioral, and overall

health characteristics that contribute to a child's ability to adapt and thrive in a school setting (Bovin & Bierman, 2013).

Dynamic Indicators of Basic Early Literacy Skills (DIBELS). This term is defined as a set of explicit procedures and measures for quickly and effectively assessing the acquisition of early literacy skills from kindergarten through to the sixth grade.

Early literacy. This term is defined as, collectively, the overall literacy skills including alphabet knowledge and fluency, phonological awareness and fluency, writing alphabet letters and/or name, and phonological memory and fluency (University of Oregon, 2016).

Assumptions, Delimitations, and Limitations

This study included three assumptions on the part of the researcher. The assumptions are as follows:

1. Prekindergarten instruction across the five schools within the study are similar in nature due to the use of the Alabama Pre-K standards, Opening a World of Learning, Waterford and SmartStart.
2. DIBELS assessments are given three times a year as progress monitoring and the results are used to provide insights into instructional practices and student achievement.
3. The experimental quantitative method of gathering data could help educators gather information concerning the impact of prekindergarten instruction on kindergarten early literacy skills.

This study was restricted to the archived DIBELS of students within five coastal lower socioeconomic elementary schools in Alabama. Because the research data was derived from only five schools, it may not be representative of other students' early learning experiences and may

have narrowed the generalization of the research findings. The researcher carefully selected schools and prekindergarten classes in the same manner and provided the same intervention instructional practices.

Additionally, the researcher was a prekindergarten teacher at one of the participating elementary schools within the coastal community in the study. Since the study was conducted within the researcher's community, student assessment results could have been tracked back to students from these schools. To ensure this was not possible, the researcher safeguarded the anonymity of student assessment results and teacher and student names remained confidential.

Summary of the Chapter

At the time of this study, there was limited research data on the topic of the benefits of prekindergarten intervention instruction on kindergarten early literacy. Most research involved the early literacy of first grade students in relation to prekindergarten instruction. Chapter 1 identified the topic and the need for more research in this area was emphasized. Additionally, the purpose of the research study, questions, assumptions, delimitations, and limitations were presented.

Chapter 2: Literature Review

Introduction to the Literature Review

Children are the foundation of America's future. With young children being the most valuable resource, the best investment to ensure a bright future for America is to invest in the lives of these children and ensure they are able to thrive in every way possible. Through research and data driven practices, educators can provide students with the education, nurturing and love they need to flourish.

Advocating for early childhood education is an investment in our country's young children and in the future of America. The educational achievement gap between disadvantaged children and their more affluent peers can be reduced by early educational experiences that implement proactive approaches to cognitive and developmental skills for young learners (Center on the Developing Child at Harvard University, 2016; Phillips et al., 2017). These early learning experiences are more effective and less costly than later intervention strategies. Early childhood learning interventions for disadvantaged children can serve to boost the level of education and lifetime earnings of students as compared to students that do not attend such programs. Investing in early childhood education for the disadvantaged provides a return of 7%–10% annually through the areas of education, overall health, sociability, economic gains, and a decrease in crime (Heckman, 2016). Making a strong commitment to provide young children the opportunity to attend early childhood programs is crucial to the future of America.

To guide the practices of educating young students, the researcher plans to conduct research on the positive impact prekindergarten has on the early literacy development of kindergarten students, as the researcher collected, studied, and evaluated educational, psychological, scientific, and medical library databases: JSTOR, ProQuest, Eric, PsycINFO,

Ebscohost and Google Scholar; in addition to many articles of peer review on the benefits of preschool. In order to locate and collect the information contained in this literature review, the specific terms were utilized in the research: Neurology and Childhood Development, Neurology and Early Childhood Education, Brain Development and Preschool, Benefits of Preschool, School Readiness and Preschool, School Readiness and Teacher's Perceptions, Achievement Gap, Economic Gains of Preschool, Inequality and Education, Funding and Preschool.

Additionally, numerous articles on early childhood education published from 1998 to 2018 were studied and reviewed. Countless studies from around the U.S have investigated the possible benefits of early childhood education. Research from these studies have been a springboard for requesting additional funding from government for the development and implementation of programs to provide quality early childhood education for all children, especially those from low SES and second language learners (Center on the Developing Child at Harvard University 2016; Fox, 2002; Olson & National Research Council, 2012; Phillips et al, 2017; Welsh, Nix, Blair, Bierman, & Nelson, 2010).

The research process requires a sound framework of conceptuality that is developed by a researcher when she has discovered the specific topic of interest he would like to research and the relevance of this topic to him personally and professional. Once the topic is chosen they must decide how they will strategically proceed with their area of study and develop a scientific conclusion based upon their findings (Ravitch & Riggan, 2012, pp. 2-3). As an early childhood educator, the researcher's dissertation topic is focused on the possible short and long term positive gains of preschool has on development, academic achievement, and quality of life. The researcher hypothesizes that there is a difference in the development and achievement of students who attend preschool and those students who do not attend preschool, especially for those for

students from lower SES families and second language learners. High quality early childhood education can serve to promote positive gains in development, achievement, and quality of life (Center on the Developing Child at Harvard University, 2016; Phillips et al., 2017).

The educational demands of kindergarten are a lot like what first grade used to be (PEW Center, 2016). Young students are expected to come to kindergarten with skill sets, attention spans and task commitment that are highly demanding and leave little time or resources for catching up to speed. Research shows that kindergarten students who start out behind their peers with limited skill sets, attention spans and task commitment tend to stay behind. The Pew Center (2016) reports children who are unable to identify the letters of the alphabet in kindergarten struggle with lower reading scores by the end of first grade. Research on early literacy shows that 88% of students who read struggle with reading in the first grade will still struggle with reading by the fourth grade, and 74% of children who read poorly in third grade will read poorly when they start high school (Pew, 2016).

Many kindergarten teachers report that students come to kindergarten without the knowledge base and skill sets they need to be successful in their educational journey. Statistics show that 46% of educators find that half of their young students have trouble following directions, 36% feel that half of students have difficulties with academic knowledge and skills and 34% feel that half or more of students have trouble with working independently (Pew, 2016). With so many students entering kindergarten without the knowledge and skill sets they need to be successful, they are behind in their educational journey before they get started and will likely stay behind, as they struggle through school.

Students who have access to quality prekindergarten have a better chance of being successful in school and later in life. Research findings show that students that attend

prekindergarten have higher math and reading test scores than students who did not attend prekindergarten (Magnuson, Meyers, Ruhm, & Waldfogel, 2004). Additionally, students who attend prekindergarten are far less likely to need services of special education, less likely to be retained, more likely to graduate from high school and more likely to attend college than students who did not attend prekindergarten (Wat & Gayl, 2009).

In the U. S., individual states that fund public prekindergarten programs has risen from 10 in 1980 to 38 in 2002, bringing the enrollment up to 700,000 plus children and a budget to provide early learning to over \$2.5 billion (Barnett, Hustedt, Robin, & Schulman, 2005 Gilliam & Zigler, 2004). The increase in funding to provide Americas' youngest citizens a quality beginning is a start, but not enough, as children are the poorest division of American society. Research concluded that children reared in poverty are susceptible to exposure to environments and experiences that cause stress and discourse and therefore cause harm to the development of the child. Research shows that poverty in the early stages of life may be more detrimental than poverty experienced later in life (Fox, 2002; Olson & National Research Council, 2012). A double risk of poverty is experienced when the poverty-stricken family resides within a neighborhood that is also impoverished, as the negative consequences increase.

As a former Head Start student, the researcher has first-hand knowledge of the value of early learning and the positive impact this important investment can make in the life of a child. As an attendee of Head Start while in the foster care system, finding comfort in the consistency of the nurturing environment and early learning experiences this program provided. Like many students from disadvantaged homes, the researcher was not reared in the environment of a stable home life and the social advantage of a middle-class upbringing. Being reared in a low SES environment exposed the researcher to the educational deficit of the achievement gap, as

educational opportunities were limited and the importance of education was not strongly valued. Many children in America are in the same situation of being brought up in families with broken homes and within families without appropriate means to care for their children's basic needs. Early learning support programs, such as Head Start, can offer low SES families support to encourage early learning to develop important school readiness skills and make a lifelong impact on learning (Bierman, Nix, Gest, Greenberg, & Welsh , 2008).

Conceptual Framework

Early childhood education is an important investment in the future of our children, our most precious resource. President Obama signified the importance of early childhood education with his State of the Union address that encouraged Congress to provide the opportunity of preschool for every child in America. Former President Obama was committed to quality early childhood learning to reap big rewards for young children, their families and society overall: In states that make it a priority to educate our youngest children...studies show students grow up more likely to read and do math at grade level, graduate high school, hold a job, form more stable families of their own. We know this works. So, let's do what works and make sure none of our children start the race of life already behind. (White House, Office of the Press Secretary, 2014)

The current president, Donald Trump has made a commitment to the *importance of providing quality childcare* (Trump, 2017). As America's leaders convey the importance of early learning for the future of our society, early childhood development studies backup the science behind their vow to promote early childhood programs (Center on the Developing Child at Harvard University, 2016; Phillips et al., 2017).

Within early childhood education, school readiness plays an integral part in the instructional process. To understand and evaluate the concept of school readiness, an explicit framework of childhood development and ways to encourage development is useful (Center on the Developing Child at Harvard University, 2016). Each piece of literature systematically outlines the author's subject matter and how this concept fits into early childhood education, school readiness and the perceptions of kindergarten teachers on the readiness of incoming students. Holistically, the literature serves to explain how and why concepts of child development and educational practices encourage student development.

The practice of early childhood education has become an ever-important topic of human interest and society has supported these efforts through the establishment of Head Start. Head Start programs have been providing high quality compressive learning for children since 1964. Research has shown great cognitive and socio-emotional gains for the children who attend these inclusive and nurturing programs. Over 33 million families have benefited from the intervention services of Head Start early learning. Based upon the great success of Head Start in providing proven benefits for early learning, congress granted \$635 million in 2016 to support Head Start programs and then approved an additional \$294 million to increase the number of children Head Start could serve for a year of early learning. In addition, President Obama asked congress to provide additional funding to build upon this progress and expand the full school day and year offerings in Head Start for 2017 (Barnett et al., 2017). With these expansions in early childhood programs, the need to understand the process of early development and learning becomes of even greater importance (Barnett et al., 2017).

An understanding of development and learning within the realm of early childhood education involves the framework of neuroscience and relevant research within the early years of

neurological development. Brain research by Krashen (1982) documented how young students are more inclined to learn and retain new information and concepts when learning is associated with strong positive emotions. Learning new information involves the Reticular Activating System (RAS), a process whereby the brain receives and filters information, and it is this process that enables young learners to be more receptive to exciting and meaningful learning (Mendes, 2012). Making learning more exciting and less predictable challenges students to understand this new information in the context of their prior knowledge, so as to make sense of the new learning.

Within the neurological study of executive control in early development and learning, research findings demonstrated how young students with the ability to focus on goal directed behavior showed increased gains in phonological awareness and print knowledge. Students who could set a goal and delay gratification to reach the intended goal made significant gains in early literacy skills (Allan & Lonigan, 2011). In the area of neurological development of behavior regulation, research findings show that children with greater levels of behavior regulation made higher academic gains in emergent literacy, vocabulary, and math skills. Children with higher behavior regulation were successful making cognitive gains through their abilities to use and access inhibitory control, increased attention, and active working memory (McClelland et al., 2007). Research found that the behavioral elements of emotion-cognition development are likely to build upon another within the years of preschool development (Blair, 2002; California Department of Education, 2017; Nigg & Huang-Pollock, 2003). There is strong corroboration for the theory of emotion and cognition at the basic neurological level (Center on the Developing Child at Harvard University, 2016; Davidson et al., 2003). In addition, neurological research showed that executive function impacts a child's readiness for school in terms of preparation to learn and receptiveness to instruction (Bierman et al., 2008; Mann, Hund, Hesson-McInnis, &

Roman, 2017). Students with higher levels of development in the area of executive function are able to attend to instruction, and demonstrate task commitment, inhibitory control, cognitive flexibility, reasoning, problem solving and planning skills. Viewing early childhood learning through the lens of neurological development provides insights into methods of increasing developmental and learning outcomes.

Head Start and Victorian Early Years Learning Frameworks. Interpreting early childhood literature through the lens of The Head Start Child Development and Early Learning Framework (2010) provides insights into the development of the whole child. The framework establishes domains of development and highlights areas of intentional scaffolding through observation of developmental play and instruction. With strategically planned interactions, children's needs are being met and they are able to develop and learn at optimal levels. Once their basic needs are satisfied, a child can more easily develop and learn.

The framework of the Australian based Victorian Early Learning Curriculum and Assessment Authority (2013) developmental domains align with and complements the Head Start Early Learning Framework (2010). The comprehensive method of viewing early childhood development provides insights into the progressions of a child's development and the domains of the progression. As children develop and grow they have natural paths of learning and growth that are outlined and explained by the progression of development. Each area of development offers a lens in which to view early childhood development and early learning processes. There are eleven developmental domains that encompass the gradual development of the whole child (Head Start for School Readiness Act, 2010; Victorian Early Learning, 2013).

The domain of Physical Development and Health is concerned with the progression of a child's ability to explore how their bodies move and how they move within their surrounding

environment as well as how they take care of their bodies. Children learn through movement in both gross and fine motor activities. Gross motor activities involve movement such as standing, walking, running, whereas fine motor activities involve movement of the hands, fingers, eyes, etc. Physical movement allows children to explore and manipulate the world around them, helping them become aware of movement that makes them feel good, which relates to their health. Exposure to information about healthy foods and drinks and methods of self-care provides children with the knowledge of how to take care of their bodies. Through movement and health practices, children develop knowledge and skill sets to care for themselves (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

The domain of Social and Emotional Development is the progression of a child's self-concept and feelings and their understanding of connections and relationships with others. A child's ability to view one's self in a positive perspective, to form and value sustaining relationships and to regulate emotions and behavior, signifies strong social and emotional development. Strength in the area of social and emotional development signifies a strong self-worth and coping mechanism, empathy and the ability to form and maintain relationships (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

The domain of Logic and Reasoning is the progress of a child's ability to think, and to process and store information about themselves, others, and their environment. The cognitive abilities of self-regulation, attention and memory involve self-control, focus and data storage and retrieval. Cognitive development allows children to learn to think in ways that facilitate reasoning and representational thinking such as logic and reasoning.

The domain of Language Development is the progression of a child's ability to understand language, communicate, and become literate. Language development entails how a

child comprehends spoken language, develops nonverbal and verbal communication skills and literacy skills. Through listening, conversing, and interacting with others and through experiencing literature, children develop a firm foundation of language (Head Start, 2010; Victorian Curriculum and Assessment, 2013).

The domain of Approaches to Learning is the progression of specific observable behaviors that provide insights into the ways children actively participate in social interactions with others around them and within their learning experiences. The learning approaches of children impact all areas of learning and development in all domains. Children's level of interest, focus and task commitment serves to support beneficial results in the areas of cognitive, language and social emotional development. Learning approaches facilitate the ability to learn and retain knowledge and new skills and teaches how to set and accomplish goals (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

The domain of Literacy Knowledge and Skills is the progression of a child's foundational skills of knowledge, reading and writing. Literacy knowledge and skills encompasses the appreciation of books, concepts of print, the alphabet, and the sounds of letters. The development of early literacy skills and instilling a love for reading is essential to future academic success, as literacy is crucial to learning in all areas of development (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

The domain of Mathematics Knowledge and Skills incorporates the progression of a child's basic understanding of numbers, the relationships between numbers and their quantity and the operations of numbers and other math skills. Math learning involves the process of learning shapes, measurement, classification, patterns, and reasoning. Exploring the world through number concepts and math skills lays the foundation for abstract thinking and logical

problem-solving skills. Success in developing math knowledge predicts further academic achievement in other subject areas (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

The domain of Science Knowledge and Skills is the progression of a child's ability to observe and collect information about the environment, the world and themselves. Children are naturally inquisitive and have a desire to ask questions, experiment, and form theories of how the world works according to their own knowledge and experiences. Questioning, forming theories, experimenting, and observing are all ways young children build science knowledge and skills (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

The domain of Creative Arts Expression is the progression of a child's ability to appreciate and produce art, movement, and drama. Within creative arts, children are able to be creative in their thinking, movement and use of their senses. The arts encourage children to observe, listen, think, imagine, create, move, and express themselves. The creative arts are a mode of self-expression and creativity in child development that facilitates learning in all the other domains (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

The domain of Social Studies Knowledge and Skills is the progression of a child's ability to attain knowledge of the culture—how people live and how they relate to others. The domain of social studies encourages children's understanding of themselves, their families, communities, and others. Through the process of learning about the present, past and future, students develop concepts of time. Children's understanding of themselves are enhanced and their learning experiences help them understand the world around them (Head Start, 2010; Victorian Curriculum and Assessment Authority, 2013).

Vygotsky's method. Another lens within the conceptual framework of early childhood development and learning is Vygotsky's Sociocultural Learning Theory which establishes the role social culture plays in the cognitive development of a child (Vygotsky, 1978). Through the socio-culture of the child's environment, an understanding and value system develops about the world around them and is internalized through social interactions and play. The child's social experiences are interconnected with learning and provide a means for development and learning through interactions with others. Vygotsky believed children first learn from their parents and caregivers as they observe their language and actions and imitate them. As parents and caregivers model, guide, challenge, and correct children, they practice, learn, and develop through these interactions. Through these processes of social culture development and play, children learn about the social world around them and become confident in their use of language and play.

Vygotsky believed that children work to make sense of the world through play and the use of "inner speech" that serves to guide their thought processes and actions. The role of language is to self-regulate and establish self-control over the child's memory and thought. A child's speech process provides insights into how they make sense of the external world around them.

Another aspect of Vygotsky's (1978) theory centered on the difference between when a child attempts to solve a problem themselves and when they have a more skilled child or adult to assist them with the task. He referred to this as the concept of the Zone of Proximal Development, where a more skilled individual helps to facilitate the learning of the child. He deemed the process of assistance during the Zone of Proximal Development as scaffolding. Scaffolding serves to bridge the gap between a child's prior knowledge in problem solving and

skills with new knowledge.

Critically evaluating early childhood literature requires a thoughtful understanding of the dynamics of child development—how the manifestations of development impact early childhood development and early childhood learning. The domains of Head Start (2010), Victorian Early Learning (2013) and Vygotsky’s (1978) Sociocultural Learning Theory provide strategic tools to gain insights into the process of early child development and early childhood learning.

