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The Effects of Public Prekindergarten Participation on Kindergarteners' Early Literacy and Reading Skills

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Abstract

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by

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MA, Troy State University, 1994

BS, Auburn University, 1989

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

High quality prekindergarten programs that provide students with core academic skills have been found to increase subsequent student reading achievement. However, students across the United States continue to show deficiencies in reading skills, a problem which may stem from a lack of participation in early childhood education. The study district offered a prekindergarten program, but the impact on later reading achievement was unknown. The purpose of this quantitative study was to examine the effects of a prekindergarten program on the subsequent reading skills of kindergarten students. The constructivist learning theories of Whitehurst, Lonigan, Piaget, and Vygotsky provided foundation. Research questions focused on the difference in early literacy skills between kindergarteners who attended the district's public prekindergarten program (n = 64) with students who did not participate (n = 64). Scores on the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) were compared using repeated measure analysis of variance at the beginning, middle, and end of the school year for those students who participated in a Pre-K program and those students who did not. Statistically significant findings revealed that participation in the public prekindergarten program yielded greater early literacy skills for kindergarteners when compared to those children who were not enrolled. The positive social change implications included providing local data on the reading achievement outcomes of students attending prekindergarten. The study findings will be useful to school administrators, teachers, and parents when making decisions on prekindergarten program availability and attendance.

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Dedication

I would like to dedicate this dissertation to my adoring and supportive family. I am grateful for their support, prayers and words of encouragement. First, I want to give a special “thank you” to Kenneth O. Coley, my amazing husband. Ken, I appreciate every act of kindness, support, and love shown to me during this tedious process. I know you have always been in my corner and applauded me to complete this important milestone. No matter how discouraged I may have gotten, you always found the words to motivate me. I also want to thank my parents, Adell and Lula Mae Johnson for being the greatest parents in the world. Dad, you are my hero and I hope that you are proud of this accomplishment. Mom and Dad, I appreciate your Godly example as you have instilled in your children to always put God first in all that we do. Lastly, I want to express my gratitude to my loving son, Markeius Coley, a gift from God; my six unbelievable siblings, Melvin, my bighearted brother that I cherish and can always count on; Pastor Mary Norwood, my spiritual role model and second mom that I love deeply; Katherine, my precious friend and prayer warrior; Laverne, my beautiful twin and inseparable partner that I love unconditional; Adell Jr., my dearest ,compassionate, and kindhearted Jr. Boy who is my rock; all my god children, nieces, nephews, and cousins that I love so dearly. I pray that my testimony has inspired you to be all that you can in God.

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One of my favorite scriptures is Proverbs 3:6 that says, “In all thy ways acknowledge Him and He shall direct thy paths”. Therefore, I want to acknowledge God whom I give all praise and glory as I know that He has definite directed my path in obtaining a doctoral degree. I also want to thank God for blessing me with an excellent Chairperson, Dr. James Crosby and an awesome committee member, Dr. Amy Sedivy-Benton. I appreciate your support, guidance, and caring spirit. Dr. Robert McClure, you were also phenomenal and time sensitive. May God bless each of you as you have blessed my life.

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Section 1: Introduction to the Study

Educational policymakers have been affected by the high stakes accountability measures that were set forth in the federal legislation of the No Child Left Behind Act (NCLB, 2002) enacted by Congress in 2002. Under NCLB, the aim is to provide equitable educational opportunities for all students and to close educational achievement gaps between specific student groups (Spohn, 2008). According to the United States Department of Education (2011), reauthorization of NCLB provided educators with more flexibility to close achievement gaps, promote rigorous accountability, and ensure that all students are on track to graduate college- and career-ready. At the core of achieving this goal is the need to study and enhance accordingly the roles of both school leaders and teachers in improving the quality of education (Spohn, 2008). Ylimaki (2007) reported that educators across the U.S. are making efforts to move students to higher levels of achievement. However, statistics reveal that many students still fail to accomplish specific academic goals despite the continuous effort to improve academic policies and programs (Whitehurst, 1976; Whitehurst & Merkur, 1977).

Justice, Kaderavek, Fan, Sofka, and Hunt (2009) reported that one third of fourth graders among U.S. schoolchildren fail to exhibit basic levels of reading comprehension skills. In addition, according to the 2011 National Assessment of Education Progress (NAEP), students across the nation are performing lower in reading than any other subject area (National Center for Education Statistics [NCES], 2011). Spohn (2008) indicated that these challenges are causing schools and districts to seek methods for overcoming these learning barriers through new practices, resources, interventions, and

educational programs that will improve instruction. NCLB has raised the standards concerning teacher accountability and student performance. In an effort to accomplish the mandates of this act, it may be necessary to explore early learning initiatives such as prekindergarten programs that prepare children with readiness skills to enter kindergarten. Prekindergarten programs allow students to develop foundational skills early on. Having basic foundational skills aligns with the general perspective that preparedness among children before they enter kindergarten is important because students' future performance will be anchored to their prekindergarten training or education.

The aim of this study was to determine the effect of prekindergarten educational programs on the development of children's early literacy skills, which is in conjunction with Section 1221 mandates in NCLB. Gamse et al. (2008) reported that the purpose of this section in the NCLB act is to enhance the early language, literacy, and pre-reading development of preschool age children, particularly those from low-income families. Enhancing early language and literacy skills can be done with better strategies and professional development based on scientific reading and research in order for all students to be fluent and proficient readers.

Examining the effects of prekindergarten educational programs allows for the consideration of whether the mandate on raising the standards of education can be accomplished. Cunningham (2010) reported that a positive trajectory in student reading is predicted by his or her acquisition of early core literacy skills provided in high quality prekindergarten programs. The core skills that children engage in prekindergarten

education, according to Cunningham (2010), are phonological awareness (ability to identify and manipulate sounds), alphabet knowledge (awareness of individual letters and letter names), concept of word (ability to segment spoken sentences/phrases into words and to match spoken words to text), and grapheme–phoneme correspondence (ability to identify correspondence between letters and sounds). Cunningham (2010) indicated that children's abilities across these four core skills serve as important predictors of subsequent reading achievement.

As stated by Justice et al. (2009) and NCES (2011), gaps exist in students' reading readiness by the time they enter kindergarten, and these gaps are more difficult to close as students progress through grade levels (Canon & Karoly, 2007). The gaps include variations in students' academic reading readiness skills among children entering kindergarten. Before entering kindergarten, students well prepared for reading should be able to read their name, recite the alphabet, recognize some or all of the letters in the alphabet, correspond some or all letters with the correct sound, rhyme, recognize that the progression of text is left to right and top to bottom, and echo simple text that is read to them. Ylimaki (2007) stated that basic skills such as concepts of print, memorizing the alphabet, and recognizing letter sounds are just a few of the reading readiness skills that students are expected to acquire before entering kindergarten. The National Institute of Child Health and Human Development (NICHHD, 2000) indicated that literacy skills taught in prekindergarten programs such as concepts of print, phonemic awareness (PA), and letter naming contribute to helping children learn to read because the structure of the English writing system is alphabetic. Vukelich and Christie (2009) also indicated that

research has shown that PA in kindergarten is a strong predictor of future reading achievement. The NICHHD (2000) stated that PA benefits the processes involved in reading real words, pseudowords, and text reading. The NICHHD also stated that teaching children to manipulate the sounds in language helps them learn to read. In addition, NICHHD noted that PA instruction is effective in teaching children to attend to and manipulate speech sounds in words.

PA can be developed through active engagement in sound manipulation, songs, stories, play, or the direct instruction experiences used in prekindergarten programs (Cooke, Krestlow, & Helf, 2010). According to the NICHHD (2000), PA is one of the best predictors of reading acquisition and is thought to contribute to reading success. Readers must be able to apply their alphabetic knowledge to decode unfamiliar words and to remember how to read the words as they learn in kindergarten settings (NICHHD, 2000). In kindergarten systematic phonics programs, extensive instruction is provided to develop children's knowledge of the alphabetic system and of how to use the knowledge to read words in and out of text. According to Burchinal et al. (2008), the greatest impact of phonics instruction is expected to occur in helping students become successful readers.

Access to public prekindergarten instruction is not uniformly available to children in the U.S. (Barnett & Frede, 2010). According to Gayl, Young, and Patterson (2009), public prekindergarten programs have been promoted as a means to improve students' academic and social development. Zigler, Gilliam, and Barnett (2011) stated that many public prekindergarten programs have been funded to target low-income families. However, Zigler et al. (2011) concluded that the U.S. should offer every child a high

quality preschool education to increase their readiness to succeed in school. Most families that participate in preschool programs have either low or high levels of income. However, those with income levels just below the national average have lower participation rates (Zigler et al., 2011).