Through the lens of Head Start (2010), Victorian Early Learning (2013) and Vygotsky’s Sociocultural Learning Theory (Vygotsky, 1978), readers are enlightened with the knowledge of three conceptual frameworks to critically evaluate early childhood literature.

According to early learning research, a prominent issue in need of remedial action is the alarming statistic that one third of American children begin school without the necessary skills needed to succeed (Boyer, 1991; Carnegie Task Force on Meeting the Needs of Young Children, 1994; Center on the Developing Child at Harvard University 2016; Phillips et al., 2017).

Findings show that disadvantaged children are entering school with less language, literacy, social skills, and other foundational skills essential to provide opportunities for success in school, as in comparison to more affluent children (Center on the Developing Child at Harvard University, 2016; Child Trends & Center for Child Health Research, 2004; Early et al., 2007; Phillips et al., 2017).

Convergence across multiple studies identifies preschool as the most crucial “grade.” Ongoing research findings continue to support the beneficial academic gains and lifelong results of quality school readiness programs for young children (Barnett & Hustedt, 2003; Center on the Developing Child at Harvard University, 2016; Hemmeter, 2000; Pew Center, 2016; Phillips et

al., 2017). Comprehensive school readiness programs are shown to be the most effective, as they provide health, social and educational services to support both children and their families (Fox, 2002; Gromley, 2005; Olson & National Research Council, Winter & Kelly, 2008; Wong et al., 2008). School readiness programs are far more effective and cost efficient than later efforts to close the achievement gaps created by disadvantaged children lacking essential school readiness skills. There are alarming disparities between what these children know and what they are capable of prior to entering kindergarten. In 2011, kindergarten educators found that only 27% of their kindergarten beginners were proficient in the foundational knowledge and skill sets needed for early literacy instruction (Bernstein et al., 2014). These grave differences in students' abilities are directly related to the economic and social circumstances of their families, and they are predictive of future student academic performance.

Students who attend high-quality early learning programs are more likely to complete high school, enroll in college, and obtain and keep a job than are children from the same dynamic, but that did not attend preschool (Burlacu, 2013; Fox, 2002; Olson & National Research Council, 2012; Steve et al., 2012). Focusing on providing opportunities for children to receive early learning is critical for preparing them for school readiness, for achievement of academic success, and for pursuing educational opportunities and job readiness skills for economic stability and their roles as productive citizens in society (Barnett, 2006; Fox, 2002; Olson & National Research Council, 2012; Steve et al., 2012).

Appropriate high-quality preschool experiences can provide students with the school readiness skills they need to be successful. Based upon findings from brain research established over the past decade, early learning is essential to a child's development and lifelong development. Early learning experiences—everything from play dough play to physics

equations—serve to construct neurological pathways of thought processes utilized throughout a lifetime (Burlacu, 2013; Fox, 2002, Olson & National Research Council, 2012). Providing students with early learning opportunities is an investment that reaps large investments for students, families, and society by working towards closing the achievement gap and enabling students to develop into productive citizens who can make positive contributions to society (Barnett, 2006; Heckman, 2006). The provision of early learning has a higher success rate of return than later costlier and less effective interventions (Fox, 2002, 2012; Heckman, 2006). For every dollar spent on early childhood education, the rate of return on this investment can be as high as \$8 (Heckman, 2006). Early childhood education can combat the current inequalities in education and provide opportunities for disadvantaged students to receive the nurturing and early learning experiences that lay the foundation for educational and general life success.

With my study, my goal was to provide educators with insights into specific knowledge and skill sets taught in prekindergarten that have the largest impact on student achievement in early literacy at kindergarten. Through evaluating prekindergarten students' acquisition of early literacy skills and knowledge through to their DIBELS assessments in kindergarten, educators could create and implement instruction to encourage early literacy skills for young children. Ensuring early childhood educators have explicit scientific research data to guide early childhood educational best practices would guarantee young students begin their educational journey with a solid foundation of knowledge and skill sets that will be instrumental in providing opportunities for their educational success in the future (Burlacu, 2013; Duncan et al., 2007).

Methodological Review of Literature

A combination of early childhood development progression and early learning are the methodologies that guide the study of the benefits of early childhood education. Data collection

in previous studies on development and early learning involved observations, longitudinal studies, trials of intervention, surveys, meta-analysis, and comparison studies. Vast amounts of fieldwork have been conducted and data collected to ensure the validity of correlations between positive gains in early development and early learning. The research and methodologies used were developed to prove or disprove the beneficial aspects of early childhood education on child development and early learning. Of utmost importance is consideration of the specifics of various research selections, sampling, and sequencing methods, including the development of instruments and the process of examining the roles and identities of the researcher and their impact on methodological stance and method choices. The organization and individual interpretation of data serves to guide the findings on the relationship between development, early learning and early childhood education and support the case for early childhood education or disprove the necessity of it.

The study of prekindergarten is an intricate process, due to the differences from state to state in program designs, teacher requirements, evaluation methods and populations of children served. By the year 2003, only 18 states had undergone the process of conducting an evaluation of the prekindergarten programs they provide and how these programs impact students in the short and long term. Few programs have studied and identified the best practices of prekindergarten programs that lead to the greatest student gains. Without the data to drive best practices for effective prekindergarten programs, early childhood education programs will continue to vary.

The federal program, No Child Left Behind Act (NCLB), placed pressure on states to increase student achievement. Many states are working towards developing prekindergarten programs as a strategy to help ensure K–12 students meet these high expectations. The Every

Student Succeeds Act (ESSA) replaced the No Child Left Behind Act (NCLBA) in 2015 and is a commitment by the government to increase access to high-quality preschool for all (US Department of Education, 2017).

As states look for ways to increase student learning and meet high benchmarks set for K-12 learning, they are beginning to focus on the quality of prekindergarten instruction and the overall positive outcomes for prekindergarten students. Previously, states only mandated rules related to teacher/child ratios, hours of operation and regulations. Currently, many states are looking for the largest return for their investment from research-based practices (Barnett et al., 2017). States would benefit from evaluation of the short- and long-term effects of prekindergarten instruction and the best practices to drive these positive impacts from prekindergarten.

National and state studies identified positive short-term benefits for the prekindergarten students who attended these programs. The Early Childhood Longitudinal Study-Kindergarten Cohort studied 22,000 children from kindergarten through to eighth grade and findings show that the children who attended prekindergarten scored higher on reading and math tests than children who stayed home and were cared for by their parents (Center for Public Education, 2017; Gormley, Gayer, Phillips, & Dawson, 2004). While students that attended other prekindergarten programs showed gains, prekindergarten students who attended public prekindergarten programs showed the greatest gains in academic achievement. Additionally, states such as Georgia, South Carolina and Maryland conducted research that supports the short-term benefits of prekindergarten instruction. Georgia's students had higher scores on readiness third grade assessments as compared with students who did not attend the program (Center for Public Education, 2017; Henry, Gordon, Mashburn, & Ponder, 2001). South Carolina's prekindergarten

program increased rates of readiness for school since its launch in 1984, with 30% of students showing school readiness (Center for Public Education, 2017; Denton, 1999). Previously, only 60% of children were viewed as ready for first grade. Maryland's prekindergarten program reduced grade retentions and special education placement for prekindergarten students (Center for Public Education, 2017; Denton, 1999).

Long-term studies on the benefits of prekindergarten have attempted to identify if the effects of prekindergarten produce long-term benefits or fade over time for children who attend prekindergarten. States such as Michigan found long-term gains for fourth grade students in math and literacy assessments for those who attended prekindergarten opposed to those that did not (Gilliam & Zigler, 2004; NIEER, 2017). The state of New York identified higher attendance in grades five and six for former prekindergarten students (Gilliam & Zigler, 2004; NIEER, 2017). The states of Texas, Maryland and New York have shown significant gains in standardized test scores for students who attended prekindergarten (NIEER, 2017).

Many studies of the short- and long-term effects of prekindergarten have evaluated and compared the benefits of early child education. An overall comprehensive meta-analysis study of the findings of 123 research studies conducted in the U.S. since the year 1960 found prekindergarten gains may decline as children enter school, but the benefits of early childhood education remained considerable for students throughout their educational journey (Camilli, Vargas, Ryan, & Barnett, 2010). Some of the notable characteristics of programs with the greatest cognitive gains come from prekindergarten practicing individualized teaching with one-on-one instruction, small group learning, and intentional teaching (Camilli et al., 2010; Phillips et al., 2017). Prekindergarten programs that utilize these practices accomplish long lasting cognitive impacts equivalent to half or more of the achievement gap between low SES/minority

children and other children by the finish of high school (Camilli et al., 2010; Phillips et al., 2017). Additionally, the summaries of these findings are consistent with prior meta-analyses (Gorey, 2001; Guralnick & Bennett, 1987; Nelson, Westhues, & MacLeod, 2003; White & Casto, 1985) and from prestigious studies conducted outside the U.S. (Nores & Barnett, 2010). Some of the long-term impacts include increases in cognitive tests, advancements in social/emotional development, and an increase in high school completion (Camilli et al., 2010; Nores & Barnett, 2010; Phillips et al., 2017).

The need for research and documentation on the effectiveness of prekindergarten instruction is critical within the discipline of early childhood education. Information on the positive impacts of early childhood education help support funding for early childhood programs and serve to guide future prekindergarten instruction. The challenge with research in this area is empirically documenting the effectiveness of prekindergarten instruction as intervention. Currently, research has only been conducted in about half of the states with prekindergarten programs. There is a need for both short- and long-term studies on the benefits of prekindergarten instruction and the quality factors that signify successful programs (Phillips et al., 2017).

Based upon the research conducted on the overall impact of early childhood education on development and early learning, I aimed to gather archived DIBELS data to collect information from kindergarten teachers within my school system to assess the benefits from early learning instruction. I assessed the archived kindergarten students' performance on the DIBELS assessment and compared their results to the national norms at each progress monitoring interval. I used the data collected from students who attended prekindergarten and their performance on the DIBELS assessment in kindergarten. The DIBELS assessment is a research-based assessment

to predict the future success of reading ability of students. DIBELS is in alignment with the Common Core Standards and is a system that provides reliably assesses student progress and predicts future reading success. Examining the data contained within the DIBELS assessment, provided insights on cognitive gains in areas of Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency. The information collected from former prekindergarten students provided documentation of the impact of benefits of prekindergarten instruction on kindergarten pre-reading success.

By collecting the archived DIBELS data I hoped to provide insights into the most beneficial intervention for this prekindergarten student population to increasing academic readiness. Knowledge of this success of intervention would help facilitate the instructional practices of more balanced and effective early childhood programs and interventions. Insights provided by kindergarten students' performance within our school system could serve to drive future prekindergarten instruction, curriculum guides and increase the positive impacts on development and early learning for young students. The valuable data obtained from the study of the beneficial impacts of early childhood learning would either support or oppose other findings in this area of study.

Utilizing students' rates of improvement on the archived DIBELS assessment data from each progress monitoring interval served as a foundation for the methodology of my study and provided concrete data on the performance of former prekindergarten students on the DIBELS assessment. The use of comparing students' growth after intervention in the next grade level

served to add validity and insights into early childhood education and the developmental and cognitive gains in early literacy. The information gleaned from this study would serve to guide future prekindergarten instruction and provide more support for the positive impacts that early childhood education has on early childhood development and cognition.

Quantitative research is typically utilized to evaluate the problem by producing numerical data to convert into informative statistics. This research can be utilized to evaluate opinions, attitudes, behaviors, and other specifically identified variables, and to generate generalizations from within a large sample population. Collected measurable data can guide the formulation of truths and display patterns within research. Data collection methods are most commonly in the form of surveys, observations, interviews, and longitudinal studies.

Quantitative research has the reputation of being more likely to be published in the top journals, more likely to receive grant funding, and be perceived as objective or scientific (Ravitch & Riggan, 2012). One weakness of quantitative research is that it lacks the detail that explains the reasons behind the data and provides limited choices for questioning which does not generate precise answers. Another area of weakness is the probability of missing variables that may mislead results. Additionally, the analytical nature of quantitative research is difficult for the public to comprehend without detailed knowledge of statistics.

Synthesis of Research Findings

Research findings prove that early childhood education is not a luxury; it is a necessity to ensure each child has access to educational opportunities to be successful within the institution of school and life in general. Early childhood education enables educators to deliver educational experiences and interventions early, meaning they are more effective than later costlier interventions (Barnett, 2015; Barnett & Belfield, 2006; Heckman, 2011; Shonkoff, 2010).

Providing prekindergarten instruction for young children during the critical windows of child development maximizes the overall development of a child's brain architecture and can positively impact every domain of student learning (Burlacu, 2013; CDC-Harvard University, 2017; Fox, 2002; Fox et al., 2010; Olson & National Research Council; Steve et al., 2012; Wolfe & Nevills, 2004). Ensuring young children have the very best educational experiences as they begin their educational journey will help to ensure their educational success within school and later throughout life.

Assessment practices. In the field of early childhood learning, specific assessment instruments are utilized to assess the academic growth and achievement of students. The Common Core State Standards (CCSS) are a way to measure student progress and ensure future high school graduates are college and career ready. The CCSS include assessment areas including The Big Ideas of Mathematics in sets, patterns, shapes numeracy, counting operations, measurement, data analysis, and spatial thinking. Student assessment of mathematical knowledge and skill sets help to guide student instructional practices and student achievement. The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment is an instrument used to assess the Big Ideas in Reading that include phonemic awareness, alphabetic principle, accuracy, fluency, vocabulary, and comprehension. Assessment of early literacy skills help to guide educational practices and student success. Mathematical and Early Literacy assessment is a crucial element to serve as a tool to impact educational practices and student achievement.

Impact of prekindergarten on achievement. Prekindergarten research indicates significant gains for early learners in the area of academic achievement. In the state of Georgia, 60% of former prekindergarten participants within the state-funded universal prekindergarten program showed higher overall gains on third grade readiness assessments, than students who

did not attend the program (Henry et al., 2001; NIEER, 2017). South Carolina’s state funded prekindergarten program has helped to facilitate an increase in school readiness for first grade from 60% in 1984 to 81% in 1998 (Denton, 1999 NIEER, 2017). NIEER demonstrated student achievement gains in a study that included prekindergarten students within five various states—Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia. Students who attended state funded prekindergarten programs showed a 31% higher score in the area of vocabulary compared with non-participating students (Barnett, Lamy, & Jung, 2005; NIEER, 2017). In the area of print awareness, prekindergarten participants showed an 85% increase in print awareness. In addition, students in those states also experienced a 44% gain in math achievement compared to students that did not participate (Barnett et al., 2005; NIEER, 2017). In the state of Michigan, former prekindergarten participants maintained gains in literacy and math assessments compared to students that did not participate (Gilliam & Zigler, 2004; NIEER, 2017). There were notable gains in Texas for third grade students who attended prekindergarten on standardized tests. In Maryland, there were similar gains for former prekindergarten students in grades fifth, eighth and ninth within the assessment areas of math and reading (NIEER, 2017).

Achievement gap. NIEER conducted a study in Michigan, New Jersey, Oklahoma, South Carolina, and West Virginia that showed students from low SES who attended state funded prekindergarten programs had the most significant gains in pre-reading and math skills of 8%–9% (Loeb, Bridges, Fuller, Rumberger, & Bassok, 2005; NIEER, 2017). Hispanic ESL (English Second Learners) with limited basic English proficiency showed double the achievement in early language and pre-reading skill sets as non-participants. Modest achievement gains were also noted for average and higher income children in reading and math. In Georgia, children who attended prekindergarten overcame the achievement gap by the end of

kindergarten (Henry et al., 2001; NIEER, 2017). In Oklahoma, a higher success in closing the achievement gap was documented for Hispanics that participated in prekindergarten, with a 79% improvement in letter/word recognition and 52% improvement in strategic problem solving. Caucasian students had a 59% gain and African American students also experienced gains (Gormley et al., 2004; NIEER, 2017).

In a study of at-risk students, research showed that if young children receive explicit instructional, developmental and socio emotional support from educators, learning gaps can be alleviated (ECEC, 2017; Pinta, 2006). Within the study on the Impacts of a Prekindergarten Program on Children's Mathematics, Language, Literacy, Executive Function, and Emotional Skills, an explicit early childhood educational program had average to substantial gains within the areas of student's development of early childhood skill sets of early language, literacy, numeracy and mathematics, smaller impacts on student's overall executive functioning and a measurement of emotion recognition (Weiland & Yoshikawa, 2013). In the Community Action Project (CAP) Head Start, research on this project identified that former prekindergarten participants showed positive effects on math achievement scores, attendance, and grade retention in middle-school (Gromley & Anderson, 2016). According to economist Heckman (2017), quality early childhood programs that target disadvantaged families can impact overall health, future labor incomes, crime levels, education levels, mother's labor income, and even greater overall gains for males through mid-30s. Overall lifetime returns for investments in early childhood education is 13% annually (Heckman, 2017). Disadvantaged students who participated in quality prekindergarten programs had academic success at the same rate as their more affluent peers. A commitment to ensuring less fortunate children have a nurturing learning environment and is of the utmost importance for educators to combat the achievement gap. Providing

opportunities for nurturing learning environments will reap large dividends for our economy and for humanity.

Research in early childhood development shows brains are developed over time through the interactions and experiences a young child has with caregivers and educators (Fox et al., 2010; Olson & National Research Council, 2012; Wolfe & Nevills, 2004). In early childhood, synapses are formed and thousands of connections are made every day. The active learning that children participate in preschool encourages brain development and maximizes cognition during this critical time of neurological development. If a solid foundation for early learning is established and the architecture of the brain has a platform on which to establish future learning, this can serve to facilitate educational success early on and throughout life (CDC-Harvard University, 2017; Center on the Developing Child at Harvard University, 2017; Fox, 2002; Fox et al., 2010; Olson & National Research Council, 2012; Phillips et al., 2017). Research on language development documents a 30-million-word gap by age 3 between children reared in low SES homes and those reared in middle class homes (Hart & Risley, 2003). Current research findings support a word gap of approximately 4 million by age 4 between children reared in the lowest SES and middle class homes (Kamenetz, 2018). The consensus of research agrees without the solid foundation of positive interactions; children will be at higher risks for developmental deficits in learning and behavior problems.

Developmentally appropriate practices. Early literacy and math skills are a primary focus of early teaching practices. Building a strong foundation of basic literacy and math skills is critical for student development and achievement. To help the facilitation of the development of early literacy and math skill sets educators must work to create and implement effective literacy instruction, take time to thoughtfully reflect on the developmental stages of young children, the

individual aptitudes and interests of students and encourage them to actively engage within the problem-solving process and learning (Copple & Bredekamp, 2009). Early childhood educators that utilize a literacy and mathematical environment that is developmentally appropriate (DAP), create flourishing learning atmospheres that cultivate student success (Copple & Bredekamp, 2009). Prekindergarten students can thrive when they are able to experience new ideas, role play, work with materials and activities, especially in pretend inventive play. They are able to express interest in feelings, appropriately identify the emotions of others and express their own emotions and, in order to develop crucial cognition that encourage them to symbolize their world in make believe play, drawings, objects, symbols, words and overall language skills sets. When DAP is used in classrooms, environments are literacy rich, lessons are more meaningful and beneficial, and each facet of learning is developed through DAP instruction (Copple & Bredekamp, 2009).

In the practice of DAP in early childhood classrooms, instruction meets the students at their individual developmental stage and empowers them to attain goals that are established for them. Through practicing DAP, educational and developmental learning gaps are reduced, thereby increasing overall achievement for children in all stages, and enabling them to engage and share in the active learning process while they work to problem solve and learn new information (Copple & Bredekamp, 2009). DAP practices are research-based ways to facilitate student achievement.

Research on the developmental and educational sciences documents how the achievement of students who attend prekindergarten, begin their educational journey with a firm foundation in early learning skills and are better equipped to benefit from more advanced instruction. The practices of learning sounds and letters encourages the development of early vocabulary and the overall ability to converse. Learning to count helps to establish mathematical skill sets in size,

measuring, calculating, and cardinality. The processes of sharing and taking turns prepares young learners to communicate, cooperate and collaborate in learning processes. A strong skill set of conceptual skills such as a rich vocabulary, strategic problem-solving skills, essential scientific and cultural awareness knowledge, and narrative skills equip young learners with the knowledge and skill sets to be confident active learners who value the process of learning (Phillips et al., 2017).

Utilizing early childhood education research findings on the benefits of prekindergarten instruction can help provide early childhood educators with the data driven methods and tools they need to facilitate the learning of young students. Using research-based best practices to teach young children, empowers educators with the scientific prescription to have the most substantial impact on student learning and help students maximize their learning potential at the time their brain development is most rapid. To capitalize on these critical windows of development, the National Research Council and Institute of Medicine made recommendations in their report *From Neurons to Neighborhoods*. Within the three Science of Early Childhood Development's prescriptive ideals outlined a guide early learning practices: (a) integrating research on child development, molecular genetics, and neuroscience; (b) integrating the applied science of early childhood intervention and basic science of human development; and (c) strengthening the evaluation practices of early childhood interventions (Fox, 2002; Olson & National Research Council, 2012).

Combining the fields of biology, cognitive science, and child development to provide educators with the most insightful and powerful knowledge and methods to facilitate student learning ensures early learners are afforded the best opportunity to succeed in school and life (Fox, 2002; Fox et al., 2010; Olson & National Research Council, 2012; Shonkoff, 2010).

Critique of Previous Research

Research synthesis of long-term studies from the Abecedarian Project, Chicago Parent-Child Centers, Cost, Quality, and Outcomes Project Changes and the Perry Preschool Project have served to propel the documentation of the positive benefits of preschool instruction and emphasize the critical role that parents, educators and communities play in young children's lives (Barnett, Young, & Schweinhart, 1998; Peisner-Feinberg, Culkin, Howes, & Kagan, 1999; Phillips et al., 2017; Ramey et al., 1999). Within the science of early learning, research has shown the great importance of development and early learning practices and how this research should best educate our most precious resource (Bowman, Donovan, & Burns, 2000; Olson & National Research Council, 2012; Phillips et al., 2017; Shonkoff & Phillips, 2000).

Forty years of scientific data evidences the profound benefits of preschool and the positive impact high quality preschool programs can have for young learners (Phillips et al., 2017). Research indicates that children with the opportunity to attend high quality school readiness preschools have overall higher cognition and language abilities than other children who do not attend preschool (Barnet et al., 2016; Center for Public Education, 2017; Phillips et al., 2017; Winter & Kelley, 2008). Survey findings show that in the professional opinion of kindergarten teachers, half of students entering kindergarten do not have the basic skills and knowledge to begin their educational journey (PEW, 2017). Leaders in early childhood education are alarmed that many students are beginning their educational journey with a deficit of essential skills to encourage their academic and future life success. These educational deficits are even greater for children from low socio-economic families and minorities, as they are less likely to have the advantage of attending preschool and to gain the skills sets needed for success (Child

Trends & Center for Child Health Research, 2004; Early et al., 2007; Olson & National Research Council; 2012; Phillips et al., 2017).

Synthesis of the research of 35 preschool experiments and quasi-experiments, provides us with the following findings:

- (a) preschool effects on standardized measures of intelligence and academic achievement were statistically significant, positive, and large;
- (b) cognitive effects of relatively intense educational interventions were significant and very large, even after 5 to 10 years, and 7 to 8 of every 10 preschool children did better than the average child in a control or comparison group; and
- (c) cumulative incidences of an array of personal and social problems were statistically significantly and substantially lower over a 10- to 25-year period for those who had attended preschool (e.g., school drop-out, welfare dependence, unemployment, poverty, criminal behavior) (Center for Public Education, 2017; Gorey, 2001).

In direct comparison with children who were not afforded the privilege of attending preschool, with those who did attend preschool were shown to be 26% less inclined to ever receive welfare services, 33% less inclined to be impoverished, and overall less than half as inclined to have a commit criminal acts and 82% less inclined to develop a criminal life style (Center for Public Education, 2017; Gorey, 2001).

According to the most current State of Preschool report for prekindergarten for the year 2014–15, preschool growth continued to increase as improvements in overall funding for prekindergarten were established (NIEER, 2017). Due to the increase in funding for preschool, more children were provided with opportunities to attend prekindergarten. Additional funding helped to pave the way for more states to meet 10 of NIEER’s prekindergarten quality standard

benchmarks for preschool. The state funding for prekindergarten rose for a third year in succession and the amount spent per child rose as well. Overall state funding for preschool increased by \$573 million in the years 2014–2015, the most ever spent on early childhood education for preschool. This increase in funding is the largest yearly increase since the establishment of the NIEER Yearbook (NIEER, 2017). While the increase is beneficial for children privileged enough to receive services, more than half of America’s children do not get the opportunity to attend preschool.

Preschool enrollment grew to serve nearly 1.5 million children and six additional programs met the quality standard benchmarks and other programs maintained their benchmark status (NIEER, 2017). The standards for quality rose to new heights and six additional states met the benchmarks, while some states fell backwards in their efforts to provide early childhood education for young students. Due to only a portion of the states providing some preschool services for young students, most of the U.S. populations of preschool age children are not being served. The lack of early childhood education has created an educational opportunity gap in access to quality preschool services for American children and therefore contributes to the achievement gap.

The research to guide the development of the high-quality standards of NIEER’s preschool benchmarks for the status of a high-quality preschool involves characteristics based upon successful programs that utilize randomized trials and show results from the most impactful quasi-experimental studies such as the High/Scope Perry Preschool and Chicago Child-Parent Centers (Barnett & Belfield, 2006; Center for Public Education, 2017; Temple & Reynolds, 2007). Research from these programs documents the positive benefits preschool can have on the educational journey and overall quality of life for students.

Early childhood research clearly documents the premise of all domains of Physical Development and Health, Social and Emotional Development, Logic and Reasoning, Approaches to Learning, Mathematics Knowledge and Skills, Science Knowledge and Skills, Creative Arts Expression, Social Studies Knowledge and Skills, Language Development and Literacy Knowledge and Skills being interrelated and interdependent (Head Start, 2017). Each learning domain is contingent upon another and can serve to suppress or expand learning in other areas (Head Start, 2017; Kostelnik, Soderman, & Whiren, 1993; Sroufe, Cooper, & DeHart, 1992). The interconnectedness of early development notes that all areas are impacted by literacy. A student's early literacy learning is the domain that encourages the growth of other areas of development. Without a strong foundation in the skills required for reading, a student may struggle in other areas of development (Center on the Developing Child at Harvard University, 2016; Fox, 2002; Head Start, 2017; Olsen et al., 2012; Phillips et al., 2017;).

Early childhood education is a powerful tool to encourage learning and strengthen any weaknesses in the early learning domains of a child (Phillips et al., 2017). Early childhood education intervention provided in the prekindergarten setting is one method that can help to establish a strong foundation for early literacy (NIEER, 2017). Intervention providing strategic support for struggling learners, specifically within the area of early literacy, provides young learners with instruction in letter names and sounds, blending, segmenting and rhymes, and other areas of learning can be facilitated as well. Learning within these crucial early literacy skills in fun and meaningful ways increases the likelihood that students will internalize these skills and gain the needed skills for successful literacy development.

An instrument to aid in the identification of the students needing intervention is Boehm Test of Basic Concepts-3 Preschool (Boehm-3 Preschool, 2017). The Boehm-3 is a

developmental assessment that assesses early learners' knowledge of the basic concepts crucial to learning reading, solving math problems, and following directions. The Boehm was specifically designed to explicitly assess young learner's understanding of basic relational concepts instrumental for language and cognitive development, essential for success across all learning areas of a child's educational journey. One major goal of the Boehm test is to identify gaps in the foundational knowledge of young learners to guide instructional practices in language concepts at school and at home. The Boehm assessment can help assess important language and cognitive development of young learners across all cultures. The basic concepts that are measured relate to a broad array of situations in the everyday life of a child in the contexts of space, quantity, time, senses, and emotions and can range from the levels of difficulty from concrete to abstract.

Assessing students with the Bohem-3 can help educators identify basic early learning concepts that are often difficult to assess in individual children and a whole class. The assessment can be utilized to inform instructional and interventional alignment with research-based practices. Additionally, this assessment can be used to measure and monitor student progress related to the Common Core learning standards.

The Boehm-3 is an assessment instrument used to individually assess 26 learning concepts in two age brackets as follows: (a) 3 years to 3 years and 11 months, and (b) 4 years to 5 years and 11 months. Further, it is a developmentally appropriate criterion referenced measurement for older children who have special needs. Each specific concept is assessed twice to ensure the identification of emerging concepts, concrete concepts, and concepts that need development. The child verbally responds to instruction by the tester to point to one of four assessment options.

Boehm-3 testing concepts were specifically selected in alignment with early childhood state and local benchmarks and curriculum materials to emulate early language usage in the instructional setting. The learning tasks included (such as more/less, top/bottom, first/last) require the ability to make relational choices and describe objects, quantity, and other concepts. The basic concepts covered within the Boehm-3 help to identify children with a sound beginning learning foundation and students who may need interventional support.

Another early learning assessment instrumental in identifying student strengths and weakness in the domain of early literacy is the Dynamic Indicators of Early Learning Skills. DIBELS is the most consistently used instrument to assess early literacy skills of kindergarten students (Barnett, Friedman, Hustedt, & Stevenson-Boyd, 2009). The DIBELS assessment is an effective research-based, criterion referenced assessment that serves to help predict the early literacy success of young students (Kaminski, Cummings, Powell-Smith, & Good, 2008). DIBELS is an instrument to empower educators with the prescriptive knowledge to facilitate early literacy achievement. The specific data that can be gleaned about student letter and sound knowledge, blending, and segmenting skills can provide educators with the understanding of students' strengths and weaknesses and direction of future instructional practices to provide the necessary instruction and/or intervention needed for student success.

DIBELS is an instrument designed specifically to assess the acquisition young children's foundational early literacy skills. Through the use of DIBELS, early childhood educators are equipped with a tool to identify young children who have difficulty in the acquiring these critical early literacy skill sets. By identifying students who are having difficulty grasping and internalizing early literacy skills, educators can develop and deliver proactive support through early intervention and prevent later reading difficulties. Utilizing DIBELS to strategically

evaluate the overall effectiveness of early learning interventions for young students needing support ensures that all supportive resources are aligned to facilitate maximum student learning and growth.

DIBELS assesses the five big components of early childhood literacy development—phonemic awareness, alphabetic principle, accuracy with fluency with text, vocabulary, and comprehension. Educators use DIBELS to assess student learning through progress monitoring in the fall, winter, and spring, allowing educators to track and evaluate student growth compared to the national norms or “benchmarks.” The use of DIBELS can help educators identify the need for support, validate the need for strategic support, develop and plan support, effectively assess and differentiate support and review findings to drive intervention instruction and student achievement. Educators can quickly and effectively use DIBELS to accurately identify a young student’s area of need for early learning support, measure the student’s progression toward individualized goals, and assess the overall intervention support effectiveness.

DIBELS is a quick and effective way to provide intervention for students having difficulty acquiring early literacy skills. Intervention can target the specific early literacy skills the child needs to learn. Providing prescriptive support to drive student learning can empower students with the knowledge and skill sets needed to be successful readers.

Chapter 2 Summary

Attend a quality preschool program is the most effective way to ensure young children have an opportunity to be successful in school. Most practitioners conclude that if young students receive high quality educational experiences many learning deficits are preventable in preschool and the early grades. Research shows how children that attend preschool are more apt to experience academic achievement and success and make positive contributions to society

throughout the rest of their educational journey into adulthood, both in their personal and professional lives, and they are less likely to qualify for special education classes, drop out of high school, break laws, and spend time in jail, or become unemployed and need welfare (California Department of Education, 2017). Children are our most precious resource and investing in preschool education is an investment in all of humanity. If we truly want to make a difference for humanity, we should invest in preschool education for our children (García, Heckman, Leaf, & Prados, 2016).

Chapter 3: Methodology

Introduction

The main purpose of this chapter is to explicitly identify and describe the study methodology utilized. Explanations of the problem statement, purpose of the study, research questions, research design, population, sampling, method, and data collection are included within the framework of this study. Furthermore, within this chapter, specific detailed information is provided such as anticipated findings, ethical issues, and a chapter summary of how this study could impact future prekindergarten educational practices and student achievement.

This research was conducted utilizing a causal comparative method design to determine the benefit prekindergarten has on the development of early literacy skills of kindergarten students. The study included the archived DIBELS data of five prekindergarten classrooms over a year of kindergarten instruction within a coastal community in Alabama. The study aimed to measure the benefits of prekindergarten instruction on early literacy skills through the data obtained from DIBELS assessments of kindergarten students.

Statement of the Problem

Measuring the academic benefit prekindergarten instruction has on the early literacy skills of young students can serve to impact future early learning educational practices in prekindergarten. Within current literature concerning the impact of prekindergarten instruction on early literacy skills, limited research is available on how prekindergarten students perform on the kindergarten DIBELS early literacy assessment. By measuring the beneficial skill sets acquired by young learners, insights will be gained into the success of prekindergarten instruction as a strong predictor of early reading achievement. The goal of this study was to determine the beneficial impact of prekindergarten instruction through assessing kindergarten

student performance on the DIBELS early literacy assessment. DIBELS is an effective research-based criterion referenced assessment that serves to help predict the early literacy success of young students.

Research Questions

The central focus of this study revolved around these research questions:

RQ1. To what degree, if any, does prekindergarten intervention instruction prepare struggling students for kindergarten early literacy in the area of Initial Sound Fluency as measured by the DIBELS assessment, compared to the national norm

RQ2. To what degree, if any, does prekindergarten intervention instruction prepare struggling students for kindergarten early literacy in the area of Letter Naming Fluency as measured by the DIBELS assessment, compared to the national norm?

RQ3. To what degree, if any, does prekindergarten intervention instruction prepare struggling students for kindergarten early literacy in the area of Phoneme Segmentation Fluency as measured by the DIBELS assessment, compared to the national norm?

RQ4. To what degree, if any, does prekindergarten intervention instruction prepare struggling students for kindergarten early literacy in the area of Nonsense Word Fluency as measured by the DIBELS assessment, compared to the national norm?

Hypotheses

The hypotheses of this study were as follows:

H1. There is no statistically significant increase in kindergarten students Initial Sound Fluency for early literacy scores as measured by the DIBELS assessment, compared to the national norm.

H2. There is no statistically significant increase in kindergarten students for early literacy Letter Naming Fluency scores as measured by the DIBELS assessment, compared to the national norm.

H3. There is no statistically significant increase in kindergarten students for early literacy Phoneme Segmentation Fluency scores as measured by the DIBELS assessment, compared to the national norm.

H4. There is no statistically significant increase in kindergarten students for early literacy Nonsense Word Fluency scores as measured by the DIBELS assessment, compared to the national norm.

Research Design

Within this causal comparative quantitative study, the archived results of the DIBELS assessment of kindergarten students within five schools in a coastal community in Alabama were studied. A causal comparative design was chosen because participants could not be randomly assigned to a treatment or control group, due to the criteria for receiving prekindergarten intervention programming. The goal of this study was to evaluate former prekindergarten intervention instruction on struggling students' early literacy achievement in kindergarten as measured by the DIBELS assessment. The research findings from this study were generated from a measurement of a one paired t-test to evaluate the impact of prekindergarten instruction on kindergarten early literacy reading achievement on the DIBELS assessment compared to the national norm. The overall research findings from this study may serve to impact future educational practices to guide instruction within the prekindergarten setting and drive student achievement.

Within this study, the archived results of 5 prekindergarten classes in a coastal community in Alabama were utilized. The DIBELS assessment performance of approximately 77 kindergarten students were evaluated for one year. The results of former prekindergarten intervention students' achievement on the DIBELS assessment were collected from the curriculum coaches at each school. This specific location was selected because of the commitment of educators to use research-based results to drive instructional practice and student achievement. Additionally, the administrators of these schools are advocates of early learning and realize the importance of research-based findings to advance educational practices and student achievement.

Creswell (2003) noted that quantitative studies are objective and provide explicit insights into scientific data. Using quantitative research methods to conduct a study allows the researcher to use research concepts and methods to answer research questions of an objective nature. Within a quantitative method study, the research is specific and validated by scientific data.

Within this causal comparative quantitative study, the central focus was to assess the impact of prekindergarten intervention instruction on struggling students' kindergarten early literacy achievement, through the utilization of a nonrandom sample, through a predetermined purposeful selection. By identifying former prekindergarten intervention students' achievement on DIBELS, educators are utilizing these findings to drive instructional practices and student achievement. Research findings will be shared with prekindergarten educators and administrators to support future early childhood literacy education.