In 2006, the school district in this study began its first public prekindergarten program serving one classroom of 18 students. Since then, the district expanded its prekindergarten program with three additional classrooms. During the 2010–2011 academic school year, students were served in four public prekindergarten classrooms funded by grants from the state's Office of School Readiness. The classrooms served 30% of the total kindergarten population, or 72 out of 240 students. The public prekindergarten participants were selected by a lottery system using a sample selection method of an equal number of male and female participants in each classroom. According to the school district's continuous improvement plan from 2010, most families in the subject district had no other means of enlisting their children in a prekindergarten program. The district's stakeholders believed that this public prekindergarten program was necessary to increase student achievement and that funding should be increased to provide all students with a preschool experience.

In March of 2011, the district board, as stated in their meeting minutes, elected to close all four of the district's public prekindergarten classrooms effective in August of 2011 due to budget cuts. Determining the effects of public prekindergarten participation on students' early literacy and reading skills allows educators, politicians, and legislators

the leverage needed to advocate for additional funding to support prekindergarten initiatives for all students.

According to Zigler, Gilliam, and Barnett (2011), prekindergarten programs such as Head Start, Child Development Centers, and day care centers have proven to be effective for students in developing the academic and social skills needed before entering kindergarten. The researchers examined the claim by determining the effect of the subject school district's public prekindergarten program on students' early literacy and reading skills, as measured by the Dynamic Indicator Basic Early Literacy Skills (DIBELS) assessment.

Statement of the Problem

The problem in the subject school district was whether participation in a prekindergarten program had an effect on kindergarten literacy skills. Addressing the problem would alleviate the district's concern over the substandard reading achievement of students as reported in the state assessment report. Since the school district's local board of education moved to close all four of its public prekindergarten classes effective August 2011 due to budget cuts, as noted in meeting minutes from March 2011, evidence of the positive effects of the program on literacy skills was needed to convince the board to revive the program.

The early literacy and academic reading skills of students in the school district chosen for this study were measured using the DIBELS assessment. According to Kaminski and Good (2009), DIBELS is a set of procedures and measures for assessing the acquisition of early literacy skills, including phonological awareness, alphabetic

principle, fluency with connected text, vocabulary, and comprehension from kindergarten through sixth grade. The assessment is designed to be a short and reliable fluency measure to regularly monitor the development of early literacy and reading skills. DIBELS was developed to measure recognized and empirically validated skills related to reading outcomes (Kaminski & Good, 2009). Each measuring tool associated with DIBELS has been thoroughly researched and demonstrated to be reliable and valid indicators of early literacy development. The tools are also predictive of later reading proficiency to aid in the early identification of students not progressing as expected (Kaminski & Good, 2009). DIBELS has been proven reliable and valid by many educators and researchers and has been used in and outside of the classroom as a diagnostic tool to monitor students' reading performance to prevent reading failure (Elliott, Lee, & Tollefson, 2001).

According to the National Institute of Early Education Research, children who attended prekindergarten programs performed higher on reading and math assessments at the start of school and through sixth grade (Barnett et al., 2008). In addition, Hustedt, Barnett, Jung, and Throw (2007) conducted a 5-year longitudinal study and determined that early intervention was critical in developing students' basic reading skill achievement. The researchers specifically indicated that prekindergarten programs have a positive effect on student learning. This study contributes to the body of research and specifically supports reinvestment funding to retain early intervention and public prekindergarten programs in the school district that was the focus for this study. The study may also potentially support similar investments in public schools across the U.S.

According to its continuous improvement plan from 2012, the school district in this study currently uses teacher professional development, varied instructional strategies, parental involvement in homework, a Scott Foresman Reading Street research-based reading program, and other resources to address the problem of substandard reading achievement. However, while there are some gains in student reading fluency skills in the district, the data do not suggest the necessary improvements in student reading comprehension skills according to measurable objectives of its state's assessment results administered to students in the third through sixth grade. Good et al. (2001) stated that reading achievement is a national, state, and local problem and should be addressed as early as preschool. Molfese et al. (2006) suggested that high quality prekindergarten programs could provide students with a foundation of reading readiness skills before entering kindergarten. The researchers also reported that there is growing evidence that the development of reading readiness in preschool ages affects formal reading achievement in elementary school.

Nature of the Study

The current researcher used a comparative research design to compare the early literacy and reading skills of students who attended the public prekindergarten program with those who did not attend before entering kindergarten. This research design allowed the researcher to look for a relationship between an independent variable and a dependent variable after the event had already occurred (Brewer & Kuhn, 2010). The researcher investigated similarities and variances (Mills, van de Bundt, & Bruijn, 2006) and

determined whether the independent variable influenced the dependent variable, or outcome, by comparing two or more groups.

In this study, the independent variable was participation in the public prekindergarten program in the subject school district. The independent variable also determined the grouping of the individuals. One group comprised students who participated in the school district's prekindergarten program, while the other comprised students who did not. The dependent variable was the students' early literacy and reading skills as measured by DIBELS at three different points in the school year: fall, winter, and spring. These DIBELS scores were extant data sets from the school district office and were used with permission. A repeated measure analysis of variance (ANOVA) allowed the researcher to determine any differences in the DIBELS scores of the two groups at different points in time. Repeated measures of ANOVA are useful if there is one categorical independent variable and a normally distributed interval dependent variable that was repeated at least twice for each subject (Tabachnick & Fidell, 2007). The objective of the test was to determine whether there was a difference in DIBELS scores among students who participated in the school district's prekindergarten program and the students who did not at three different points in the school year.

Research Questions and Hypotheses

Data were collected to answer the following research question: "Is there a difference in early literacy and reading skills between kindergarteners who attended the public prekindergarten program in the subject school district and those who did not participate in the public prekindergarten program?" The researcher investigated the

question through the following sub questions and related hypotheses. The dependent variable, early literacy and reading skill development, had four measures: Letter Name Fluency, Nonsense Word Fluency, Phone Segmentation Fluency, and Initial Sound Fluency from the DIBELS test.

RQ 1: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the beginning of the kindergarten school year?

RQ 2: Is there a difference in the initial sound fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the beginning of the kindergarten school year?

RQ 3: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 4: Is there a difference in the nonsense word fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 5: Is there a difference in the phoneme segmentation fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten

program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 6: Is there a difference in the initial sound fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 7: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 8: Is there a difference in the phoneme segmentation fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 9: Is there a difference in the nonsense word fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

The research questions led to the following hypotheses, respectively:

$H1_0$: There is no difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H1_1$: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H2_0$: There is no difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H2_1$: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H3_0$: There is no difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H3_1$: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H4_0$: There is no difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H4_1$: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H5_0$: There is no difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H5_1$: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H6_0$: There is no difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H6_1$: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H7_0$: There is no difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H7_1$: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H8_0$: There is no difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H8_1$: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H9_0$: There is no difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H9_1$: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

The researcher addressed the questions and hypotheses and tested them to determine whether there was a difference in test scores throughout the year. This was possible through the repeated ANOVA measures, as the test was used to compare a variable measured in three or more points in times where the grouping of the participants were the same in each category. The test allowed the researcher to determine the change of the DIBELS scores of participants measured multiple times. The researcher determined whether there was a difference in DIBELS scores when participants attended the public prekindergarten program as compared to those who did not.

Purpose of Study

The study school district has been faced with ongoing budget cuts. Due to these cuts, the district dropped the public prekindergarten program in August of the 2011–2012 academic school year. According to the 2011–2012 budget, the district saved $200,000 by eliminating the prekindergarten program. The United States Department of Education

(2011) reported that the NCLB mandate requiring all students to be proficient readers by 2014 is no longer in effect. Instead, all states will have flexibility to establish attainable goals in reading to support improvement efforts for all schools and students. As such, schools must still take steps to ensure that this goal is accomplished.

The current researcher compared the early literacy, reading skills, and development of student participants who attended the district's public prekindergarten program with students in kindergarten who did not participate in the program, as measured by the DIBELS assessment. More specifically, by conducting an analysis of variance, the researcher aimed to determine whether attendance or participation in a prekindergarten program correlated to changes in a child's DIBELS scores. If the statistical analysis revealed that participation in the program positively correlated to increases in the children's DIBELS scores, then the implication would be that the program effectively aided in the children's early literacy development. This identification can serve to encourage the school district to reopen or revive the pre-kindergarten program in public schools. Therefore, the purpose of this study was to statistically determine the effect of participation in the prekindergarten program on children's DIBELS score in order to urge the school district to further the program in order to attain the NCLB reading proficiency goal by 2015.