Data Collection

A one paired t-test was used to measure the impact of prekindergarten instruction on the early literacy achievement of kindergarten students measured by the DIBELS assessment,

compared to the national norm. School administrators and curriculum coaches were aware of the study, but students were not involved or impacted by the study. A causal comparative quantitative methodology was utilized in this study to conduct and report the study's findings. The primary focus of the study involved the use of quantitative methods to better understand research problems (Creswell, 2003). The research questions were formulated to assess the archived DIBELS results from former prekindergarten students' performance on the early literacy assessment. The overall purpose of utilizing DIBELS assessment data results of former prekindergarten intervention students was to assess the impact of prekindergarten intervention on struggling students' kindergarten early literacy achievement. Conducting quantitative research provided data on the impact of prekindergarten instruction on the impact of prekindergarten instruction on early literacy achievement.

Target Populations, Sampling Method, and Related Procedures

Based upon findings from (Creswell, 2003), specified purposeful participants and relevant locations for quantitative methods research are essential. The primary reason for selecting purposeful participants is ensuring they are the most relevant subjects to study and evaluate to provide accurate feedback on the given research. The purposeful selected subjects were former prekindergarten students whose assessment data was used in this study. Creswell (2003) noted that within a quantitative method study, the researcher aims to identify and select participants that provide the most valid and reliable research results on a given area of study. The central themes from student scores were identified and evaluated.

The demographic breakdown according to ethnicity of the 35,900 students of this coastal Alabama community were as follows: 87% Caucasian, 10% African American, and 3% of other ethnic descent. The schools comprise grade levels prekindergarten through to the twelfth grade.

Within the prekindergarten classrooms, the teacher/child ration was 2:18 with a total of two teachers and a principal and vice principal. These schools have greater than 60% of students receiving free or reduced lunch, earning the schools the Title 1 status and because of this status, federal funds are received to support the educational programs and encourage community involvement.

The setting and sample size of this study was comprised of former struggling prekindergarten intervention students from five schools serving a population of prekindergarten through to fifth grade students. More than half of the community fall within the low socioeconomic status in the southern most portion of Alabama. Five selected prekindergarten intervention classes within this community provided the required information for this study. The superintendent gave permission for student data to be used in this study and the school administrator gave consent for research to be conducted within his organization. The main purpose for strategically selecting these prekindergarten classes study was to assess the benefits of prekindergarten intervention instruction on struggling students' kindergarten early literacy skills.

Prekindergarten intervention students were selected for these five intervention classes based upon an identification of an early learning deficit as assessed through the Boehm-3 early intervention assessment results. All students who applied to attend prekindergarten were assessed with the Bohem-3 early intervention assessment. Students who scored below the age appropriate benchmark on this early intervention assessment are likely to struggle to develop both in and outside the classroom without the support of intervention (Boehm-3, 2017). Within the Boehm-3 assessment, students were to complete simple tasks to describe objects, quantities, order events and follow directions. These predictors of early learning are prerequisites of the basic concepts

of being able to make comparisons, sequence and classify. Eighteen struggling students were chosen to receive intervention services and academic support. Parents were asked to commit to twelve volunteer hours focused on their child's learning environment and to attend parental workshops on how to help their children learn. With young learners already experiencing a learning deficit, the prekindergarten intervention program offered these struggling students the support to encourage the development of the skill sets and the foundational knowledge they need to thrive.

The information from the DIBELS assessment provided explicit information on the specific areas of early literacy that were impacted by prekindergarten instruction. After having the study explained to him in explicit detail, the superintendent consented to the terms and conditions of this study. He was informed how his school system would contribute to the study and impact future prekindergarten instruction and drive student achievement. The participants did not need to be notified of their individual rights prior to study because only archived assessment data were utilized. The study did not contain any information that could be used to identify participants. Within this causal comparative quantitative study, the research data on the impact of prekindergarten intervention instruction provided insights into the objective aspects through presenting quantitative findings of DIBELS data.

Instrumentation

Within this causal comparative quantitative study, the archived DIBELS results of former prekindergarten students were utilized. The archived DIBELS results of former prekindergarten students were presented and strengths in early literacy skills were examined. The DIBELS results provided valuable insights into the benefits of prekindergarten intervention instruction on struggling students' kindergarten early literacy achievement.

The DIBELS assessment is a norm and criterion referenced literacy assessment instrument designed specifically to assess the acquisition of early literacy skills in young children. Using DIBELS, early childhood educators are able quickly and explicitly identify young children who are experiencing difficulty in the acquisition of early literacy skill sets. By identifying students who are having difficulty grasping and internalizing early literacy skills, educators can provide support and intervention to prevent reading difficulties. Utilizing the DIBELS assessment to strategically evaluate the overall effectiveness of early learning interventions for young students needing support ensures student learning and growth (Good & Kaminski, 1996).

The kindergarten DIBELS assessment is used to assess students in early literacy learning specifically in the areas of Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency. The DIBELS assessment is given to monitor student learning through progress monitoring in the fall, winter, and spring (Good et al., 2003). By assessing student learning systematically and periodically, educators can track and evaluate student growth compared to the national norms through benchmarks (Kaminski et al., 2008). Benchmarks are norm referenced scores identified as the target goals for student achievement during a specific leveled window of literacy development. The use of DIBELS assessment is a powerful educational tool to accurately identify a young student's need for early learning intervention support, monitor the student's progress toward individual goals, and evaluate the overall effectiveness of the intervention support provided for the students.

Providing prescriptive early literacy support to drive student learning and achievement can empower students with the knowledge and skill sets needed to become successful readers. DIBELS is a quick and effective way to provide intervention for young students who are having

difficulty acquiring early literacy skills. Intervention can be provided to target the specific early literacy skills the child needs to learn to become a fluent reader (Barnett et al., 2006).

Data Collection

The data collection procedures for this study were completely voluntary. The researcher received the approval of the administrators and curriculum coaches of the schools in which the study was conducted. Students did not need full explanation of the study, as only archived scores were used. The researcher explained that if at any given time during the study administrators and coaches wished to discontinue participation, they may do so. Participants received a copy of the consent form confirming the participant's knowledge of the specific details of this study, and their individual rights as participants, which were signed to show their willingness to participate. The identity of the participants and school system remained confidential. The success of this study hinged upon the ability of the researcher to collect the data from participants and evaluate the archived DIBELS assessment results to determine the impact of prekindergarten intervention instruction on struggling students' kindergarten early literacy achievement.

The procedures for data collection employed an evaluation of DIBELS assessment results. The curriculum coaches of each school shared the results of the DIBELS assessment. The focus of examining the DIBELS assessment data on the impact of prekindergarten intervention instruction on struggling students' kindergarten early literacy achievement were to guide future instructional practices and student achievement. An analysis of a one paired t-test was conducted to analyze the DIBELS data.

The purpose of the DIBELS early literacy assessment is to quickly and accurately assess the Big Ideas in Reading. Each assessment is designed to be administered in 1-minute fluency measures that help monitor and drive instructional practices of early literacy and early reading

skills. These scientific research-based assessments are contingent upon one another and provide strong predictive measures of future reading proficiency in early learners. This assessment instrument is a reliable, readily available, and easy to administer tool to help track and determine student early literacy progress and growth.

The specific purpose of DIBELS is provide educators with educational standards to gauge the early literacy development of students. The assessment provides data for educators to track each student's early literacy achievement by monitoring research-based, criterion-referenced scores to guide instructional practices and early interventions for struggling students. The DIBELS assessment enable educators to predict the probability of a student attaining early literacy goals and the probability of students needing additional support to meet literacy benchmark goals.

In this study, the DIBELS Letter Naming Fluency (LNF) assessment scores for former prekindergarten intervention students were utilized. This individualized assessment of upper and lower-case letter knowledge was based on the research of Marston and Magnusson (1988). The students were asked to name as many random order alphabet letters as they could in a 1-minute timeframe. Students who performed in the range of the 40th percentile and above were at low risk; students who performed between the 40th and 20th percentile were at some risk and students that performed in the lowest 20th percentile in the district were at risk.

Another measure within the DIBELS assessment used in this study was the Nonsense Word Fluency (NWF) component. This assessment evaluated former prekindergarten intervention students' alphabetic principle knowledge and their letter-sound correspondence knowledge, where letter sound knowledge was combined with the skill of blending (Kaminski & Good, 1996). Students were encouraged to produce as many letter-sounds as they could within 1

minute. In this fluency assessment, students who could recode the words, as opposed to only naming the letter sounds in isolation, received higher scores.

An additional assessment component of DIBELS used in this study to assess the impact of former prekindergarten intervention instruction was the Initial Sound Fluency test. This component was used to measure phonological awareness which serves to assess a student's ability to identify and produce the initial sound in a word presented in oral format (Kaminski & Good, 1996, 1998; Laimon, 1994). The student was presented with four pictures and was asked to identify the picture that began with a given sound. The time taken to produce the correct sound match was factored into the student's score.

Another area of the DIBELS used in this study was the Phoneme Segmentation component. This assessment was utilized to assess students' phonological awareness (Kaminski & Good, 1996). In this assessment, the students were assessed on their ability to segment three and four phoneme words into their individual phonemes fluently within 1 minute. Phoneme segmentation has been documented as a valid predictor of later reading achievement (Kaminski & Good, 1996).

The archived DIBELS results of former prekindergarten students were utilized to show the impact of prekindergarten intervention instruction on struggling students' kindergarten early literacy achievement. The findings from this research data were collected, analyzed, and presented. The primary purpose for utilizing the examination of the DIBELS early literacy skills assessment results was to keep the focus explicitly on the impact of prekindergarten intervention on struggling students' kindergarten early literacy achievement. In order to intentionally extract the desired information, specific indicators of early literacy achievement were collected and analyzed.

Operationalization of Variables

The independent variables of the study were comprised of former prekindergarten intervention student's performance on the DIBELS assessment in the areas of Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency. All variables were significant in the process of analyzing the specific early literacy gains of former prekindergarten students. The researcher examined the results of the archived DIBELS data through statistical analysis using a one paired t-test.

Data Analysis Procedures

The quantitative data analysis utilized in the process of analyzing and interpreting the data collected established possible themes on the benefits of prekindergarten intervention instruction on struggling kindergarten students' early literacy achievement (Creswell, 2003). The data analysis included the collection, analysis, and presentation of the data, bringing to light the central themes in the research (Creswell, 2003). The researcher distributed the information that outlined the voluntary participation of the administrators and curriculum coaches in the study and the conditions of consent for the information collected and used. The archived DIBELS assessment results were collected from the curriculum coach and analyzed. The data collected by the researcher remained anonymous as it did not include any identifying information that would disclose the identity of participants.

To analyze students' DIBELS scores, a one paired t-test was utilized. The researcher used the one paired t-test to compare the means of the datasets to determine if there was a statistically significant difference between the beginning and ending DIBELS scores of kindergarten students compared to the national norm benchmark goal. From this analysis, the researcher identified the

early literacy benefits of prekindergarten intervention instruction on struggling kindergarten students' early literacy achievement.

Limitations of the Research Design

The researcher attempted to minimize limitations of the study but came to realize limitations are a part of most research projects. The strengths and weaknesses of a study often help establish the validity of the study. One predetermined limitation of this study was that only one community was used—a school system in coastal Alabama. The prekindergarten students were from five schools within that community. A second limitation of this study was possible differences in teacher's instructional practices which may have affected the beneficial prekindergarten outcomes.

A potential limitation was that administrators and curriculum coaches could have chosen not to participate in this study due to the increasing workload of educators and educators being overwhelmed with the amount of paperwork to complete, in addition to having to allow ample time for instruction. Further, using a small sample size may have highlighted just the benefits of prekindergarten instruction in Alabama. Also, the DIBELS assessment data of former prekindergarten was limited to five sets of kindergarten students.

Another limitation of this study was that participants were not randomly assigned to a control group. Ideally, random assignment for half of the children to receive prekindergarten and half to not receive prekindergarten would have been ideal for research purposes but would have been unethical. Research shows that prekindergarten instruction is beneficial therefore, asking parents to refrain from sending their young children to learn would go against the documented science of best practices for early education.

The research data collected was generated from five Title 1 primary schools' prekindergarten intervention classes that feed into general education kindergarten classes. A continuation of this research could encompass other prekindergarten intervention programs with similar dynamics as the participants in this study. Collecting data from within higher SES communities may lead to different findings. Students in other educational settings may receive more parental involvement or have more opportunities for early learning experiences than the low SES community included in this study. For this study, a nonrandom sample was utilized, but a random sample may have proven to be more inclusive for all children of various prekindergarten programs.

Internal and External Validity

A study's validity hinges upon the researcher's ability to conduct and present reliable and valid information collected from a reputable study. The process of presenting all data collected entailed the researcher to accurately summarize and present the findings in an organized and precise manor. In an effort to ensure the validity of this project, a causal comparative study, a quantitative design was selected to evaluate groups upon which the variable was tested, without any random pre-selection processes. The archived DIBELS assessment of former prekindergarten intervention students was utilized. DIBELS is a highly distinguished published national assessment of early literacy skills and achievement and evaluators attend system wide training for test administrators. All prekindergarten intervention classes had highly qualified teachers and an assistant with early childhood training.

Expected Findings

Within this study the following were the anticipated findings from the research on the benefits of prekindergarten intervention on struggling kindergarten students' early literacy

achievement. The anticipated findings were specifically to identify the early literacy benefits of former prekindergarten intervention on struggling kindergarten students' early literacy achievement as assessed by the DIBELS. The second anticipated finding was specifically to identify the early literacy benefits of prekindergarten intervention instruction on struggling kindergarten students' early literacy achievement.

Ethical Issues

Ethics involves the practice of following a set of values. The ethical goal of this study was to truthfully examine the benefits of prekindergarten intervention instruction on struggling students as measured by the kindergarten DIBELS assessment data to reveal the early literacy benefits of prekindergarten intervention instruction. The researcher worked to ensure a reputable study took place by ensuring the participants had a full understanding of the purpose of the study and the requirements of their participation. The responsibility of the researcher was to inform the participants of their individual rights to voluntarily participate or to cease participation at any time. Additionally, the participants were not led to feel obligated to participate. It was the responsibility of the researcher to ensure the anonymity of the participants and copies of the consent to participate in the study were kept private. Data collection involved the researcher documenting each archived assessment collected by utilizing analysis. The data from DIBELS results of former prekindergarten students remained anonymous and was used to identify the impact of prekindergarten instruction on early literacy skill achievement. The researcher had the sole responsibility of informing all participants, community stakeholders and future researchers with valid and reliable data collected from the study.

Each participant of the study was provided with an informed consent form, which was signed to show his or her agreement to participate in the study. The informed consent form

provided the participants with the option to participate in the study. The researcher ensured the participants were willing to participate and the intent of the study was clearly understood by all participants.

Within this study, confidentiality was important. The anonymity of the participants was upheld to protect their identity. The individual identity of the former prekindergarten students or the name of the school campus and school system were not disclosed to ensure their privacy. The research data and findings from this study were stored in a secure location. Individual participants signed a consent form that authorized the researcher with the permission to share the data and findings of the study. All areas of informing the participants of their rights, the procedures of the study and how the findings were to be used were the sole responsibility of the researcher.

Chapter 3 Summary

Within this causal comparative quantitative study, the benefits of prekindergarten intervention instruction on struggling kindergarten students' early literacy skills as measured through the findings of the kindergarten DIBELS assessment were assessed. A causal comparative quantitative study was purposely selected to identify the finding of DIBELS assessment with the goal of gaining insights into the benefits of prekindergarten intervention instruction on the statistical findings of the early literacy assessment. The findings of this study were evaluated to provide a thorough understanding of the benefits of prekindergarten intervention instruction on struggling kindergarten students' early literacy skills.

In conclusion, the data from this study was collected and analyzed to impact future prekindergarten intervention instruction with the goal of driving instructional practices and

student achievement. Within Chapters 4 and 5, the data, results and findings from this study are presented.

Chapter 4: Data Analysis and Results

Introduction

The purpose of this causal comparative quantitative research study was to evaluate the benefit of prekindergarten intervention instruction on the development of early literacy achievement of kindergarten students compared to the national norm benchmarks for kindergarten students. This study aimed to measure the benefits of prekindergarten intervention instruction on early literacy skill development through the data obtained from archived DIBELS assessments of kindergarten students. The study examined the archived DIBELS data of five prekindergarten intervention classrooms over a 1-year period in a coastal community in Alabama.

The archived DIBELS assessment results of former prekindergarten students were utilized to show the impact of prekindergarten intervention instruction on struggling kindergarten students' early literacy achievement. The primary purpose for utilizing the examination of the DIBELS early literacy skills assessment results was to keep the focus explicitly on the early literacy achievement of former prekindergarten intervention on struggling kindergarten students' early literacy achievement. To intentionally extract the desired information, specific indicators of early literacy achievement were collected and analyzed.

Within this study, each of the four assessment areas of the kindergarten DIBELS assessment were utilized—Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency and Nonsense Word Fluency. Archived DIBELS data were examined for evidence of the benefits of instruction on early student literacy development and achievement. Within the DIBELS Letter Naming Fluency (LNF) assessment scores for former prekindergarten intervention students were used. This individualized assessment of upper- and lower-case letter

knowledge was utilized to prompt students to name as many random order letters in the alphabet as they could in a 1-minute timeframe.

An additional assessment component of DIBELS used in this study to assess the impact of former prekindergarten intervention instruction was the Initial Sound Fluency test. This component was used to measure phonological awareness used to assess a student's ability to identify and produce the initial sound in a word presented in the oral format (Kaminski & Good, 1996, 1998; Laimon, 1994). The student was presented with four pictures and asked to identify the picture that began with a given sound. The time taken by the student to produce the correct sound match was factored into their score.

Another measure within the DIBELS assessment used in this study was the Nonsense Word Fluency (NWF) component. This assessment was used to evaluate former prekindergarten intervention students' alphabetic principle knowledge and their letter-sound correspondence knowledge where letter-sound knowledge was combined into the skill of blending (Kaminski & Good, 1996). Students were encouraged to produce as many letter-sounds as they could within 1 minute. In this assessment, students who recoded the word, as opposed to only naming the letter sounds in isolation, received higher scores.

Additionally, the Phoneme Segmentation component of the DIBELS assessment was used in this study to assess the impact of prekindergarten intervention instruction. This assessment was utilized to assess student's phonological awareness (Kaminski & Good, 1996). The students' abilities to segment three and four phoneme words into their individual phonemes fluently within 1-minute was assessed. Phoneme segmentation is a valid predictor of later reading achievement (Kaminski & Good, 1996).

Four hypotheses were considered in this study:

H1. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Initial Sound Fluency and the learning gains that occur in the National Norm.

H2. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Letter Naming Fluency and the learning gains that occur in the National Norm.

H3. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Phoneme Segmentation Fluency and the learning gains that occur in the National Norm.

H4. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Nonsense Word Fluency and the learning gains that occur in the National Norm.

The following four areas were examined for evidence of beneficial effects of prekindergarten intervention instruction:

1. Students demonstrated greater scores than the National Norm for Letter Naming Fluency, the ability to identify the upper and lower-case letters of the alphabet, as their scores on the on the individualized assessment of Letter Naming Fluency portion of the DIBELS assessment documents.
2. Students demonstrated greater scores than the National Norm for Initial Sound Fluency, as students could identify and produce the initial sound in a word that was presented in the oral format, as their scores on the on the individualized assessment of Initial Sound Fluency portion of the DIBELS the assessment documents.

3. Students demonstrated greater scores than the National Norm for Phoneme Segmentation Fluency, as students could segment three and four phoneme words into their individual phonemes, as their scores on the on the individualized assessment of Phoneme Segmentation Fluency portion of the DIBELS the assessment documents.
4. Students demonstrated greater scores than the National Norm for Nonsense Word Fluency as shown by their alphabetic principle knowledge and their letter-sound correspondence knowledge combined into the skill of blending, as their scores on the individualized assessment of Nonsense Word Fluency portion of the DIBELS assessment documents.

This chapter will explicitly describe the data collection process and present the data evaluated in this study as well as present the results of the statistical analysis of the data.

Description of the Sample

The researcher selected a convenient sample of five prekindergarten intervention instructional classrooms for participation in this study. All students were enrolled in prekindergarten in a coastal community in Alabama. Students who attended these prekindergarten classes ranged in ages from three years eleven months to four years eleven months. Prekindergarten intervention participants within this study included 40 males and 37 females. Only the archived data from students who completed the full year of instructional intervention and kindergarten instruction were included in the study.

Table 1

Prekindergarten Participants Included in the Study

Gender	Number of participants
Males	40
Females	37
Total Participants	77

Students who attended these intervention programs were identified through the Boehm-3 Early Learning Assessment as needing academic support services. Within the Boehm-3 assessment, students are to complete simple tasks to describe objects, identify quantities, order events and follow directions. These predictors of early learning are prerequisites of the basic concepts of being able to make comparisons, sequence and classify. Each of the five classrooms within this study selected students who would benefit the most from academic intervention services based upon their Boehm-3 assessment results. The intervention students selected for these five intervention classes were selected based upon an identification of an early learning deficit as assessed through the Boehm-3 early intervention assessment results. Research states that without the support of intervention, students who score below the age appropriate benchmark on this early intervention assessment will struggle with development in and outside the classroom (Boehm-3, 2017). Eighteen struggling students for each of the five schools were chosen to receive intervention services and academic support based upon the severity of their need for intervention services.

Summary of the Results

Within this study, a one sample t-test was used to analyze the aggregate rate of improvement of former prekindergarten intervention students as documented in the archived

DIBELS results of kindergarten students. The one sample t-test allows for the comparison of the participant scores in DIBELS with the National Norm benchmark scores. By comparing the variables of prekindergarten intervention classes at each DIBELS assessment interval of fall, winter and spring to the National Norms of expected benchmarks for students at each developmental phase, the growth of prekindergarten intervention students' early literacy development and achievement could be measured.

Table 2

Overall Comparison of National Benchmark Scores with Averages of Participants' Early Literacy Scores per Five Components on the DIBELS Assessment

Early literacy component	Participants' scores	National benchmark
Fall Initial Sound Fluency Scores	14.7662	8
Fall Letter Naming Fluency Scores	20.1429	8
Winter Initial Sound Fluency Scores	38.7273	25
Winter Letter Naming Fluency Scores	40.6364	27
Winter Phoneme Segmentation Fluency Scores	40.1688	18
Winter Nonsense Word Fluency Scores	25.4805	13
Spring Letter Naming Scores	50.3506	40
Spring Phoneme Segmentation Scores	54.2987	35
Spring Nonsense Word Fluency	34.0130	25

Fall Semester National Norm Comparative Analysis

A one-sample t-test was conducted to evaluate whether the mean of the kindergarten DIBELS assessment score of students who had undergone a prekindergarten intervention instruction was significantly different from the national benchmark norm for prekindergarten students for that year. Two components of the DIBELS assessment, Initial Sound Fluency (ISF) and Letter Naming Fluency (LNF) were compared in the fall semester. The sample mean of 14.77 (SD = 12.26) for ISF in the fall was significantly different from the national norm 8, $t(76) = 4.84, p < .001$. The 95% confidence interval for the ISF mean ranged from 3.9828 to 9.5497. The effect of size d indicated a medium effect and the sample mean of 20.14 (SD = 12.78) for LNF was significantly different from the national norm 8, $t(76) = 8.34, p < .001$. The 95% confidence interval for the LNF mean ranged from 10.7304 to 16.5423. The effect of size d indicated a medium effect. The results support the conclusion that prekindergarten's who engaged in the intervention instruction performed better in Initial Sound Fluency (ISF) and the Letter Naming Fluency (LNF) than the average kindergartener, in the fall semester of that academic year.

Table 3

Comparison of National Benchmark Scores with Averages of Participants' for the Fall Early Literacy Scores per Two of the Four Components on the DIBELS Assessment

Early literacy component	Participants' scores	National benchmark
Fall Initial Sound Fluency Scores	14.7662	8
Fall Letter Naming Fluency Scores	20.1429	8

Winter Semester National Norm Comparative Analysis

A one-sample t-test was conducted to evaluate whether the mean of the kindergarten DIBELS assessment score of students who had undergone a prekindergarten intervention instruction was significantly different from the National Norm benchmark for prekindergarten students for that year. Four components of the DIBELS assessment, Initial Sound Fluency (ISF), Letter Naming Fluency (LNF), Nonsense Word Fluency (NWF), and Phoneme Segmentation Fluency (PSF), were compared in the winter semester. The sample mean of 38.73 ($SD = 12.78$) for ISF in the fall was significantly different from the national norm 25, $t(76) = 8.52, p < .001$. The 95% confidence interval for the ISF mean ranged from 10.5187 to 16.9358. The effect of size d indicated a medium effect. The sample mean of 40.64 ($SD = 12.80$) for LNF in the winter was significantly different from the National Norm 27, $t(76) = 9.35, p < .001$. The 95% confidence interval for the LNF mean ranged from 10.7304 to 16.5423. The effect of size d indicated a medium effect. The sample mean of 25.48 ($SD = 12.05$) for NWF was significantly different from the National Norm 13, $t(76) = 9.09, p < .001$.

The 95% confidence interval for the NWF mean ranged from 9.7458 to 15.2153. The effect of size d indicated a medium effect. The sample mean of 40.17 ($SD = 20.84$) for PSF was significantly different from the National Norm 18, $t(76) = 9.33, p < .001$. The 95% confidence interval for the PSF mean ranged from 15.7022 to 22.8952. The effect of size d indicated a medium effect. The results support the conclusion that prekindergarten's who engaged in intervention instruction performed better in Initial Sound Fluency (ISF), Letter Naming Fluency (LNF), The Nonsense Word Fluency (NWF), and the Phoneme Segmentation Fluency (PSF) than the average kindergartener in the winter semester that academic year.

Table 4

Comparison of National Benchmark Scores with Averages of Participants' Early Literacy Scores per Four Components on the DIBELS Assessment

Early literacy component	Participants' Scores	National Benchamrks
Winter Initial Sound Fluency Scores	38.7273	25
Winter Letter Naming Fluency Scores	40.6364	27
Winter Phoneme Segmentation Fluency Scores	40.1688	18
Winter Nonsense Word Fluency Scores	25.4805	13

Spring Semester National Norm Comparative Analysis

A one-sample t-test was conducted to evaluate whether the mean of the kindergarten DIBELS assessment score of students who had undergone a prekindergarten intervention instruction was significantly different from the national benchmark norm for prekindergarten students for that year. Three components of the DIBELS assessment, Letter Naming Fluency (LNF), Nonsense Word Fluency (NWF), and Phoneme Segmentation Fluency (PSF) were compared in the winter semester. The sample mean of 50.35 ($SD = 14.38$) for LNF in the winter was significantly different from the National Norm 40, $t(76) = 6.32, p < .001$. The 95% confidence interval for the LNF mean ranged from 7.0870 to 13.6143. The effect of size d indicated a medium effect. The sample mean of 34.01 ($SD = 15.32$) for NWF was significantly different from the National Norm 25, $t(76) = 5.16, p < .001$. The 95% confidence interval for the NWF mean ranged from 5.5354 to 12.4906. The effect size of d indicated a medium effect.

The sample mean of 54.30($SD = 15.85$) for PSF was significantly different from the national norm 35, $t(76) = 10.69, p < .001$. The 95% confidence interval for the PSF mean ranged from 15.7022 to 22.8952. The effect size of d indicated a medium effect.

Table 5

Comparison of National Benchmark Scores with Averages of Participants' Early Literacy Scores per Four Components on the DIBELS Assessment

Early Literacy Component	Participant Scores	National Benchmark
Spring Letter Naming Scores	50.3506	40
Spring Phoneme Segmentation Scores	54.2987	35
Spring Nonsense Word Fluency	34.0130	25

The results support the conclusion that prekindergarten's who engaged in the intervention instruction performed better in Letter Naming Fluency (LNF), Nonsense Word Fluency (NWF), and Phoneme Segmentation Fluency (PSF) than the average kindergartener, in the winter semester that academic year. The following four null hypotheses were rejected:

- N1. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Initial Sound Fluency and the learning gains that occur in the National Norm.
- N2. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Letter Naming Fluency and the learning gains that occur in the National Norm.
- N3. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Phoneme Segmentation Fluency and the learning gains that occur in the National Norm.

N4. There is no difference in the learning gains of kindergarten students who participated in prekindergarten intervention in the area of Nonsense Word Fluency and the learning gains that occur in the National Norm.

Student Improvement in Literacy

The researcher explored the growth in the four components of DIBELS from a selected preceding semester. The researcher's examination of the Nonsense Word Fluency of prekindergarten intervention students' archived DIBELS scores from winter to spring of their kindergarten year showed an increase in early literacy. This assessment was used to evaluate former prekindergarten intervention students' alphabetic principle knowledge and their letter-sound correspondence knowledge where letter sound knowledge was used to combine into the skill of blending (Kaminski & Good, 1996). Students were encouraged to produce as many letter sounds as they could within 1 minute. In this fluency assessment students were to recode the word as opposed to only naming the letter sounds in isolation to receive higher scores. The descriptive analysis, using bar graphs, provided a visual representation of the increase in recoding skills of the prekindergarten's who experienced the intervention. The archived DIBELS data shows that on average, students' rates of improvement improved by 9 points (Fig. 1).

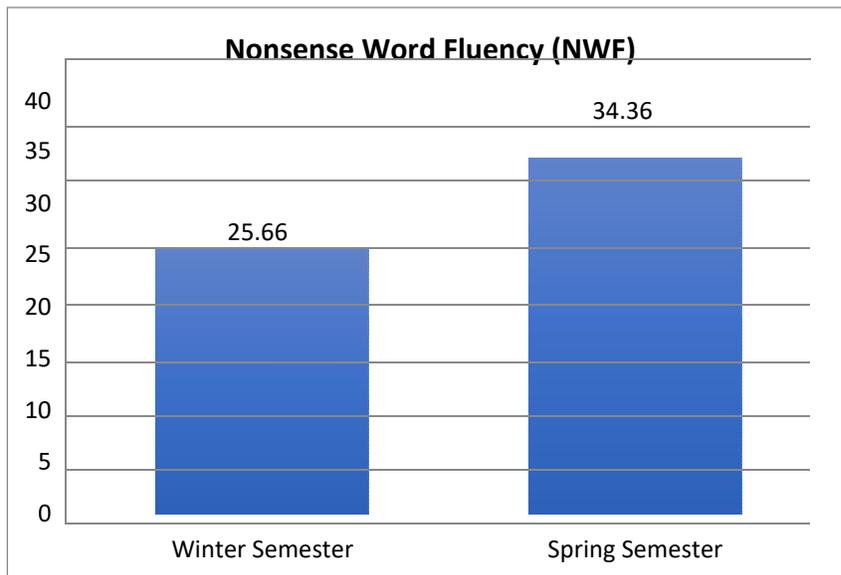


Figure 1. Winter-spring increase in NWF performance.

The descriptive analysis of Initial Sound Fluency showed growth in the archived DIBELS scores of former prekindergarten intervention students from the fall to winter of their kindergarten year. This component of DIBELS was used to measure the phonological awareness that assesses a student’s ability to identify and produce the initial sound in a word presented in the oral format (Kaminski & Good, 1996, 1998; Laimon, 1994). The student was presented with four pictures and asked to identify the picture that began with a given sound. The time taken by the student to produce the correct sound match was factored into their score. The bar graphs showed that prekindergarten intervention students scored higher in the winter than the fall semester in the same year in early literacy skill. The archived DIBELS data shows that on average, students’ rates of improvement improved by 24 points (Fig. 2).

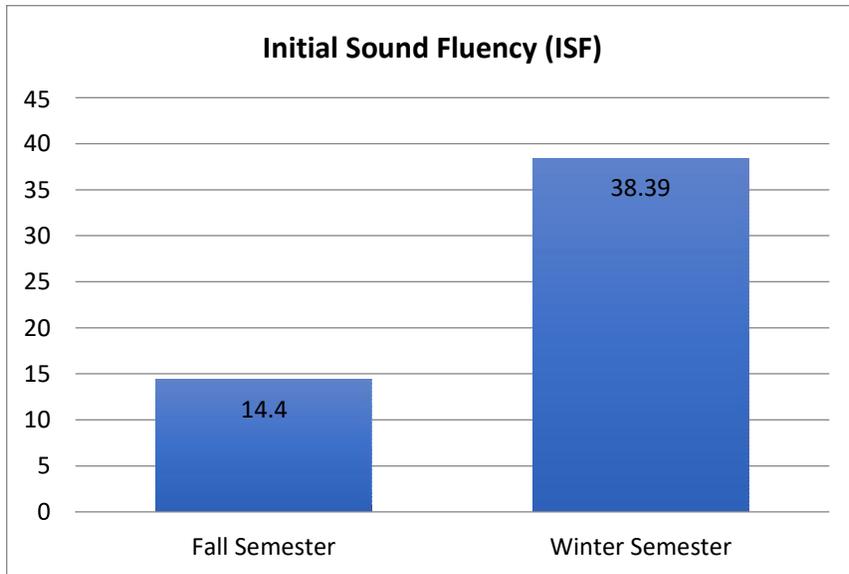


Figure 2. Fall-winter increase in ISF performance.

In the descriptive analysis of Phoneme Segmentation Fluency, the archived DIBELS scores of former prekindergarten intervention students demonstrated an increase in PSF from the winter to the spring of their kindergarten year. In this assessment, the student's ability to segment three and four phoneme words into their individual phonemes fluently within 1 minute was assessed. Phoneme segmentation is a valid predictor of later reading achievement (Kaminski & Good, 1996). The relevant results of the paired t-test are shown in bold. This data provides evidence that prekindergarten intervention students increased in PSF. The archived DIBELS data showed that on average, students' rates of improvement improved by 13 points (Fig. 3).

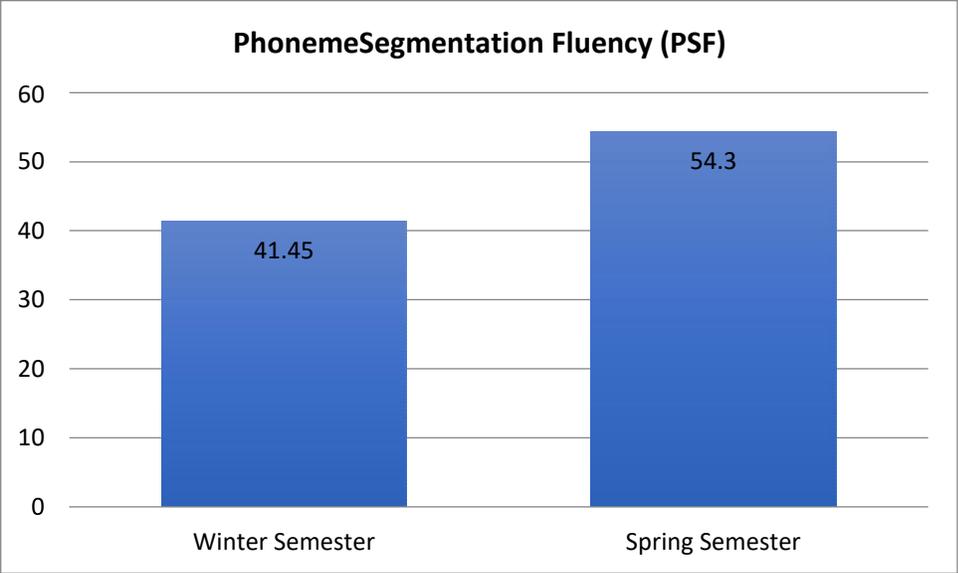


Figure 3. Winter-spring increase in ISF performance

The researcher compared the fall to the spring Letter Naming Fluency archived DIBELS scores of former prekindergarten intervention students. In this study, the DIBELS Letter Naming Fluency (LNF) assessment scores for former prekindergarten intervention students were utilized. This is an individualized assessment of upper- and lower-case letter knowledge based on the research by Marston and Magnusson (1988). The students were asked to name as many random order alphabet letters as they could in a 1-minute timeframe. Students who performed in the range of the 40th percentile and above were at low risk, students who performed between the 40th and 20th percentile were at some risk and students that performed in the lowest 20% in their district were considered to be at risk. The descriptive results of prekindergarten intervention improve early literacy skill development in young children. The archived DIBELS data bars showed that on average students' scores increased by 29 points (Fig. 4).

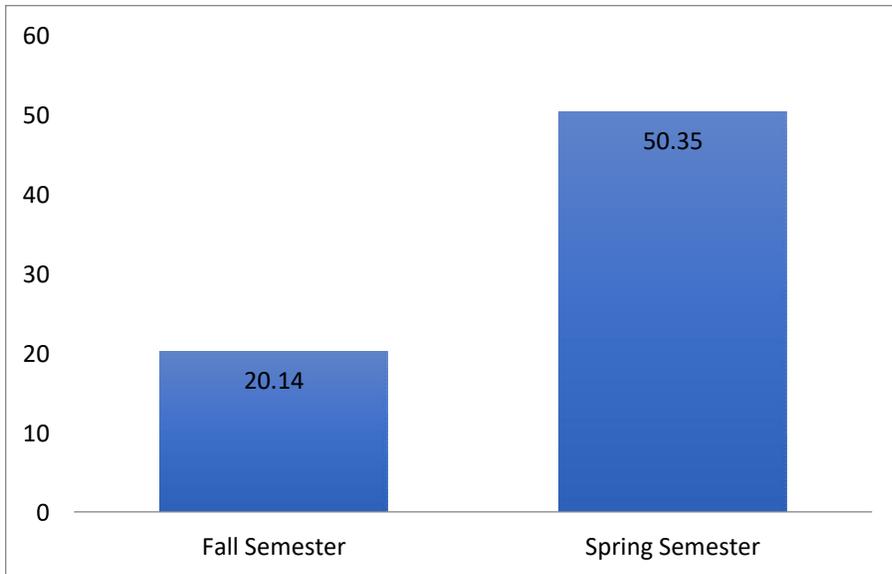


Figure 4. Fall-spring increase in LNF performance

By comparing the increases across the components, the most growth of the prekindergarten intervention students appeared to be the Letter Naming Fluency, and the least growth was Nonsense Word Fluency (Figs. 5–9).