Theoretical Framework

The purpose of this study was to compare the early literacy and reading skills of student participants who attended the district's public prekindergarten program and students who did not participate in the district's public prekindergarten program. This

study was founded on the constructivist theory of learning. Constructivist theory proposes that learning is based on previous knowledge, beliefs, and experiences (Lambert et al., 2002). In this theory, learning for children at the preschool level occurs through social interaction and engagement with the environment (Powell & Kalina, 2009). Based on the constructivist theory, students learn and construct learning together from their individual and cooperative experiences (Creswell, 2009). The research study was established on the constructivist learning theories of Whitehurst and Lonigan (2002), Piaget (1985), and Vygotsky (1978). The present study incorporated the knowledge gained by the preschool aged child, as described by historical developmental theories. The data were derived from the examinations of existing prekindergarten education programs.

Literacy starts to develop at an early age, even before formal schooling begins, primarily through exposure to print and conversation. Literacy can also be the result of a child's interaction with objects, people, and the environment. This presumption of early or emergent literacy includes the skills, knowledge, and attitudes necessary for children to learn how to read and write. Emergent literacy skills can be broadly divided into two domains: the outside-in domain with sources of information outside of print that support and enhance children's understanding of print, and the inside-out domain with information sources within the printed word that strengthen a child's ability to translate print into sounds and vice versa (Whitehurst & Lonigan,1998). Studies on emergent literacy skills have upheld the relationship between such skills and success in later reading (e.g., Whitehurst & Lonigan, 1998), and have indicated that this represents a developmental continuum from pre-reading to reading.

Storch and Whitehurst (2001) used a structural equation approach to create a model that depicted the connections or relationships between emergent literacy skills, reading achievement, and the home literacy environment. The model represented four main findings from relevant research on the topic. First, emergent literacy skills that have been studied extensively in research were delineated between inside-out and outside-in domain to create a clear distinction between the two. Second, the model indicated that the direction of influence of these emergent literacy skills was from the outside-in domain towards the inside-out domain, primarily because outside-in skills develop much earlier than inside-out skills. Third, the influence of family characteristics and the home environment, operationalized as shared book reading and verbal interaction, is modeled to flow directly to outside-in skills. Lastly, the model represented home influences as a comprehensive source of information instead of focusing on a single or combination of two emergent literacy activities (Storch & Whitehurst, 2001).

Storch and Whitehurst (2001) tested this model with Head Start children and found significant results. All three components within the home and family characteristics domain (i.e., literacy environment, parental expectations, and parental characteristics) have a strong and significant influence on a child's outside-in skills (Storch & Whitehurst, 2001). The outside-in skills also have a strong and significant influence on inside-out skills during the preschool years which gradually decreases with age (Storch & Whitehurst, 2001). In summary, testing of the model revealed that there are strong early connections between home environment, language, and emergent

literacy, and that these are important to later reading achievement. The researcher addresses this model further under the section titled Literature Related to the Problem.

With this amalgamation of theoretical frameworks (Whitehurst & Lonigan, Piaget, Vygotsky, and SEM) as a basis for research and practice, public prekindergarten intervention may be one solution to improving education in the subject school district and other schools across the U.S. The intervention approach may enable students to reach higher academic reading standards by exposing them to early literacy and reading skills through a public prekindergarten learning experience. The idea that learning occurs within an individual based on his or her own background of experiences, interaction with the environment, and current understanding was the foundation for this research study.

Definition of Terms

DIBELS: An acronym for a published reading assessment used to measure students' reading readiness. This assessment is the Alabama Dynamics Indicator of Basic Early Literacy Skills (Continuous Improvement Plan, 2010).

Early literacy: Early literacy refers to both precursor and the conventional literacy skills of preschool and kindergarten children (Vukelich & Christie, 2009).

Emergent literacy: Emergent literacy refers to the skills, knowledge, and attitudes that are presumed to be developmental precursors to conventional forms of reading and writing and the environments that support these developments (Whitehurst & Lonigan, 2002).

Intervention programs: Intervention programs are "programs that address academic barriers to increase student learning" (Muenning, Schweinhart, & Montie, 2009, p. 6).

Prekindergarten program: A prekindergarten program is "a preschool program designed to provide learning experiences for 4-year olds" (Magnuson, Meyers, Ruhm, & Waldfogel, 2004, p. 118).

Reading readiness: Reading readiness is presumed to be the prerequisite for formal reading instruction in school (Jackson et al., 2007).

School readiness: School readiness refers to a combination of different skills that lead to school success. These skills include positive early literacy experiences, physical and mental health, social skills, playing well with others, and the basic cognitive skills of curiosity and enthusiasm for learning (Daimant-Cohen, 2007).

Scope and Delimitations of the Study

The public prekindergarten program in the subject school district was a state-funded initiative for high poverty school systems. The district initiated the prekindergarten program with one classroom in 2002. From this base, it expanded and served prekindergarteners in four classrooms by the 2010–2011 school year, which enabled 72 of 250 kindergarteners to participate in the public prekindergarten program. Each prekindergarten class consisted of a maximum of 18 students. Participants in the prekindergarten program were selected on a lottery system to ensure an equal number of male and female students.

One of the delimitations of this study was the use of only one form of assessment to measure students' early literacy and reading skills. Archived DIBELS test scores were used to compare students' early literacy and reading skills. Two different groups of students were purposefully chosen to participate in this study that included kindergarteners who attended the subject district's public prekindergarten program and kindergarteners who did not participate in the subject district's public prekindergarten program. While the prekindergarten experience can have a positive effect on student achievement, other factors can play a role, such as parent support, family intellectual inheritance, and quality of instruction (Muennig, Schweinhart, Montie, & Neidell, 2009).

The researcher did not consider background information such as socioeconomic status, demographic information, or the home environments of participating students. The study did not purport to cover all prekindergarten programs. The research study was limited to kindergarten participants from the subject school district and its individual public prekindergarten program.

Limitations

The archived data were limited to student early literacy and reading skills in the subject school district. The small sample size was a limitation of this study, as a large sample is important in trying to determine the program's quality and intensity (Creswell, 2009). The public prekindergarten and no prekindergarten groups were intact prior to this study; therefore, the lack of randomization was a limitation of this study. In addition, the students were in different kindergarten classes, causing a lack of control over the kindergarten instruction, as there was some variation. This study was designed to be

conducted specifically in the subject school district. In addition, the test data were limited to 2011–2012 archived DIBELS assessment scores.

Another limitation to this study was that it was not known whether students were receiving tutoring or other academic assistance beyond the regular school day, which may have impacted the assessment of student achievement. Despite these limitations, this study could add to the body of knowledge regarding the possible effects of public prekindergarten programs and early literacy and reading skills for children. More discussion and elaboration of the assumptions, limits, and delimitations are provided in Section 3.

Assumptions

Four assumptions were made in the conduct of this study. First, it was assumed that the administration, scoring, and reporting of all student achievement scores as measured by DIBELS were accurate, valid, and reliable. Second, it was assumed that each participating elementary kindergarten class in the subject school district followed instruction protocols according to state standards. Third, it was also assumed that students in each kindergarten classroom in the subject school district received comparable instruction. Lastly, it was further assumed that the student test data collected represented each student's best effort on the employed measures of reading achievement.

Significance of Study

The subject school district, like many other districts across the U.S., is seeking ways to increase student achievement. According to the district, students are having difficulty mastering state-mandated reading goals. This research sought to understand

whether student participants who attended the public prekindergarten program in the subject school district demonstrated higher early literacy and reading skills as measured by DIBELS. Therefore, the significance of this study was twofold: first, it provided scientific data and analysis on the effect of attendance in a prekindergarten program on kindergarten students' early literacy and reading skills. Second, it potentially inspired social change in the school district board, specifically in the consideration of reopening or reviving the public prekindergarten programs to aid young children in developing early literacy and reading skills.

Social Change

Reading deficiencies are known to affect students, parents, teachers, and the community, resulting in an increase in students' academic failure, high school dropouts, crime rates, and unemployment (Hustedt, Barnett, Jung, & Throw, 2007). There are many possible factors contributing to this problem, including the lack of parental involvement, student motivation, quality of teacher professional development, poor instruction, and limited public prekindergarten programs for student participation (Munoz, 2001). Early intervention programs, research-based instructional practices, and resources are needed to improve students' reading skills (Justice, Kaderavek, Sofka, & Hunt, 2009). For this generation of children to succeed in today's rapidly changing world, they have to be proficient in core academic subjects, and reading achievement can affect this goal dramatically. This study contributed to the body of knowledge needed to address this local problem by determining whether students who attended public prekindergarten programs demonstrated higher early literacy and reading skills compared to those

students that did not participate in the subject school district's public prekindergarten program.

A study that could provide evidence to support the positive effects of public prekindergarten programs on reading might aid educators, parents, policymakers, and advocates of prekindergarten initiatives in their argument to reopen programs in the subject school district. Such a study could also potentially expand programs across the U.S. by affecting the funding offered to public prekindergarten programs. According to Zigler, Gilliam, and Barnett (2011), the effects of prekindergarten studies will be pertinent to local policymakers, educators, administrators, and parents as it will assist them in making decisions that will increase early intervention programs as a means to improve students' early literacy and reading skills. Improving students' reading skills will improve the quality of educational programs in the subject school district, enabling its students to be more productive citizens in society.

School Readiness

The first years of life are a critical foundation for children's early learning and life-long development. School readiness is a measure of how prepared a child is to succeed in school and encompasses several aspects of growth, such as emotional, cognitive, and physical. Meyers, Ruhm, and Waldfogel (2007) stated that school leaders, educators, and parents need to know and understand how to ready children for school and what actions to take if children exhibit signs that they are not ready when they should be. However, teachers still encounter new students who appear to be unready to start formal education.

According to an executive summary prepared by Rhode Island Kids Count (2005), "early experiences actually influence brain development, establishing the neural connections that provide the foundation for language, reasoning, problem solving, social skills, behavior, and emotional health" (p. 1). Thompson (2008) stated that the most important growth of the brain occurs during the prenatal stage of the child. Shonkoff and Phillips (2000) also supported the early learning experiences of youth and reported that babies are born with an eagerness and desire to learn. It is imperative for children as early as birth to receive the proper development of the environment and experiences that support physical, social, emotional, language, literacy, and cognitive development to avoid early detriments and begin school with a readiness gap. Learning begins at birth, and addressing children's development needs early will increase their chances of success (Burchinal et al., 2008). This belief is also supported by Dessoff (2010) who stated that research on early learning indicates that early experience have lasting effects, early childhood is a critical period of neurological development, all children enter early childhood programs with active minds, and early childhood is a critical period in social development. Dessoff (2010) reported that proper, researched-based early learning programs enhance later achievement and social adjustments, reduce the likelihood of retention, increase graduation rates, and reduce placements in special needs classes. Christie (2008) stated that researched-based programs have used correlational studies and qualitative experiments. These programs also focus on decoding print and use visual as well auditory aspects of the reading process.

Barnett and Frede (2010) stated that preschools have been instrumental in preparing children for school, but the quality of preschool education in the U.S. is not consistent. Therefore, school readiness has become the cornerstone for education reform. School readiness is also known to serve as an intervention and a proactive measure for preventing early learning disadvantages and to improve educational outcomes for children in the U.S. (Coley, 2002; Duncan et al., 2007; Edwards, 1999; Fiester, 2010). Dessoff (2010) concluded that the "school readiness component is one of the most important aspects of pre-kindergarten programs" (p. 73). The U.S. Department of Education's (2010) reauthorization of the Elementary and Secondary Education Act supports early learning by indicating the need for intervention before children begin formal schooling. The proposal acknowledged the necessity for an early learning agenda beginning at birth and continuing through third grade, with a smooth transition between preschool and elementary school (U.S. Department of Education, 2010).

According to Temple and Reynolds (2007), a child's school readiness is the culmination of the experiences and care that he or she has received from birth to school entry. Such experiences include physical well-being and motor development, social and emotional development approaches to learning, language development, cognition, and general knowledge. Magnuson, Meyers, Ruhm, and Waldfogel (2007) indicated that schools play a critical role in school readiness. These authors stated that prekindergarten schools are established to support the learning and development of every child in their community, and to ensure that there is a smooth transition between home and school.

Many states are setting early education milestones. For example, Dessoff (2010) reported that New Jersey is building a system that provides prekindergarten programs to children as early as 3 years old that align with their public education K–3 curriculum. Dessoff (2010) also revealed that Massachusetts is providing a program whereby teachers visit two low-income housing projects to provide parents with help to build their children's literacy and other school readiness skills. Dessoff (2010) posited that North Carolina's "More at Four" public program for at-risk 4-year-olds is ranked among the top prekindergarten programs in the country, according to the National Institute for Early Education Research. This program has become a model among the 38 states that fund prekindergarten programs. Based on these reviews, states throughout the U.S. are setting early education milestones through preschool programs that support and contribute to school readiness. The current study is significant because it measured the readiness of the students' literacy and their ability to read and write. This study also filled the gap of a seeming lack of studies in the reading literacy of prekindergarten students.

It is important to emphasize the need for preschool quality in supporting children's readiness for school. Although preschool programs have been adopted by many states to ensure school readiness, many of the programs have not been evaluated to determine their effectiveness (Burchinal et al., 2008). According to Demma (2010), improving readiness for high-risk children is based on many components, such as the number of children in a classroom, adult child ratio, and the physical environment. Furthermore, quality is dependent upon the kinds of developmentally appropriate experiences children have in the classroom such as activities, interactions with other

children, and interactions with teachers. Barnett and Frede (2010) argued that teacher education and training is a critical variable in establishing a high-quality preschool education program.

Early childhood education is widely recognized as a critical period for development and later school success. Children enter formal schooling with different interests, knowledge, and background experiences and therefore may benefit from school readiness programs. Magnuson et al. (2004) pointed out that there are many barriers that hinder school readiness, creating an achievement gap on the first day of kindergarten that can be difficult and costly to close. Duncan et al. (2007) emphasized that getting an early start in addressing the needs of young learners and school readiness through preschool programs may help pave the way for improving academic and life success. The goal of readiness is to help preschoolers enter school with the skills and behaviors necessary to be successful in future learning. The information reviewed above supports the significance of this study in general, as it speaks to the need for early childhood education programs such as prekindergarten to ensure that students are ready for school. In addition to this information, and more specifically related to significance of this study, is the importance of reading readiness.

Reading Readiness

Reading readiness is an important element in the success of teaching students how to read. Bierman et al. (2008) contended that children can begin acquiring pre-reading skills as early as birth when they listen to others conversing around them. The researcher also stated that the skills are necessary for learning to read. However, children who enter

kindergarten without the prerequisite skills needed to learn how to read are at risk of not meeting the rigorous demands of formal reading instruction (Whitehurst & Lonigan, 1998). Therefore, the years prior to kindergarten are critical in teaching children essential literacy skills and preparing them to be proficient readers (National Institute for Literacy, 2007). Prekindergarten programs are the foundation for the development of reading readiness skills (Burchinal et al., 2008; Chatterji, 2006; Cooke et al., 2010; Fischel et al., 2007).

An effective foundation for learning to read includes a solid grasp of oral language (Vukelich & Christie, 2009), daily access to books and other print materials, play opportunities linked to literacy, and instruction that supports other reading skills (Barnett & Frede, 2010). A positive trajectory in children's reading is predicted by the acquisition of early core literacy skills provided in quality prekindergarten programs (Cunningham, 2010).

The number of children experiencing reading failure has continued to increase in recent years (National Institute of Child Health and Human Development, 2000). One-third of fourth graders in the country fail to exhibit basic levels of reading comprehension skills (Justice, Kaderavek, Fan, Sofka, & Hunt, 2009), and students across the nation are performing lower in reading than any other subject area (National Center for Education Statistics, 2011). Prekindergarten programs have become a common and sustainable intervention program to close the achievement gap in schools across the U.S. (Cannon & Karoly, 2007; Gayl et al., 2009; Reynolds, 2000). Research has shown that children who attended prekindergarten programs had significantly higher scores on reading

assessments at the beginning of kindergarten through third grade (Barnett et al., 2007; Magnuson et al., 2005; Smith, 2009). Prekindergarten exposure to phonological awareness has a positive impact on reading readiness (Moore, 2003), which is evident in that the vocabularies of students entering kindergarten range from 4,000 to 12,000.