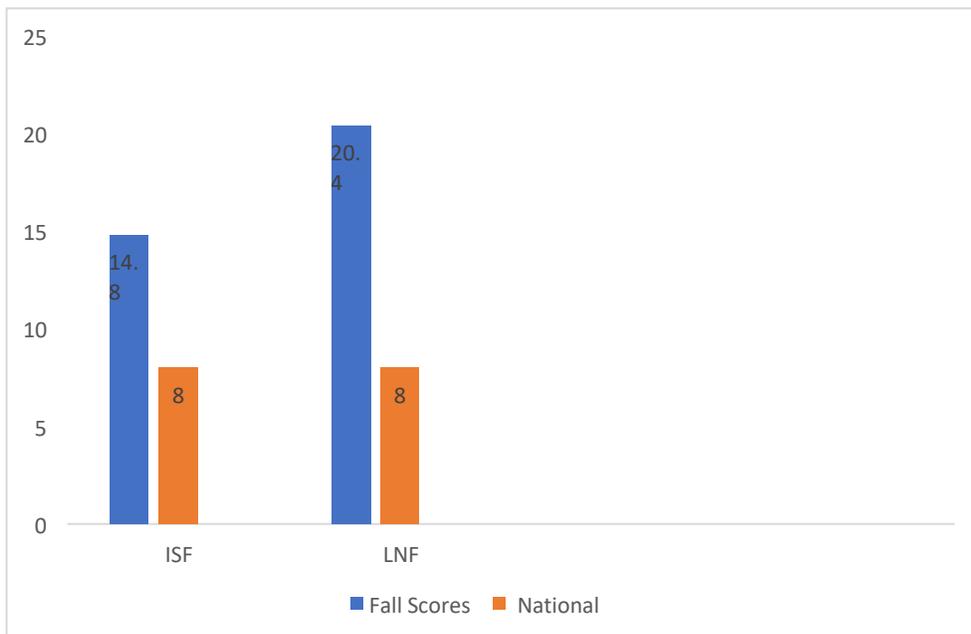


Figure 5. Comparison of increased student performance for ISF and LNF in the fall.

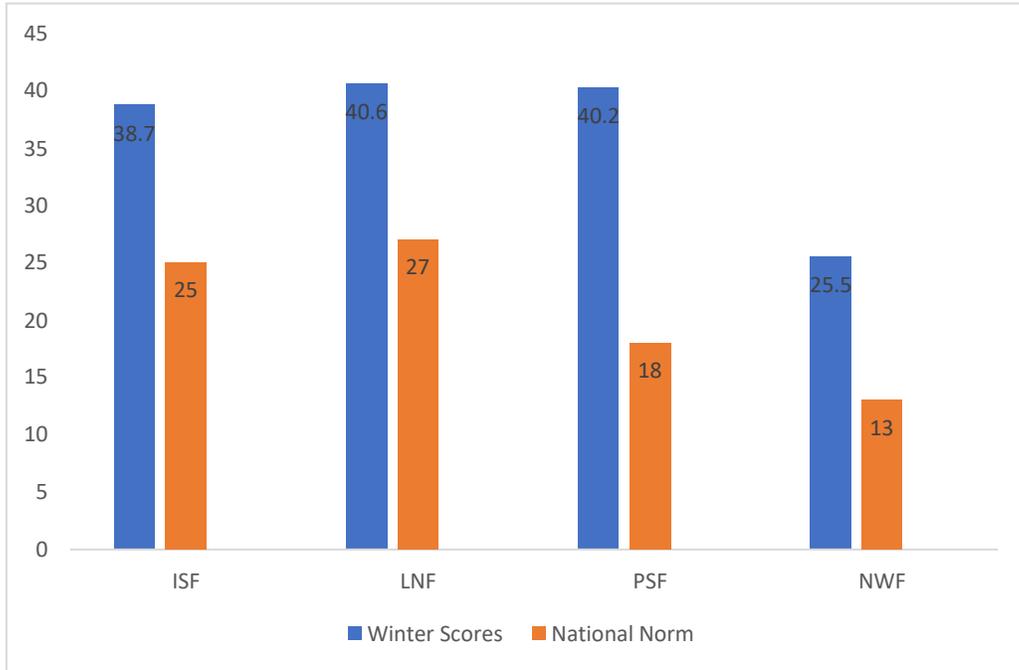


Figure 6. Comparison of increased student performance across all DIBELS components in the winter.

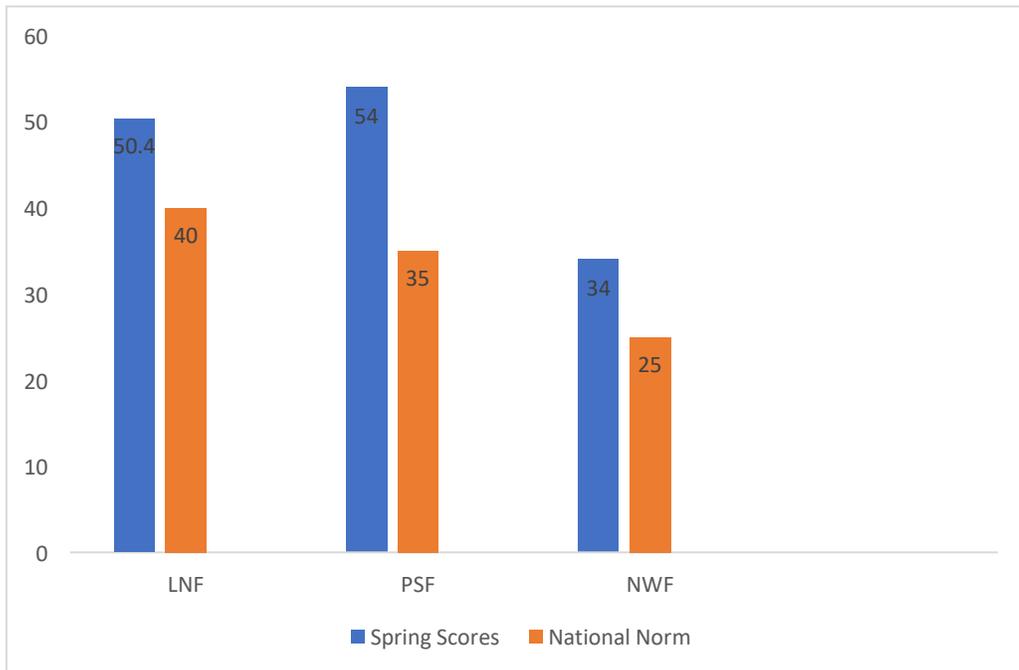


Figure 7. Comparison of increased student performance in DIBELS components LNF, PSF, and NSF in the spring.

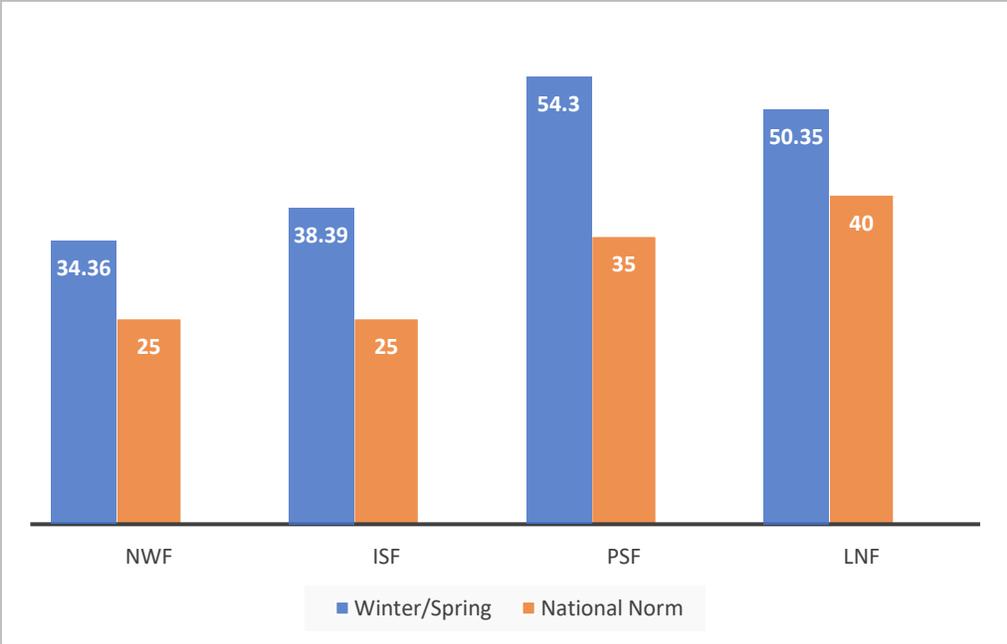


Figure 8. Comparison of increased student performance across all DIBELS components in the spring/winter.

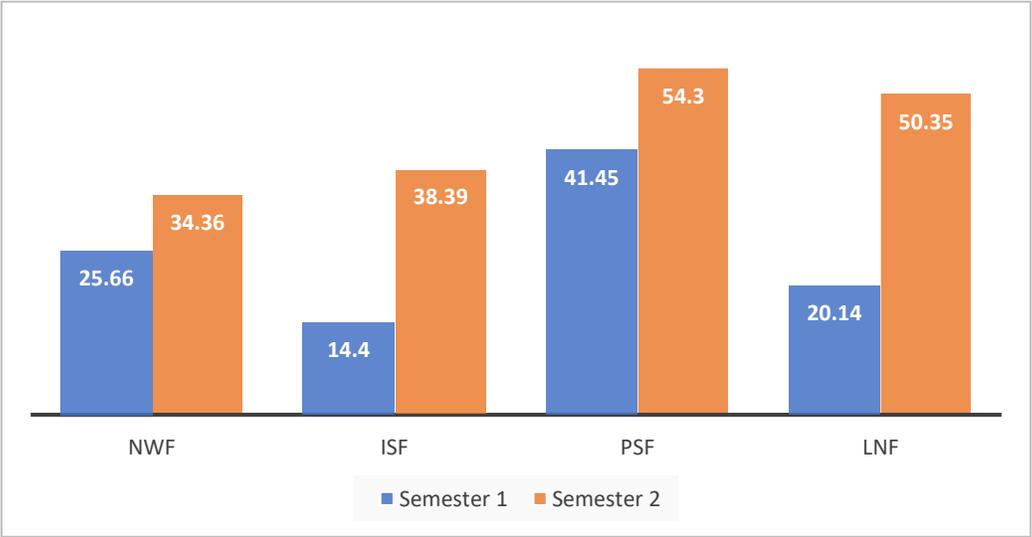


Figure 9. Comparisons of increases in performance between semesters 1 and 2 across the DIBELS components.

Prekindergarten intervention can play an important role in helping to facilitate the early literacy development of struggling learners. Within each component of the DIBELS assessment, struggling learners met and exceeded the National Norm benchmark for the developmental goals

for kindergarten. Students' scores showed a .54 gain in Nonsense Word Fluency for each week within a 16-week time frame. In the areas of Initial Sound Fluency, students showed a 1.5 gain per 16-week time frame. Student scores showed a .80 gain in Phoneme Segmentation Fluency per a 16-week time frame and a .84 gain in Letter Naming Fluency for a 36-week time frame. Each DIBELS goal and score are research-based, criterion-referenced scores, that are predictive of the probability of students achieving subsequent early literacy development and achievement goals. As shown in Figure 10 student DIBELS assessment scores improved in each area of the assessment. Based upon the overall achievement of intervention students on the DIBELS assessment the probability of these former prekindergarten intervention students achieving subsequent early literacy development and achievement goals is high (Kaminski et al., 2008).



Figure 10. Comparing weekly rate of increases in performance across the DIBELS components.

Chapter 5: Discussion and Conclusion

Introduction

Not all children are afforded the opportunity to attend prekindergarten. Within their 2017 report on early childhood education, NIEER documents the research findings of how young children benefit from early childhood instruction in the areas of academic and social development, early education, and elementary education alike. Research evidence suggests children with access to quality prekindergarten experience are more prepared for school, more likely to read and achieve academically on grade level and more likely to graduate from high school and attend college (NIEER, 2017). Support for students to have the opportunity to attend prekindergarten has grown, and the impact prekindergarten can make in the educational journey is life changing. This study has been strategically designed to explicitly evaluate the early literacy gains of struggling students within the discipline of early literacy achievement. This chapter provides an in-depth look into the findings of this study and the implications will be discussed.

This study was directed by the following research questions:

RQ1. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Initial Sound Fluency as measured by the DIBELS assessment, compared to the national norm?

RQ2. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Letter Naming Fluency, as measured by the DIBELS assessment, compared to the national norm?

RQ3. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Phoneme Segmentation Fluency, as measured by the DIBELS assessment, compared to the national norm?

RQ4. To what degree, if any, does prekindergarten instruction prepare kindergarten students for early literacy in the area of Nonsense Word Fluency, as measured by the DIBELS assessment, compared to the national norm?

The Summary of the Results section of this study offers a concise overview. The Discussion of the Results section provides a brief synopsis of the research findings. In Discussion of the Results in Relation to the Literature section, the findings of the study are compared to the relevant research contained in the literature review in Chapter 2. Within the Limitations portion of the study, limitations pertaining to this study are presented. The Implications of the Results for Practice, Policy and Theory examines the practical results of the study. Within the Recommendations for Further Research section, overall suggestion on how to replicate and improve the study are offered.

Summary of the Results

This study was conducted with the specific goal of explicitly examining the potential relationship between prekindergarten intervention instruction and the early literacy development of kindergarten students. The essential focus of the research sought to compare former prekindergarten intervention students' kindergarten DIBELS scores to the National Norm benchmarks to compare their progress and then to show the rate of improvement of former intervention students. By comparing students' achievements on early literacy indicators in the areas of Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency the relationship between prekindergarten intervention instruction and

early literacy achievement could be empirically tracked and examined. Researchers Kamanski and Good (2018) noted the importance of early intervention and the beneficial impact; however, little research has been conducted on the impact of the prekindergarten intervention instruction on the development of early literacy development and achievement.

The archived DIBELS scores of five former prekindergarten intervention classes containing a total of 77 students were intentionally selected for this research study. These prekindergarten students received one full year of prekindergarten instruction and were assessed in kindergarten at the beginning, middle and end of the school year to assess and measure student early literacy growth and achievement. Student growth and achievement at each developmental interval was compared to the expected predetermined early literacy National Norm benchmark for that interval, and then the student rate of overall improvement was measured. Taking into consideration all four assessments, at all three assessment periods on the archived DIBELS scores, the empirical data from this study indicates a positive causal relationship between prekindergarten instruction and early literacy achievement in kindergarten.

Students who were identified as having a learning deficit positively benefitted from prekindergarten intervention instruction within the areas of Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency and Nonsense Word Fluency. These early literacy components are essential to the ability of a child to read and are interwoven into the development and growth of other early childhood learning domains. Providing the opportunity for struggling students to attend prekindergarten to help develop and strengthen their early literacy skill sets and academic knowledge positively impacts their future learning.

Discussion of the Results in Relation to the Literature

A consensus of early learning research indicates that one third of children in America

begin school without the necessary pre-learning knowledge and skill sets needed to succeed (Boyer, 1991; Carnegie Task Force on Meeting the Needs of Young Children, 1994; Center on the Developing Child at Harvard University, 2016; Phillips et al., 2017). The expectations of students entering school for the first time have increased, and young students are being challenged to rise to these increasing expectations. The academic demands of kindergarten are a lot like the demands of that first grade used to pose (PEW Center, 2016). Young students are entering school without the knowledge base and skill sets they need to be successful. Statistics show that 46% of teachers report that half of their young students have trouble following directions, 36% feel that half of students have difficulties with academic skills, and 46% feel that more than half of students have problems working independently (PEW, 2016). Research shows that children who begin their educational journey behind their peers with limited skill sets, attention spans and task commitment, tend to remain behind. Students who are unable to identify the letters of the alphabet in kindergarten will struggle with reading by the end of first grade and 88% of students who read poorly in the first grade will still read poorly by the fourth grade. Further, 74% of children who read poorly in third grade will read poorly when they start high school (Annie E. Casey Foundation, 2010; PEW, 2016; Senechal, 2009; U.S. Department of Education, 2015).

Multiple studies corroborate that prekindergarten is the most crucial “grade,” with significant beneficial developmental and academic gains for children who attend school readiness programs (Barnett & Hustedt, 2003; Center on the Developing Child at Harvard University, 2016; Hemmeter, 2000; Pew Center, 2016; Phillips et al., 2017). Research shows that

students who attend prekindergarten score higher on math and reading tests than other students who do not (Barnett et al., 2013; Friedman-Krauss, Barnett & Nores, 2016; Magnuson et al., 2004; NIEER, 2018). Students who attend prekindergarten are less likely to need special education services, are less likely to need retention, are more likely to graduate high school, are more likely to attend college and are less likely to be incarcerated than students who do not attend prekindergarten (Wat & Gayl, 2009; Heckman, 2016).

A convergence of early learning frameworks offers insights into interpretation of the benefits of early childhood learning through the lens of The Head Start Child Development, the Early Learning Framework, and the Victorian Early Learning Development, which show how each progression of learning is interconnected and contingent upon the other (ECLKC, 2018; Victorian Early Years Learning and Development Framework, 2018). Early literacy development evolves with other learning domains and skill sets. Substantial research documents the importance of the development of early learning pre-reading skill sets in early childhood that are used for the foundation of early literacy (US Department of Education, 2015). There are critical windows for development involved in early literacy which are a continuous process interconnected with other learning domains beginning within the first years of a child's life. Researchers note that early literacy develops through real-life settings of positive interactions and experiences with literacy materials and with other people. The all-important early literacy ability sets of language, reading and writing skills develop within the same window of time and are interdependent with other areas of learning. Research supports the role of interactive and experiential processes of spoken and written language skill sets and the foundational support early childhood education provides in developing these crucial skill sets and knowledge (BrainWonders, 2018; Erikson Institute, 2018).