Transition Statement

Reading readiness is an educational concern in the subject school district and across the U.S. (Good et al., 2001). Prekindergarten programs have been used as an early intervention strategy to prepare students for reading readiness in kindergarten, which is a predictor of reading success in primary and secondary schooling (Wat, 2007). In addition, prekindergarten programs present an opportunity within the educational system to break the cycle of achievement gaps and disparities among students. This study compared the early literacy and reading skills as measured by DIBELS of students who participated in a public prekindergarten program to students who did not participate in the subject district's public prekindergarten program.

This study used a comparative research design. Quantitative data were the subject school district's 2011–2012 archived DIBELS assessment scores. Kindergarteners who participated in the subject school district's public prekindergarten program DIBELS scores were compared to those who did not participate in the district's public prekindergarten program. The results of this study contributed to positive social change by providing research on prekindergarten programs and instructional reading practices and the potential comparison of student achievement. According to Magnuson et al. (2004), improving students' reading skills will reduce the rate of high school dropouts,

crime, and unemployment as well as increase student achievement and enable citizens to be more productive members of society.

Section 1 provided the foundation and purpose of the study. Section 2 provides a literature review of the problem, exploring more in depth findings of prekindergarten programs and their connection to student learning. Section 3 outlines the design method used in the study, and Section 4 provides an analysis of the data collected. Section 5 provides a narrative of the study findings, recommendations, and an outline of implications for social change.

Section 2: Literature Review

According to the 2011 National Assessment of Education Progress (NAEP), fourth grade students in public K–12 schools across the nation are performing lower in reading than any other subject area (National Center for Education Statistics, 2011). Educators are noticing a wide disparity in the academic reading readiness of students entering formal schooling, which leads to achievement gaps at the beginning of kindergarten (Burchinal et al., 2008; Chatterji, 2006; Ylimaki, 2007). Therefore, the view of the K–12 system of education is being transformed to one that includes with prekindergarten. This new emphasis on prekindergarten does not appear to be a school-based approach, but rather one that must be school connected. Wang (2008) stated that early intervention is one way that educators are closing the achievement gaps in education. The view of early learning is supported by other researchers who stated that the early learning of young children provides the foundation for progress and is an indicator of future academic success (Barnette & Frede, 2010; Carbonaro, 2006; Foster & Miller, 2007), and that children need to be exposed to learning environments that nurture language and literacy (Roskos, Tabors, & Lenhart, 2009).

Content, Rationale, and Strategies for Searching Literature for the Review

This literature review includes studies of preschool programs and their effect on students' early literacy and reading skills in formal schooling. These early childhood learning experiences include participation in a variety of settings such as the Head Start Program, public prekindergarten, child development centers, and home-based programs. Literature for this review was obtained through various books, articles, journals, and

other scholarly works. The works were found directly or searched for online using journal and publisher listings as well as research databases such as EBSCOhost, ERIC, and JSTOR. Websites were used to acquire information and copies of studies from the National Institute for Literacy and the National Center for Education.

The researcher examined the existing studies based on early literacy skills and reading achievement, parental involvement and the importance of intervention, and assessing early literacy skills. The review also focused on literature related to the research questions and hypotheses, and childhood education initiatives such as NCLB and Early Reading First. Finally, the review provides research related to the impact of prekindergarten programs on student achievement and the theoretical framework. Although there are many research studies on the effects of participation in prekindergarten programs and students' reading skills, this research study specifically examined the public prekindergarten program in the subject school district.

Literature Related to the Problem

The federal government provides for the educational needs of young children through several early childhood policy initiatives administered by the Department of Health and Human Services and the Department of Education. Head Start, Early Head Start, Early Learning Challenge Fund, Promise Neighborhoods, NCLB, and the Early Reading First Grants are examples of initiatives that support early childhood education. During the 20th century, the federal government was involved in at least three early childhood programs at the national level: the Works Progress Administration (WPA) Nursery Schools, the Lanham Act child care centers, and Head Start Programs. The

government established child care centers in the 1940s to support working mothers during World War II (Edwards, 1999). These centers remained in operation until after the war. In the 1960s, prekindergarten programs for disadvantaged children were provided through the Economic Opportunity Act (EOA) of 1964 and Title I of the Elementary and Secondary Education Act (ESEA) of 1965 that were part of President Lyndon B. Johnson's War on Poverty (Edwards, 1999). The purpose of ESEA, also known as Title 1, was for preschool programs to provide for and meet the special needs of educationally deprived children (Gayl, 2010).

The Early Learning Challenge Fund provided support for states to develop effective, integrated, and innovative early learning systems. Competitive grants are awarded to high capacity states to take their established plans to scale. Development grants are awarded to other states to assist them in expanding their early learning struggles with standards-based and outcome-driven systems. In addition, Promise Neighborhoods support early learning by providing grants to improve the educational and developmental outcomes of children living in distressed communities (Dillon, 2008). The organizations receiving grants are provided funding for one year to plan for a cradle-to-career system to support educational programs, family and community supports, and effective schools. Between four and six institutions were awarded grants from $4 million to $6 million by the end 2011. Additional efforts at the national level to support early childhood education include a 2007 Congressional mandate that 50% of teachers and all educational coordinators in Head Start centers have at least a bachelor's degree by September 30, 2013 (Lynch, 2007). The state's role in early childhood initiatives has

made a difference in early childhood educational programs as well. The National Governors Association (NGA) outlined six actions that state leaders can take to ensure that children enter kindergarten ready to learn (Demma, 2010):

1. Coordinate early childhood governance through a state early childhood advisory council. The 2009 American Recovery and Reinvestment Act (ARRA) offered grants of at-least $500,000 to each state to support ECAC development and implementation.
2. Build an integrated professional development system. The system should help track the effectiveness of policies to recruit, retain, and develop the state's early childhood workforce.
3. Implement a quality rating and improvement system (QRIS) that measures several features of program quality and promotes improvement.
4. Develop a longitudinal and coordinated early childhood data system that drives continued improvement and maintains accountability while protecting child and family privacy.
5. Align comprehensive early learning guidelines and standards for children from birth to age 8 with K–3 content standards.
6. Integrate federal, state, and private funding sources to support and sustain a comprehensive, high quality early childhood system (p.3).

Although there are initiatives to support early childhood education through funds, resources, and quality personnel, additional research on the effects of student participation in public prekindergarten on early literacy and reading skills is needed to

provide further data on the justification in early childhood education. One of the most comprehensive acts that has gained much attention from educators, school district officers, and state education board members is NCLB. While this act affects all levels from kindergarten to 12th grade, its requirements and provisions have subsequent implications on prekindergarten programs and early literacy development.

No Child Left Behind Act of 2001

Since the implementation of NCLB, more attention has been paid to student achievement and the role of school leaders and teachers in improving the quality of education to ensure that no students are 'left behind' (Sphon, 2008). Hyun (2003) noted that NCLB has impacted the federal government's role in education programs for preschool through grade twelve. Ylimaki (2007) reported that educators across the U.S. are making efforts to move all students to high levels of achievement. As a result of NCLB, administrators have been compelled to partner with schools, educational organizations, and policymakers to study, discuss, and address new ways to improve educational practice.

NCLB supports early childhood education because it emphasizes the need for pre-kindergarten educational programs. As NCLB requires accountability of the reading proficiency of all students in Grades K–12, it provides a strong motivation to promote participation in prekindergarten programs. The purpose of the NCLB legislation is to close the achievement gap and to improve students' reading skills (Darling-Hammond, 2007; Harris, 2007; Hess & Finn, 2007; Sphon, 2008). NCLB requires states to establish standards to measure student progress and improve the proficiency levels of all students

(Finn & Hess, 2004). Student achievement and student progress are the main focuses of NCLB and are determined by outcome measures (Daly, 2006; Hyun, 2003; Maleyko & Gawlik, 2011).

According to Daly (2006), NCLB reauthorized ESEA. This reauthorization included increased accountability for states, school districts, and schools; more flexibility for states and local educational agencies (LEAs) in the use of Federal education dollars; and a stronger emphasis on reading, especially for younger children. With this flexibility, districts can target their funds for specific needs, including increasing preschool programs, hiring new teachers, increasing teacher pay, and improving professional development for teachers (Mathew, 2010).

There is some disagreement in the existing literature on how funds should be allocated to maximize reading proficiency. Wat (2008) argued that too much money is spent on an assessment tool for testing 4-year olds, when it could be used for providing educational programs to prepare students to learn. NCLB requires states to establish standards to measure student progress and improve the proficiency levels of all students (Darling-Hammond, 2007; Finn & Hess, 2004; Hyun, 200). According to Sphon (2008), while NCLB has mandated states to improve the quality of preschools, it has also forced states to work toward closing achievement gaps between various subgroups of students. These subgroups include economically disadvantaged students, special needs students, racial/ethnic groups, and limited-English proficient students. Since NCLB was enacted, districts have worked diligently to close achievement gaps (McReynolds, 2006; Thompson, 2003; Wang et al., 2006).

The United States Department of Education (2004) identified NCLB as having profound implications for teachers of young learners across the nation, particularly those with special needs. The two main purposes of NCLB are to raise student achievement across the board and to eliminate achievement gaps among students from different backgrounds. Federal funding is used to provide support for programs and teaching methods that improve student learning and result in an increase in achievement levels (McClure, 2005). Many strategies have been used in an effort to bridge the achievement gaps, including the provision of tutoring for low-performing subgroups, improving the collaboration between special education teachers and regular education teachers, and training teachers in specific methods to address the academic needs of low-performing subgroups (Mathew, 2010). NCLB has played a critical role in efforts to ensure that all students are provided a high-quality education. Based on recent waivers of NCLB, all schools and students must demonstrate academic growth and improvement on a yearly basis (United States Department of Education, 2011).

The guidelines of NCLB provide compelling evidence that supports legislation efforts to afford every child a quality education. The primary relevance of NCLB to this research is that it requires accountability for the reading proficiency of all students from schools and educators. Provisions in NCLB support early childhood education through the Early Reading First (ERF) program.

ERF and its elementary counterpart Reading First (RF) are federally funded, billion dollar initiatives authorized by NCLB (United States Department of Education, 2002). According to Gamse et al. (2008), ERF emphasizes that preschool classrooms

provide services to better prepare children entering kindergarten with the necessary language, cognitive, and literacy skills that can avert future reading difficulties.

Regarding the accountability of schools and students' reading performance, Section 1221 of NCLB supports early literacy and prekindergarten programs. Gamse et al. (2008) reported that the purpose of this section is to enhance the early language, literacy, and pre-reading development of preschool age children. The section focuses on students from low-income families and how to enhance skills through strategies and professional development from scientifically-based reading research.

ERF provides school-age children with cognitive learning opportunities in high-quality language-rich environments so that they can attain the fundamental knowledge and skills necessary for optimal reading development in kindergarten and beyond (Jackson et al., 2007). Providing funds to preschools supports the development of age-appropriate language and literacy skills through scientifically-based reading activities that teach the recognition of letters of the alphabet, knowledge of letter sounds, the blending of sounds, and the use of an increasingly complex vocabulary (Jackson et al., 2007). This initiative is based on the understanding that written language has phonemes and letters, each representing one or more speech sounds that in combination create syllables, words, sentences, spoken knowledge of the purposes, and conventions of print. According to Jackson et al. (2007), another purpose of the ERF initiative in NCLB is to use screening assessments to effectively identify preschool age children who may be at risk for reading failure. Finally, Section 1221 of NCLB integrates scientific, reading, research-based

instructional materials and literacy activities with the existing programs of preschools, child care agencies and programs, Head Start centers, and family literacy services.

Given its role in promoting and ensuring academic achievement, NCLB is critical in supporting early childhood education (Mathew, 2010; Mathis, 2009; Pruisner, 2009; Schoen & Fusarelli, 2008). The education of preschool children is a focal point for meeting the accountability standards set forth by the legislation (Daly, 2006). Providing children with high quality early childhood education equips students with the cognitive and academic skills needed to be successful readers in and beyond elementary school (NICHHD, 2000). While NCLB's ERF program increases children's chances in developing early literacy skills, many students are still not afforded the opportunity to participate in prekindergarten programs due to lack of funding (Barnett et al., 2010).

Parental Involvement and the Importance of Intervention

Several researchers have provided evidence indicating the importance and significance of parental involvement and support in the development and acquisition of early literacy skills (Barnett & Frede, 2010; Dessoff, 2010; Johnson & Porter DeCusati, 2004; Justice et al., 2009; Roskos et al., 2010; Soar, 2004). The Kindergarten Language Study (Paez, Pizzo, & Bock, 2009) was a 5-year longitudinal research project that used an intervention program to improve the language skills of Spanish–English bilingual kindergarten students. A quasiexperimental design was used in the research study, which aimed to link classroom and home activities that would improve the language skills of Spanish–English bilingual kindergarten students. Pre- and post-intervention data from 48 Spanish speaking students were used in the research study. Based on the study data,

supporting parents and students with Spanish at home is an effective way to produce a richer home environment and improve early literacy skills (Paez et al., 2009). The researchers concluded that children's early literacy skills can provide an early indicator of potential skilled versus deficient readers in elementary school. Neuman and Dickinson (2010) argued that early intervention for children with and without language deficiencies should be one that follows a three-tiered intervention plan of universal, targeted, and individualized intervention. The Early Childhood Study of Language and Literacy Development of Spanish Speaking Children is a research study that examined the longitudinal growth of preschoolers' literacy skills (Tabors & Paez, 2007). A total of 350 children from Spanish-speaking homes in Massachusetts and Maryland and 152 children in Puerto Rico comprised the research sample. Based on assessment results collected from two periods of data collection, students have limited oral language skills, primarily in the area of vocabulary in English and Spanish.

There is empirical evidence to support parental involvement in helping children master early literacy skills (Neumann & Neumann, 2009; Reynolds, 2000; Wat, 2010). Neumann and Neumann (2009) reported that educators are making efforts to increase parental involvement and participation in classrooms as a way to promote the social, emotional, and academic growth of children. The researchers concluded that schools that have policies and practices in place to increase communication and collaboration among schools and parents tend to have stronger partnerships which increased student achievement. School–family partnerships have a positive impact on school success and student learning. For instance, Johnson and Porter DeCusati (2004) used teacher action

research with a design experiment approach to investigate the effects of working with parents in small groups on kindergarteners' early literacy skills. There were 56 randomly chosen kindergarten students that participated in the research study. The participants were children who attended a rural public school in central Pennsylvania. The Emergent-Level Word Recognition assessment was used to measure students' early literacy skills. Student interviews on their reactions to having parents in the classroom was another source of data collection for the research study. During a 5-month period, a total of 18 parents served as volunteers in a kindergarten classroom. In addition, other parents completed questionnaire surveys to share their experiences of volunteering in the classroom. Johnson and Porter DeCusati (2004) stated that parents volunteered to help children sound out, spell, and form alphabet letters as well as read charts and match pictures to words. Research findings of the study indicated that the children had a positive perception of parents' participation in the classroom. Results of the study also showed that the treatment group performed higher on word recognition skills than the control group.

Another research study that involved parents' support of students' early literacy skills is the Home-School Study of Language Development (Snow, Dickenson, & Tabors, 2009). This study was a longitudinal research project designed to examine the social predictors of literacy achievement. The researchers examined the relationship between decontextualized language used in the home and future reading achievement. Significant correlations were found between aspects of home language and kindergarten outcomes (Dickenson & Tabors, 2001). Home language such as extended course, rare word density,

and support for literacy were moderately correlated with kindergarten outcome variables: narrative production, emergent literacy, and receptive vocabulary (Tabors, Roach, & Snow, 2001). The researchers also compared a select number of control variables with kindergarten outcomes and determined that the demographic data were also associated with reading outcomes in kindergarten. Family income and emergent literacy were slightly related (r = .23). For the purpose of the Home-School Study of Language and Literacy Development, comparisons between kindergarten outcomes and home yielded similar results when comparing the demographic data. Tabor et al. (2001) advocated that there are a number of social factors associated with literacy acquisition.

Algozzine and Wang (2008) conducted a quasi-experimental research design whereby children with severe reading problems received targeted interventions to address early literacy skills. This group was compared to a control group who did not receive intervention. The Behavior and Reading Improvement Center provided services to the struggling readers in six different public elementary schools. Participants consisted of first graders of diverse ethnic backgrounds and genders. DIBELS was used to identify students at risk for reading failure. Targeted Intervention entailed additional instruction of phonemic awareness, alphabetic understanding, decoding skills, and fluency of targeted students. The researchers reported that the reading skills were assessed using the Woodcock Reading Mastery Test-Revised and DIBELS. Based on the findings of the research study, Algozzine and Wang (2008) concluded that both the treatment and control groups made statistically significant gains, but the treatment group gained more early literacy and reading skills improvement than the control group. In context,

intervention may be necessary for children who do not receive adequate home instruction or experience, and one available intervention method is public or private prekindergarten programs.