Early literacy learning impacts a child's physical, social-emotional, and cognitive development, as all domains of a child's early learning development are interdependent and interrelated (NIEER, 2006). Early learning domains are intertwined and are developed by experiences with a child's environment (Johnston, 2010). Within the dynamic of understanding reciprocal relationship of the early learning domains, Vygotsky noted the importance of analyzing the role social culture plays in the cognitive development of a child and how a child's environment helps to develop their value system which is then internalized, as the constructs of a child's brain are formed through the interactions and experiences they have (Fox et al., 2010; Olson & National Research Council, 2012; Wolfe & Nevills, 2004). The child's social experiences are interconnected with learning and provide a means for development and learning through social interactions with others. Through these processes of social culture development and play, children learn about the world around them and become confident in their use of language and play. A child's speech process provides insights into how the child makes sense of the external world around him. Children that are provided the opportunity to attend prekindergarten are surrounded by social experiences that support and encourage their cognitive development of all domains of learning and specifically early literacy skill sets and knowledge (Phillips et al., 2017).

Providing prekindergarten instruction for young children during the critical windows of development maximizes the overall development of their brain architecture and can positively impact every domain of student learning (BrainWonders, 2018; Burlacu, 2013; CDC-Harvard University, 2017; Fox, 2002; Fox et al., 2010; Olson & National Research Council, 2012; Wolfe & Nevills, 2004). Ensuring young children have the very best educational experiences as they begin their educational journey will help to ensure their educational success in school and later in

life. Research documents that the foundations of brain architecture are established early in life. According to findings from Alabama's First Class (2018), a strong foundation can be established when young children attend high quality prekindergarten programs. If early experiences do not lay a solid foundation of connections and the architecture of the brain does not construct a solid platform on which to build future learning, deficits in learning and behavior problems may develop. Young learners who attend quality prekindergarten programs are less likely in the future to need remedial education, to repeat a grade, or to be placed in special education services (Center on the Developing Child at Harvard University, 2016; Heckman, 2016; Phillips et al., 2017). Students who attend quality early childhood programs make better grades, score higher on achievement t-tests, are more likely to graduate from high school and to attend college. As adults, they earn higher paying salaries, are less likely to be incarcerated and less likely to receive welfare (Center on the Developing Child at Harvard University, 2016; Heckman, 2016; Phillips et al., 2017).

Limitations

The most concerning limitation for this study was the overall small sample size of 77 preschool intervention students. Due to the small sample size, the generalizability of this study applied to other classrooms is limited. Additionally, this study was conducted in one Coastal community in Alabama and may not contribute to the generalizability of other school systems. Another factor may be the generalizability of the assessment instrument used to assess students needing preschool intervention.

An additional limitation of this study was that the researcher is employed within the school system where the study was conducted. Every effort to maintain ethical and legal integrity

were followed. Great care was taken to ensure data resources were accurate, anonymity of the schools and subjects were upheld, and precise statistical calculations were generated.

Implications of the Findings

Research documents providing children with quality prekindergarten instruction can positively impact their learning potential and life outcome (Heckman, 2017). America has an opportunity to invest in one of the most precious and highly profitable resources of human life by offering quality prekindergarten to all children. Making the service of prekindergarten education available to all children could help combat the educational gap that exists between disadvantaged children and children of more affluent families by providing research-based early learning experiences that target cognitive and developmental skills (Center on the Developing Child at Harvard University, 2016; Phillips et al., 2017). Early childhood education is a more effective, cost efficient and humane approach to closing the educational achievement gap between disadvantaged children and children who receive quality early childhood educational experiences.

Theoretical Implications

Families are struggling to provide nurturing childcare for their young children. Young children are entering school with less knowledge and skill sets needed for learning in today's rigorous learning environment. These young children struggle upon entering school and potentially throughout their educational journey and life. Early intervention can change the outlook for these young learners and help to provide them with opportunities during these critical windows of brain development to learn the knowledge and skill sets they need to be successful in life.

Providing young students with the opportunity to become active participants in learning and take ownership of their learning is an empowering gift. Serving struggling learners while they are in the critical developmental window of rapid brain growth is more effective and cost efficient than other costlier interventions. Proactively offering young students an opportunity to attend prekindergarten is a more effective and humane service for our youngest learners.

Future Implications

Research shows that early childhood education is more effective than later costlier interventions strategies which should drive the mission to provide early learning for all children (Barnett, 2015; Barnett & Belfield, 2006; Heckman, 2011; Shonkoff, 2010). Providing preschool intervention for a portion of the population identified as the most academically needy will serve to decrease learning deficits and to positively impact the future of these young learners. However, providing prekindergarten services for all students in need of early childhood education would ensure all young learners have opportunity to develop and learn the skill sets and knowledge they need to be successful. Further research could be conducted to confirm the importance of these efforts; however, a substantial amount of research has already been conducted and the consensus of the findings are prekindergarten education positively impacts all domains of learning. The question remains, do we act upon the call to provide prekindergarten instruction as a constitutional right or do we continue to allow educational deficits to stricken our most precious resource?

Recommendations for Further Research

Based upon the findings of this study the following recommendations for further research in the area of the impact of prekindergarten on the early literacy development of kindergarten students have been suggested.

1. This type of study could be replicated with an experimental-research design utilizing a larger sample size. The ideal sample for the future study would involve thousands of students in various school settings across the nation.
2. An argument for causation could be to use a different early literacy assessment instrument to document the early literacy achievement of students.
3. Research documents that young children benefit most from early intervention efforts. Students could be assessed at age three and learning deficits could be identified earlier and students served for two consecutive years of preschool for an earlier start to intervention may have larger gains.

The data for this research study shows a strong to moderate positive relationship between prekindergarten intervention instruction and the early literacy achievement of kindergarten students. An empirical study utilizing an experimental research design could serve to further document and confirm the relationship between early intervention instruction and early literacy achievement. The utilization of the experimental research design would be the best research design to establish and support the identified relationship.

Recommendations for Practitioners

Educators of all stages should be aware of the powerful impact early intervention can have to combat deficits of young learners based upon the irrefutable evidence of the positive impact of prekindergarten instruction. The data from this shows that providing opportunities for our youngest learners to receive intervention services during the formation of their foundational learning can positively impact their early literacy development and achievement. Young students who are given the opportunity to experience prekindergarten instruction will be afforded an

opportunity to develop strong early learning foundational skills and knowledge that will serve to facilitate future learning.

Conclusion

This study was designed to assess the causal relationship between prekindergarten intervention instruction and kindergarten early literacy development and achievement. The findings of this study document the positive causal relationship between prekindergarten intervention and the early literacy development and achievement of kindergarten students. Children who do not have the opportunity to attend preschool may not have a language rich, nurturing, and supportive learning environment to foster knowledge and skill sets for early learning. Students included within this study received intervention instruction to develop the early learning knowledge and skill sets needed to support future learning. This study focused specifically on the positive benefits of prekindergarten intervention instruction on early literacy development and achievement of kindergarten students in the areas of Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency. All specific areas of early literacy were shown to have a positive casual impact on the early literacy development and achievement of kindergarten students.

Further research and study is warranted to document and confirm the results of this study. However, the results are substantial enough to indicate the value of early prekindergarten intervention on early literacy development and should give educational practitioners insights into how to support early literacy learning. This study supports those who specifically advocate for early learning literacy instruction and intervention to combat learning deficits and ensure a solid early learning foundation to empower future learning. Additionally, the consensus of early childhood research supports the positive impact prekindergarten education can have on the

development of early learning skill sets and knowledge that support early literacy in an interwoven relationship. America can choose to help close the achievement gap by providing all children with the educational opportunity to attend prekindergarten.

References

- Alabama First Class*. (2018, February). Retrieved from <http://children.alabama.gov/firstclass/>
- Allan, N. P., & Lonigan, C. J. (2011). Examining the dimensionality of effortful control in preschool children and its relation to academic and socio emotional indicators. *Developmental Psychology*, 47(4), 905–915.
- Annie E. Casey Foundation. (2010). (2018, March). *Early warning! Why learning to read by third grade*. Retrieved from http://www.aecf.org/m/resourcedoc/AECF-Early_Warning_Full_Report-2010.pdf
- Barnett, D.W., Elliott, N., Graden, J., Ihlo, T., Macmann, G., Nantais, M., & Prasse, D. (2006). Technical adequacy for response to intervention practices. *Assessment for Effective Intervention*, 32(1), 20–31.
- Barnett, S. W., & Boocock, S. S. (1998). *Early care and education for children in poverty: Promises, programs, and long-term results. SUNY series, youth, special services, schooling, and public policy and] SUNY series, early childhood education*. Albany, NY: State University of New York Press.
- Barnett, W., Friedman, A., Hustedt, J., & Stevenson-Boyd, J. (2009). An overview of prekindergarten policy in the united states. In R. Pianta & C. Howes (Eds.), *The promise of pre-k* (pp. 31–50). Baltimore, MD: Paul H. Brooks Publishing.
- Barnett, W., Young, J., & Shweinhart, L. (1998). How preschool education influences long-term cognitive development and school success: A causal model. *Early Care and Education for Children in Poverty*, 167–184.
- Barnett, W. S. (2004). *Better teachers: Better preschools: Student achievement linked to teacher qualifications, NIEER policy brief*. New Brunswick, NJ: Rutgers University, National

Institute for Early Education Research.

Barnett, W. S., & Belfield, C. R. (2006). Early childhood development and social mobility. *The Future of Children*, 16(2) (pp. 73–98). Retrieved from

<http://cupdx.idm.oclc.org/login?url=http://search.proquest.com.cupdx.idm.oclc.org/docview/1519298905?accountid=10248>

Barnett, W. S. (2015). Universal and targeted approaches to preschool education in the United States. *International Journal of Child Care and Education Policy*, 4(1), 1–12.

doi:<http://dx.doi.org.cupdx.idm.oclc.org/10.1007/2288-6729-4-1-1>

Barnett, W. S., Friedman-Krauss, A. H., Weisenfeld, G. G., Horowitz, M., Kasmin, R., & Squires, J. H. (2017). *The state of preschool 2016: State Preschool Yearbook*. New Brunswick, NJ: National Institute for Early Education Research.

Barnett, W. S., Hustedt, J., Robin, K., & Schulman, K. (2005). *The state of Preschool Yearbook, 2005*. New Brunswick, NJ: Rutgers University, National Institute for Early Education Research.

Bernstein, S. West, J., Newsham, R., & Reid, M. (July 15, 2014) *Kindergartners' skills at school entry: An analysis of the ECLS-K*. Princeton, NJ: Mathematica Policy Research.

Bierman K., Nix R., Greenberg, R., Blair, C., & Domitrovich, C. (2008). Executive functions and school readiness intervention: Impact, moderation, and mediation in the Head Start REDI program. *Development and Psychopathology*, 20, 821–843.

doi:10.1017/S0954579408000394

Bierman, K. L., Domitrovich, C. E., Nix, R. L., Gest, S. D., Welsh, J. A., Greenberg, M. T., ... & Gill, S. (2008). Promoting academic and social-emotional school readiness: The Head Start REDI program. *Child Development*, 79(6), 1802–1817.

- Bowman, B. T., Donovan, S., & Burns, M. S. (2000). *Eager to learn: Educating our preschoolers: Executive summary*. National Academy Press.
- Burlacu, F. (2013). The importance of pre-school education in child development. *Euromentor Journal*, 4(2), 153–165. Retrieved from
- California Department of Education. (2017). *Education*. Retrieved from <http://www.cde.ca.gov/index.asp>
- Camilli, G., Vargas, S., Ryan, S., & Barnett, W.S. (2010). Meta-analysis of the effects of early education interventions on cognitive and social development. *Teachers College Record*, 112(3), 579–620.
- Center on the Developing Child at Harvard University. (2016, December 8). *Developing child*. Retrieved from December 8, from <http://developingchild.harvard.edu/>
- Children Born in 2001 At Kindergarten entry: First findings from kindergarten data collections of early childhood longitudinal study, Birth cohort (ECLS-B). (2009, Oct 29). *US Fed News Service, Including US State News*. Retrieved from <http://cupdx.idm.oclc.org/login?url=https://search-proquest-com.cupdx.idm.oclc.org/docview/472654808?accountid=10248>
- Clancy, B. (2002). School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. *The American Psychologist*, 57(2), 111–127. Retrieved from <http://cupdx.idm.oclc.org/login?url=https://search-proquest-com.cupdx.idm.oclc.org/docview/212135076?accountid=10248>
- Common Core State Standards Initiative. (2017). *Preparing America's students for college & career*. Retrieved from www.corestandards.org.
- Copple, C., & Bredekamp, S. (Eds.) (2009). *Developmentally appropriate practice in Early*

- Childhood Programs serving children from birth through age 8* (3rd ed.). Washington, DC: NAEYC.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Denton, D. (1999). *Prekindergarten and parent support programs*. Atlanta, GA: Southern Regional Education Board.
- DeVries, R. (1997). Piaget's Social Theory. *Educational Researcher*, 26(2), 4–17. Retrieved from <http://www.jstor.org.cupdx.idm.oclc.org/stable/1176032>
- Dewey, J. (1902). *The child and the curriculum*. Chicago, IL: The University of Chicago Press. Retrieved from <https://books.google.com/books>.
- Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., & Japel, C. (2007). School readiness and later achievement. *Developmental Psychology*, 43(6), 1428–1446.
- Early Childhood Development. (2013). An Office of the Administration for Children & Families. *President Obama's early learning initiative*. Retrieved from <http://www.acf.hhs.gov/ece/early-learning/early-learning-initiative>
- Fernald, A., Marchman, V. A., & Weisleder, A. (2013). SES differences in language processing skill and vocabulary are evident at 18 months. *Developmental Science*, 16, 234–248. doi:10.1111/desc.12019
- Fox, G. (2002). From neurons to neighborhoods: The science of early childhood development. *Journal of the American Academy of Child and Adolescent Psychiatry*, 41(5), 625–626.
- Fox, S. E., Levitt, P., & Nelson III, C. A. (2010). How the timing and quality of early experiences influence the development of brain architecture. *Child Development*, 81, 28–

40. doi:10.1111/j.1467-8624.2009.01380.x

Frank Porter Graham Child Development Center. (2000). *The children of the cost, quality, and outcomes study go to school: Executive summary*. Chapel Hill, NC: FPG Child Development Center.

García, J. L., Heckman, J. J., Leaf, D. E., & Prados, M. J. (2016). *The life-cycle benefits of an influential early childhood program* (No. w22993). National Bureau of Economic Research.

Gilliam, W., & Zigler, E. (2004). *State efforts to evaluate the effects of prekindergarten 1977–2003*. New Haven, CT.: Yale University Child Study Center.

Good, R. H. III, & Kaminski, R. A. (1996). Assessment for instructional decisions: Toward a proactive/prevention model of decision-making for early literacy skills. *School Psychology Quarterly, 11*(4), 326–336.

Good, R. H., Kaminski, R. A., Smith, S., Simmons, D. S., Kame'enui, E. J., & Wallin, J. (2003). Reviewing outcomes: Using DIBELS to evaluate a school's core curriculum and system of additional intervention in kindergarten. *Reading in the classroom: Systems for observing teaching and learning*. Baltimore, MD: Paul H. Brookes.

Gorey, K. M. (2001). Early childhood education: A meta-analytic affirmation of the short- and long-term benefits of educational opportunity. *School Psychology Quarterly, 16*(1), 9–30.

Gormley, W., Gayer, T., Phillips, D., & Dawson, B. (2004). *The effects of universal pre-K on Cognitive Development*. Washington, DC: Georgetown University, Center for Research on Children in the U.S.

Gormley, W. T. Jr, Gayer, T., Phillips, D., & Dawson, B. (2005). The effects of universal pre-K on cognitive development. *Developmental Psychology, 41*(6), 872–884.