Based on the studies reviewed, it is clear that if educators are to be successful in teaching reading in formal schooling, work must begin prior to school entry during the preschool period as research supports that early literacy skills have a positive impact on children's later reading achievement. More specifically, pre-kindergarten programs – whether provided at home, in school, or at a specific center – are necessary to provide children with an arena to develop the emergent literacy skills necessary for learning to read (Whitehurst & Lonigan, 1998).

Early Literacy Skills and Reading Achievement

Early childhood educators have the responsibility of preparing students for later reading success by implementing and focusing on instructional activities that promote early literacy skills. Early literacy refers to the knowledge, skills, and dispositions that children acquire prior to actually learning to read and write (Justice et al., 2009; Roskos et al., 2009; Strickland, 2010). Although formal reading instruction is usually provided in elementary school, the acquisition of early reading and literacy skills is a continuous process that can begin before a child goes into formal schooling (Whitehurst & Lonigan, 1998). More recently, Wilson and Lonigan (2010) supported this claim and indicated that early literacy is a precursor to later reading achievement in formal schooling. Cunningham (2010) also conveyed that children's reading success throughout elementary school can be predicted from their early literacy skills development in preschools.

Backed by statistics and literature, some states in the country have developed preschool programs that are aligned with kindergarten through twelfth grade curricula and standards (Dessoff, 2010).

Early literacy skills. Phonemic awareness, print knowledge, and oral language are the three main early literacy skills that are most predictive of reading ability (National Institute of Child Health and Human Development, 2000; Roskos et al., 2009; Strickland, 2010; Wilson & Lonigan, 2010). Wilson and Lonigan (2010) defined phonemic awareness as "the ability to detect and manipulate the sounds of spoken language, independent of meaning" (p. 63). The researchers stated that phonemic awareness is linked to achievement in reading. Also, past research supported by Lundberg, Olofsson, and Wall (1980); Lundeberg (1988); and Good et al. (2001) indicated that phonemic awareness is one of the best predictors of reading acquisition. Phonemic awareness can be developed through active engagement in sound manipulation experiences whether through songs, stories, play, or direct instruction (Cooke, Krestlow, & Half, 2010).

Research on early or emergent literacy has been conducted over the past few decades, and academics often identify various key concepts or elements. While there are concepts that are identified by some researchers and not by others, many have agreed on core elements of emergent literacy. Elements of emergent literacy include oral language development, phonological processing, letter recognition, concepts of print, phonemic awareness, alphabetic principle, vocabulary development, and comprehension.

Oral language development. Parent and home activities that support children's oral language and intellectual development are necessary for the mastery of early literacy

skills (Barnett & Frede, 2010; Justice et al., 2009; Roskos et al., 2010). Oral language refers to one's vocabulary and the ability to use words to create and communicate meaning (Wilson & Lonigan, 2010). The National Literacy Panel on Language-Minority Children and Youth (2006) indicated that oral language development is the foundation of literacy (as cited in Soto-Hinman, 2011). Therefore, it is important to engage children in activities that will develop their oral language and related skills to ensure they will learn how to read and write.

Vocabulary-building is critical for oral language development, as children with larger vocabularies tend to become more proficient readers (National Institute for Literacy, 2007; Wilson & Linogan, 2010), and having a wide vocabulary increases reading readiness and comprehension (Biemiller, 2006). As oral language continues to develop, so too does vocabulary. An improved vocabulary not only increases oral language development and reading comprehension, but also improves a child's overall cognition (Wilbourn, Kurtz, & Kalia, 2012). Therefore, the simultaneous growth and improvement of a child's vocabulary and oral language paves the way for adequate literacy and potential success in reading and writing.

It is well-known among educators and researchers that oral language development is at the foundation of reading achievement. Children with typical language development demonstrate normal to high reading achievement, while children with spoken language impairments frequently exhibit problems when learning to read (Catts, Bridges, Little, & Tomblin, 2008). Therefore, specifically-tailored interventions are needed to aid children who exhibit low oral language development in learning to read.

Phonological processing. The use of developed phonological or sound structures in processing and understanding written and oral information is referred to as phonological processing (Anthony et al., 2006). The process requires separate abilities and skills (Anthony et al., 2006) as well as cognitive operations (Hutchinson, Kirby, & Carson, 2000; Molfese et al., 2006) that are interrelated and equally important in developing the ability to read and write. One important skill is phonological awareness, or the ability to recognize and manipulate the sounds in one's oral language. Sounds in oral language include phonemic awareness, or the manipulation of individual phonemes to create words, and the ability to recognize words that rhyme (Anthony et al., 2006; Hutchinson et al., 2000). Phonological memory is another process wherein information is temporarily stored as a form of sound familiar to the person (Anthony et al., 2006; Hutchinson et al., 2000). Children receive the sound-based representations at their own speeds and efficiencies which can be measured through rapid autonomic naming task tests (Anthony et al., 2006).

Efficiency in phonological processing is largely related to high phonological memory capacities and increased general cognitive ability (Anthony et al., 2006). However, the individual phonological processing abilities of a child do not always develop together. Therefore, different instruction methods are necessary to test and develop these abilities. In addition, a child's phonological processing abilities are uniquely related to his or her emergent literacy skills, as efficient phonological processing predicts literacy acquisition (Anthony et al., 2006). It is therefore necessary to

develop phonological processing abilities for a child to be able to learn how to read and write.

Letter recognition. Print knowledge refers to a child's ability to comprehend how print is structured as well as his or her knowledge of the alphabet (Strickland, 2010). Letter recognition refers to a child's ability to identify letter forms, names, and corresponding sounds (Wilson & Lonigan, 2010). Print or alphabet knowledge has become a primary objective of preschool instruction and intervention, as it forms the foundation of a child's literacy and all subsequent learning (Piasta & Wagner, 2010).

Children's knowledge of letter names and sounds is a known prerequisite of developing reading and spelling abilities (Ellefson, Treiman, & Kessler, 2009; Piasta & Wagner, 2010; Strickland; 2010; Wilson & Lonigan, 2010). Neuman and Dickens (2011) reported that letter name and sound knowledge predict subsequent literacy skills independently of other important literacy instruction such as phonological awareness and oral language. Preschool and kindergarten students who do not master letter names and sounds have difficulty learning to read, causing a reading achievement gap early on. It is therefore important to identify and address difficulties in letter recognition and sound knowledge as early as possible to ensure that children remain at par with their peers. One way to identify such difficulty is to use letter names testing at the beginning of formal schooling, which has been shown to best predict student academic success in literacy (Durrell, Nicholson, Olsen, Gavel, & Linehan, 1958).

Once identified, several approaches and strategies that been developed to aid children who exhibit difficulty in letter recognition can be executed. Preventive measures

that provide early instructional practice in letter names and sounds have been shown to prevent students from having reading difficulties (Durrell et al., 1958). It is important to note that early recognition and intervention is critical, as research shows that children's knowledge about print and letter recognition skills should be developed with a strong foundation very early in childhood (Justice et al., 2009).

Piasta and Wagner (2010) conducted a meta-analysis of the effects of instruction on alphabet outcomes. The study synthesized research literature on the effects of alphabet instruction on both knowledge and other early literacy outcomes. A multi-step literature search identified 494 studies that were obtained for full review after meeting initial screening criteria. A total of 63 studies met all criteria and were included in the meta-analysis. According to the study, school-based instruction yielded larger effects than home-based instruction, and small-group instruction yielded larger effects than individual tutoring programs.

Concepts of print. Concepts of print, or print awareness, is the understanding of the forms and functions of print (Browder, Gibbs, Ahlgrim-Delzell, Courtade, Mraz, & Flowers, 2009), and how it symbolically represents spoken language (Bialystok & Luk, 2007). Distinguishing a display of words and non-words, awareness of print-to-speech correspondence, and an understanding of the function of spaces as demarcation between printed words are some examples of a child having concepts of print (Browder et al., 2009). Mastering concepts of print is another prerequisite for independent reading because it teaches children to understand that the ultimate purpose of print is to provide a

uniform representation that can be converted into spoken forms through a fixed set of rules or principles (Bialystok & Luk, 2007).

Alphabetic principles. The term alphabetic principles**,** or phonemic orthography, refers to the relationship between printed words and phonemes (Parette, Hourcade, Boeckmann, & Blum, 2008). The relationship can be described in detail by two principles, namely alphabetic awareness and alphabetic understanding. Alphabetic awareness includes the ability to recognize letters of the alphabet, the understanding that each individual letter represents the sounds of spoken language, and the understanding of the correspondence of spoken words to written language (Browder et al., 2009). Alphabetic understanding describes the comprehension of how the sequential spelling of printed words is representative of the first to last phoneme of the word (Browder et al., 2009).