- Guralnick, M.J., & Bennett, F.C. (Eds.) (1987). *The effectiveness of early intervention for at-risk and handicapped children*. New York, NY: Academy Press.
- Hart, B., & Risley, T. R. (2003). The early catastrophe: The 30-million-word gap by age 3. *American Educator*, 27(1), 4–9.
- Harvard Developing Child. (2018). Center on the Developing Child at Harvard University *From Best Practices to Breakthrough Impacts: A Science-Based Approach to Building a More Promising Future for Young Children and Families*. Retrieved from <https://developingchild.harvard.edu>.
- Head Start. (2017). *Head Start program school readiness goals*. Retrieved from <http://www.projectnow.org/headstartreadiness.htm>.
- Head Start. (2018). *ECLKC*. Retrieved from <https://eclkc.ohs.acf.hhs.gov/school-readiness/article/head-start-early-learning-outcomes-framework>
- Heckman, J. (2006). Skill formation and the economics of investing in disadvantaged children. *Science*, 312(5782), 1900–1902.
- Heckman, J. J. (2011). The economics of inequality. *The Education Digest*, 77(4), 4–11.
- Heckman, J. J. (2017). *Heckman equation*. Retrieved from <https://heckmanequation.org/the-heckman-equation/>
- Hemm. Henry, G., Gordon, C., Mashburn, A., & Ponder, B. (2001). *Pre-K longitudinal study: Findings from the 1999-2000 school year*. Atlanta, GA: Georgia State University, Applied Research Center.
- Johnston, J. (2010). *Factors that influence language development*. Retrieved from <http://www.child-encyclopedia.com/sites/default/files/dossiers-complets/en/language-development-and-literacy.pdf>

- Kaminski, R., Cummings, K. D., Powell-Smith, K. A., & Good, R. H. (2008). Best practices in using Dynamic Indicators of Basic Early Literacy Skills for formative assessment and evaluation. *Best practices in school psychology V, 4*, 1181-1204.
- Kamenetz, A. (2018). Let's stop talking about the '30 million word gap'. (2018). *Let's Stop Talking About The '30 Million Word Gap'. (Audio File) (Broadcast Transcript)*, All Things Considered, June 1, 2018.
- Kaminski, R. A., & Good, R. H. III. (1996). Toward a technology for assessing basic early literacy skills. *School Psychology Review, 25*(2), 215–227.
- Kostelnik, M., Soderman, A., & Whiren, A. (1993). *Developmentally appropriate programs in early childhood education*. New York, NY: Macmillan.
- Krashen, S. (1982). Theory versus practice in language training. In R. W. Blair (Ed.), *Innovative approaches to language teaching* (pp. 25–27). Rowley, MA: Newbury House.
- Laimon, D. E. (1994). *The effects of a home-based and center-based intervention on at-risk preschool children's early literacy skills* (Unpublished doctoral dissertation). University of Oregon, Eugene.
- Lally, J. R., & Mangione, P. (2017). Caring relationships: The heart of early brain development. *Young Children, 72*(2), 17–24.
- Leerkes, E. M., Paradise, M., O'Brien, M., Calkins, S. D., & Lange, G. (2008). Emotion and cognition processes in preschool children. *Merrill-Palmer Quarterly, 54*(1), 102–124.
- Loeb, S., Bridges, M., Fuller, B., Rumberger, R., & Bassok, D. (2005). *How much is too much? the influence of preschool centers on children's social and cognitive development*. Cambridge: National Bureau of Economic Research, Inc.
doi:<http://dx.doi.org.cupdx.idm.oclc.org/10.3386/w11812>

- Magnuson, K. Meyers, M. K., Ruhm, C. J., & Waldfogel, J. (2004). Inequality in preschool education and school readiness. *American Educational Research Journal*, *41*, 115–157.
- Mann, T. D., Hund, A. M., Hesson-McInnis, M. S., & Roman, Z. J. (2017). Pathways to school readiness: Executive functioning predicts academic and social-emotional aspects of school readiness. *Mind, Brain, and Education*, *11*, 21–31.
- Marston, D., & Magnusson, D. (1988). Curriculum-based measurement: District level implementation. In J. Graden, J. Zins, & M. Curtis (Eds.), *Alternative educational delivery systems: Enhancing instructional options for all students* (pp. 137–172). Washington, DC: National Association of School Psychology.
- McClelland, M. M., Cameron, C. E., Carol, M. C., Farris, C. L., & al, e. (2007). Links between behavioral regulation and preschoolers' literacy, vocabulary, and math skills. *Developmental Psychology*, *43*(4), 947–959. Retrieved from <http://cupdx.idm.oclc.org/login?url=http://search.proquest.com>.
cupdx.idm.oclc.org/docview/224541481?accountid=10248
- Mendes, J. (2012). *Five ways to create an optimal learning environment for students*. Retrieved from <http://www.readinghorizons.com/blog/post/2012/06/07/increase-student-attention-anticipation-interest-during-a-lesson>
- Miles, S., & Stipek, D. (2006). Contemporaneous and longitudinal associations between social behavior and literacy achievement in low-income elementary school children. *Child Development*, *77*(1), 103–117.
- Mulligan, G. M., Hastedt, S., & McCarroll, J. C. (2012). *First-time kindergartners in 2010–11: First findings from the kindergarten rounds of the early childhood longitudinal study, kindergarten class of 2010-11 (ECLS-K:2011)*. NCES 2012-049. National Center for

Education Statistics.

National Center for Educational Statistics. (2017). *Early Childhood Longitudinal Program*.

Retrieved from [https://nces.ed.gov/ecls/Policy Brief - Early Literacy: Policy and Practice in the Preschool Years](https://nces.ed.gov/ecls/Policy%20Brief%20-%20Early%20Literacy%20-%20Policy%20and%20Practice%20in%20the%20Preschool%20Years) [http://nieer-www1.rutgers.edu/publications/ policy-matters-policy- briefs/policy-brief-early-literacy-policy-and-practice-preschool](http://nieer-www1.rutgers.edu/publications/policy-matters-policy-briefs/policy-brief-early-literacy-policy-and-practice-preschool)

Nelson, G., Westhues, A., & MacLeod, J. (2003). A meta-analysis of longitudinal research on preschool prevention programs for children. *Prevention and Treatment, 6*, 1–34.

NIEER. (2018). *Longitudinal effects of the Arkansas Better Chance Program: Findings from first grade through fourth grade*. Retrieved from [http://NIEER.Org/Research-Report/Longitudinal-Effects-of-the Arkansas-Better-Chance-Program-Findings-From First- Grade-Through-Fourth-Grade](http://NIEER.Org/Research-Report/Longitudinal-Effects-of-the-Arkansas-Better-Chance-Program-Findings-From-First-Grade-Through-Fourth-Grade).

Nores, M., & Barnett, W. S. (2010). Benefits of early childhood interventions across the world: (Under) Investing in the very young. *Economics of Education Review, 29*(2), 271–282.

OECD. (2017). *Encouraging quality in early childhood education and care*. Retrieved from <http://www.oecd.org/education/school/48483409.pdf>

Olson, S., & National Research Council (U.S.). (2012). *From neurons to neighborhoods: A update: workshop summary*. Washington, DC: National Academies Press.

Peisner-Feinberg, E. (1999). *The children of the cost, quality, and outcomes study go to school: Executive summary*. Chapel Hill: University of North Carolina at Chapel Hill, Frank Porter Graham Child Development Center.

Pew Charitable Trusts. (2016). *Why all children benefit from pre-k. Benefits of pre-k*. Retrieved from <http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2005/06/15/why-all-children-benefit-from-prek>

- Pew Trusts. (2011). Benefits of prek. Retrieved from http://www.pewtrusts.org/~media/legacy/uploadedfiles/pcs_assets/2011/pewprektransformingpubliceducation.pdf
- Phillips, D., Gormley, W., & Anderson, S. (2016). Effects of Tulsa's CAP Head Start program on middle-school academic outcomes and progress. *Developmental Psychology, 52*(8), 1247–1261.
- Phillips, D. A., Lipsey, M. W., Dodge, K. A., Haskins, R., Bassok, D., Burchinal, M. R., . . . Weiland, C. (2017). *Puzzling it out: The current state of scientific knowledge on prekindergarten effects. A consensus statement*. Washington, DC: The Brookings Institution.
- Phillips, D., Gormley, W., & Anderson, S. (2016). The effects of Tulsa's CAP head start program on middle-school academic outcomes and progress. *Developmental Psychology, 52*(8), 1247–1261. doi:<http://dx.doi.org/cupdx.idm.oclc.org/10.1037/dev0000151>
- Pianta, R. C., Barnett, W. S., Burchinal, M., & Thornburg, K. R. (2009). The effects of preschool education: What we know, how public policy is or is not aligned with the evidence base, and what we need to know. *Psychological science in the public interest, 10*(2), 49–88.
- Ravitch, S. M., & Riggan, M. (2012). *Reason & rigor: How conceptual frameworks guide research*. Thousand Oaks, CA: Sage.
- Senechal, M. (2009). *Literacy, language and emotional development*. Retrieved from <http://www.child-encyclopedia.com/sites/default/files/dossiers-complets/en/language-development-and-literacy.pdf>
- Shonkoff, J. (2010). Building a new bio developmental framework to guide the future of early childhood policy. *Child Development, 81*(1), 357–367.

- Spira, E. G., Bracken, S. S., & Fischel, J. E. (2005). Predicting improvement after first-grade reading difficulties: The effects of oral language, emergent literacy, and behavior skills. *Developmental Psychology, 41*(1), 225–234.
- Sroufe, L.A., Cooper, R. G., & DeHart, G. B. (1992). *Child development: Its nature and course* (2nd ed.). New York, NY: Knopf.
- Starting Points: Executive Summary of the Report of the Carnegie Corporation of New York Task Force on Meeting the Needs of Young Children. (1994). *Young Children, 49*(5), 58–61. Retrieved from <http://www.jstor.org.cupdx.idm.oclc.org/stable/42725594>
- Temple, J. A., & Reynolds, A. J. (2007). Benefits and costs of investments in preschool education: Evidence from the child–parent centers and related programs. *Economics of Education Review, 26*(1), 126–144.
- Thomas, A. E., & Grimes, J. E. (2002). *Best practices in school psychology IV, Vols. 1-2*. Bethesda, MD: National Association of School Psychologists.
- University of Oregon DIBELS Data System. (2016). *Dynamic indicators of basic early literacy skills*. Retrieved from <https://dibels.uoregon.edu/assessment/dibels/index>
- U.S. Department of Education. (2015). *A matter of equity: Preschool in America*. Retrieved from <https://www2.ed.gov/documents/early-learning/matter-equity-preschool-america.pdf>
- U.S. Department of Education. (2017). *Education*. Retrieved from <https://www.ed.gov/esea>
- Victorian Curriculum and Assessment Authority. (2013). *Report on assessment for Learning and Development Project 2012: Transforming practice in the Early Years*. Retrieved from www.vcaa.vic.edu.au/Documents/earlyyears/ALDProjectReport2012.pdf
- Victorian Early Years Learning and Development Framework. (2018). *Victorian Early Years Learning and Development Framework*. Retrieved from

<http://www.education.vic.gov.au/Documents/childhood/providers/edcare/veyldframework.pdf>

Vygotsky, L. (1978). *Interaction between Learning and Development*. Cambridge, MA: Harvard University Press.

Walker, D., Greenwood, C., Hart, B., & Carta, J. (1994). Prediction of School Outcome Based on Early Language Production and Socioeconomic Factors. *Child Development*, 65(2), 606–621. doi:10.2307/1131404

Wat, A., & Gayl, C. (2009). *Beyond the school yard: Pre-K collaborations with community based partners*. Pew Center on the States.

Weiland, C., & Yoshikawa, H. (2013). Impacts of a prekindergarten program on children's mathematics, language, literacy, executive function, and emotional skills. *Child Development*, 84, 2112–2130. doi:10.1111/cdev.12099

Welsh, J. A., Nix, R. L., Blair, C., Bierman, K. L., & Nelson, K. E. (2010). The development of cognitive skills and gains in academic school readiness for children from low-income families. *Journal of Educational Psychology*, 102(1), 43–53.

White, K., & Casto, G. (1985). An integrative review of early intervention efficacy 14 studies with at-risk children: Implications for the handicapped. *Analysis and Intervention in Developmental Disabilities*, 5, 7–31.

White House, Office of the Press Secretary (2014). *President Barack Obama's State of the Union Address*. Retrieved from <https://obamawhitehouse.archives.gov/the-press-office/2014/01/28/president-barack-obamas-state-union-address>

Winter, S. M., & Kelley, M. F. (2008). Forty years of school readiness research: What have we

- learned? *Childhood Education*, 84(5), 260–266.
- Wolfe, P., & Nevills, P. (2004). *Building the reading brain, prekindergarten-3*. Thousand Oaks, CA: Corwin Press.
- Wong, V. C., Cook, T. D., Barnett, W. S., & Jung, K. (2008). An effectiveness-based evaluation of five state prekindergarten programs. *Journal of Policy Analysis and Management*, 27(1), 122–154.
- Zero to Three. (2018). *What we know about early literacy and language*. Retrieved from <https://www.zerotothree.org/resources/300-what-we-know-about-early-literacy-and-language-development>
- Zigler, E., Gilliam, W., & Jones, S. (2006). *A vision for universal prekindergarten*. New York, NY: Cambridge University Press.

Appendix A: Approval Letter



CONCORDIA
UNIVERSITY

-PORTLAND, OREGON-

DATE:
TO: October 3, 2017
FROM: September 20, 2018
PROJECT TITLE: The Benefits of Prekindergarten
REFERENCE #: 1110442
SUBMISSION TYPE: New Project
ACTION: Approval
APPROVAL DATE: October 3, 2017
EXPIRATION DATE: September 20, 2018
REVIEW TYPE: October 3, 2017

Jennifer Pierce Concordia University - Portland IRB (CU IRB)
[1110442-1 and -2] The Benefits of Prekindergarten EDD-20170806-Mendes-Pierce New
Project
APPROVED October 3, 2017 September 20, 2018 Facilitated Review

Thank you for your submission of New Project materials for this project. The Concordia University - Portland IRB (CU IRB) has APPROVED your submission. All research must be conducted in accordance with this approved submission.

This submission has received Facilitated Review based on the applicable federal regulations and applicable exempt categories (see below). The CU IRB conducted an IRB review – and approved your project. At the same time, the CU IRB noted that the project could fit the criterion of Exempt Research because the study is primarily for Educational Research* for classroom management (see below). Whether or not to grant this exemption is at the discretion of the local IRB(s). Therefore, if you are conducting research within another institution, you will have to present this research to that institution and have permission before you can begin your research. The goal is primarily instruction and program development. Publication should description the study as being initiated as educational research within a school environment. The results cannot identify the name of the school in any publication or report without expressed permission by the school.

You are responsible for contacting and following the procedures and policies of Concordia University and any other institution where you conduct research.

You requested a waiver of written documented informed consent. You qualify for this because this

is educational research fitting Federal Exemption, the information on test scores you will use for this research will be provided to you in a de-identified manner, and because this is a minimal risk study.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. The form needed to request a revision is called a Modification Request Form, which is available at www.cu-portland.edu/IRB/Forms.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please email the CU IRB Director directly, at obranch@cu-portland.edu, if you have an unanticipated problem or other such urgent question or report.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of September 20, 2018.

You must submit a close-out report at the expiration of your project or upon completion of your project. The Close-out Report Form is available at www.cu-portland.edu/IRB/Forms. Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Dr. OraLee Branch at 503-493-6390 or irb@cu-portland.edu. Please include your project title and reference number in all correspondence with this committee.

* Federal Regulations 45 CFR 46 Exemption Category: Educational and/or Classroom Research. Research conducted in established or commonly accepted educational settings, involving normal educational practices such as: (i) research on regular and special education instructional strategies; or (ii) research on the effectiveness of, or the comparison among, instructional techniques, curricula, or classroom management methods. As noted above, research must be conducted in “established or commonly accepted educational settings” and involve “normal educational practices” to be exempt under this category. The study must not contrast one group with and the other without the instructional strategy, and must not divide into subpopulations based upon race, gender, or other protected class. The study must not have a risk greater than everyday risk for the population under study; that is, the study must be a “minimal risk” study. Whether or not to extend this exemption is at the discretion of the local IRB(s). (Summary of this exemption was written by the CU IRB)

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Concordia University–Portland IRB (CU IRB)'s records.

Appendix B: Consent Form

Research Study Title: Benefits of Pre-kindergarten
Principal Investigator: Jennifer Pierce
Research Institution: Concordia University
Faculty Advisor: Dr. John Mendes

Purpose and what you will be doing:

The purpose of this survey is to examine the benefits of prekindergarten instruction on kindergarten early literacy skills. We expect to access the archived DIBELS scores of 185 students. No one will be paid to be in the study. The curriculum coach will provide the researcher with the DIBELS scores. We will begin to access the archived scores once the study is approved and end once data is collected and processed. To be in the study you will help access the archived DIBELS scores of kindergarten students and provide them to the researcher.

Risks:

There are no risks to participating in this study other than providing student assessment data. However, we will protect assessment information. Any personal information provided will be coded so it cannot be linked to students. Any name or identifying assessment information you provide will be kept in a secure filing cabinet. When we or any of our investigators look at the data, none of the data will have students' names on it or identifying information. We will only use a secret code to analyze the data. We will not identify you or any students on any publication or report. Your information and student information will be kept private at all times and then all study documents will be destroyed 3 years after we conclude this study.

Benefits:

Information you provide will help identify the benefits of prekindergarten instruction on kindergarten early literacy skills. You could benefit from this research by gaining insights into the specific early literacy skills that could impact educational practices and student achievement.

Confidentiality:

This information will not be distributed to any other agency and will be kept private and confidential. The only exception to this is if you tell us abuse or neglect that makes us seriously concerned for your immediate health and safety.

Right to Withdraw:

Your participation is greatly appreciated, but we acknowledge that the student assessment data that we are using is personal in nature. You are free at any point to choose not to engage with or stop the study. You may skip any providing data for students if you so choose. This study is not required and there is no penalty for not participating. If at any time you experience a negative emotion from providing data, we will stop collecting data.

Contact Information:

You will receive a copy of this consent form. If you have questions you can talk to or write the principal investigator, Jennifer Pierce. If you want to talk with a participant advocate other than the investigator, you can write or call the director of our institutional review board, Dr. John Mendes ([contact information redacted]).

Your Statement of Consent:

I have read the above information. I asked questions if I had them, and my questions were answered. I volunteer my consent for this study.

Participant Name Date

Participant Signature Date

Investigator Name Date

Investigator Signature Date

Investigator: Jennifer Pierce
c/o: Professor Dr. John Mendes
Concordia University–Portland
2811 NE Holman Street
Portland, Oregon 97221



Appendix C: Consent Waiver Form



CONCORDIA
UNIVERSITY

-PORTLAND, OREGON-

DATE: August 6, 2017
TO: FROM: September 20, 2018

PROJECT TITLE: The Benefits of Prekindergarten

REFERENCE #: 1110442-3

SUBMISSION TYPE: New Project
ACTION: Approval
DECISION DATE: October 3, 2017

Jennifer Pierce Concordia University - Portland IRB (CU IRB)

[1110442-1] The Benefits of Prekindergarten EDD-20170806-Mendes-Pierce New Project
DETERMINATION to waive the requirement of a consent form October 3, 2017

Thank you for your submission of New Project materials for this project. The Concordia University - Portland IRB (CU IRB) has determined this project is EXEMPT FROM requiring a documented signed consent form because this study fits under the U.S. Federal Exemption Category of normal educational practices and using standardized test scores in a manner in which the scores have been deidentified prior to them being provided to the research team. We will retain a copy of this correspondence within our records.

If you have any questions, please contact Dr. OraLee Branch at 503-493-6390 or irb@cu-portland.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Concordia University - Portland IRB (CU IRB)'s records. October 3, 2017

Appendix D: Statement of Original Work

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy.

This policy states the following:

Statement of academic integrity.

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

Explanations:

What does “fraudulent” mean?

“Fraudulent” work is any material submitted for evaluation that is falsely or improperly presented as one’s own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate’s final work without full and complete documentation.

What is “unauthorized” assistance?

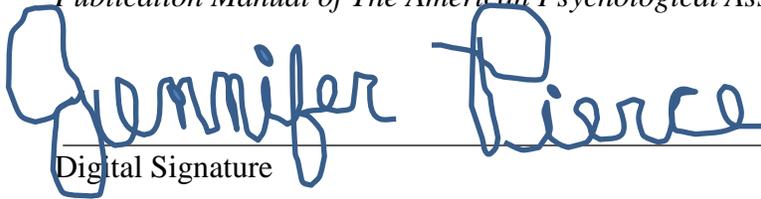
“Unauthorized assistance” refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another’s work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

Statement of Original Work

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University-Portland Academic Integrity Policy during the development and writing of this dissertation.
2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association*



Digital Signature

Jennifer Pierce

Name (Typed)

4/11/2018

Date