Students or children who experience difficulty in acquiring or grasping alphabetic principles eventually find them themselves unable to develop early basic reading skills (Harn, Stoolmiller, & Chard, 2008). One popular method for screening the alphabetic principle is the Nonsense Word Fluency measure, which identifies whether a child is at the standard pace of learning early literacy skills or if he or she requires additional support (Harn et al., 2008). The development of the alphabetic principle is said to take place over four different phases. Also, the age and speed at which children enter and finish each phase may vary according to individual attitudes, contexts, and cognitive abilities. The pre-alphabetic phase is the stage wherein children are unable to form letter-to-sound connections. The partial alphabetic phase is characterized by initial attempts to

learn the names or sounds of letters, which is limited by the child's phonemic awareness skills. The full alphabetic stage is reached when children are able to make accurate connections between letters in printed words and phonemic sounds, while the consolidated alphabetic stage is when children are able to consolidate grapheme-phoneme connections into larger units or words and build a vocabulary incrementally (Cummings, Dewey, Latimer, & Good, 2011).

Assessing Early Literacy Skills

Monitoring and assessing student development is an important part of an effective early literacy program. Assessment can be used for the purpose of monitoring students' mastery of skills taught, guide teacher planning and instruction, and to identify at-risk and struggling students for intervention. Roskos et al. (2009) recommended that preschools use cost effective but quality assessments to identify at-risk students. Wilson and Lonigan (2010) conducted a study to determine the value of two early literacy screenings to measure students' skills. The purpose of the assessment was to identify children who may be at-risk of later reading problems to provide early intervention and close reading achievement gaps in kindergarten. The two screenings were Get Ready to Read (GRTR) and Individual Growth and Development Indicators (IGDI). The GRTR provides parents and early childhood educators with the reading knowledge necessary for 4-year-olds when entering kindergarten. The findings indicated that it was possible to effectively screen preschool children who are at higher risk of later reading problems than more developed early literacy skills. The GRTR, which measures print knowledge and phonemic awareness, was found to be a more accurate screener than the IGDI.

According to Roskos et al. (2009), this assessment is a 20 item tool that focuses on three skills: print knowledge, emergent writing, and phonological awareness. The researchers concurred that the GRTR assessment has been determined reliable and research-based.

Early literacy assessments such as DIBELS have provided schools with access to valuable information about students' early literacy and reading skills (Good et al., 2001; Coyne & Harn, 2006). These researchers indicated that knowledge about students' early literacy skills can help promote their beginning reading success by providing teachers with information to meet the individual instructional needs of students in the classroom. Coyne and Harn (2006) posited that "assessment practices contribute to higher levels of reading achievement only when they (a) answer important questions for teachers and schools and (b) enable informed, data-based instructional decision making" (p. 33). These researchers focused on the domains of phonemic awareness and alphabetic understanding because of their significant role in the progress of foundational or beginning reading skills. The Initial Sounds Fluency and Phonemic Segmentation Fluency are the two different DIBELS measures designed to assess phonological awareness. For example, Good et al. (2001) stated that the benchmark goal for ISF is a score of 25 or more by the middle of kindergarten. The researchers indicated that students who meet this goal by winter of kindergarten are likely to also meet the end-of-kindergarten goal for phonemic awareness. However, Good et al. (2001) also shared that the criterion performance or benchmark goal for the PSF is a score of 35 or more by the end of kindergarten. Students meeting this goal are likely to be proficient readers by the end of first grade. According to Coyne and Harn (2006), DIBELS uses Nonsense Word Fluency to assess students'

alphabetic understanding. The criterion performance goal for NWF is a score of 50 or more by the middle of first grade. Good et al. (2001) noted that students meeting this goal are more likely to be proficient readers by the end of first grade. Coyne and Harn (2006) reported that the framework for early literacy skills assessment should be based on four purposes: screening, progress monitoring, diagnosis, and measuring student outcomes.

According to Good et al. (2001), DIBELS can be used in kindergarten to address each of the aforementioned purposes. Screenings can determine which children are at risk for experiencing reading problems to provide them with additional support or intervention, as part of the Response to Intervention (RTI) system mandated by the Individuals with Disabilities Education Act (Murawski & Hughes, 2009). The RTI provides systematic methods for identifying students with learning disabilities. The approach involves multiple levels of intervention that aid students to maximize achievement and reduce behavioral problems (Murawski & Hughes, 2009). Progress monitoring is necessary for making decisions about students' reading growth. Data can be used to make instructional adjustments if students are not demonstrating adequate growth. Coyne and Harn (2006) stated that Diagnostic Assessments assist teachers in planning instruction by providing them with in-depth knowledge about skills and academic needs. Finally, Outcome Assessments are used at the end of the year to determine a comprehensive measure of student performance and the overall effectiveness of the reading program. Therefore, early literacy skill assessments can provide valuable information for reading instruction and students' foundational reading skills.

According to Binder et al. (2011), Coyne and Harn (2006), and Good et al. (2001), DIBELS has proven to be a reliable and valid school-wide assessment to measure students' early literacy skills. For example, Binder et al. (2011) conducted a recent research study that examined the reliability and validity of administering DIBELS to adult basic education students. The study involved 90 adult participants with a mean age of 34. The DIBELS included assessments of pre-reading measures (CBM-R), initial sound fluency (ISF), phoneme segmentation fluency (PSF), and nonsense word fluency (NWF). The assessment measured essential early literacy skills. The Woodcock-Johnson II Broad Reading and four orthographic ability tests were also used with the DIBELS assessment for comparison in the study. Binder et al. (2011) noted that phonemic awareness and alphabetic understanding are predictors of later literacy and reading achievement. The research results indicated that DIBELS measures produced strong values across three measures: PSF, NWF, and CBM-R. However, ISF showed lower reliability, which is consistent with the results reported for children. Binder et al. (2011) concluded that DIBELS measures have been successful in determining adult reading abilities, as it is successful in monitoring student reading growth. Assessments are critical in determining the instructional needs of the program (Barnett et al., 2011; Fischel et al., 2007; Wang et al., 2006). Binder et al. (2011) suggested that many assessments and intervention resources that are used to teach children may also be effective for instructing adult student literacy. The researchers reported that students' literacy skills are increased when teachers use assessments to guide instruction, as the assessments provided teachers with data to help them better understand the instructional needs of students.

The validity of the DIBELS Assessment for early literacy screening is also supported by Kraayenoord's (2010) research, which identified the instructional practices in the U.S. used to assist students experiencing difficulties with literacy and learning to read. A comparison was made between the U.S. Response to Intervention (RTI) and an Australian model of whole-school intervention improvement. One of the models discussed by Kraayenoord (2010) was the use of early assessment and early intervention. The researcher described using an assessment as a three-tier approach to reading instruction. The key components mentioned were universal screening and benchmark testing, diagnostic measurement, and progress monitoring referred to as curricular based measurement (CBM). The researcher concluded that CBM assessment for reading examined letter-sound fluency in kindergarteners. Kraayenoord (2010) noted that the assessment data provided the necessary data for instructional intervention to improve children's reading skills and minimize the need for subsequent reading intervention with formal reading instruction in upper grade levels. The researcher also reported that the use of assessments is a critical component of RTI. Just as instructional approaches are research-based, so too are RTI assessments. Kraayenoord (2010) stated that the DIBELS is one of the most effective research-based screening tests in RTI. Although DIBELS is a reliable test and has strengths such as multiple forms of tests and a short duration, the assessment has also been criticized. One concern reported was the limited scope of abilities and skills measured. Additionally, it was reported that DIBELS focused too strongly on isolated reading skills rather than on early reading skills. The researcher reported that too much emphasis was placed on the speed of reading instead of the goal of

reading comprehension. However, Kraayenoord's (2010) also stated that multiple assessments should be used to make RTI decisions.

Impact of Prekindergarten Programs on Student Achievement

Preschool and prekindergarten programs across the U.S. support school readiness. According to Kleek (2008), Mashburn (2008), and Wat (2007), prekindergarten experiences provide students with increased social, emotional, cognitive, and academic development compared to non-participants.

The High/Scope Perry School study was held from 1962 to 1967. The Perry project tracked 58 participants and 65 control children through adulthood. The data from this research demonstrated that the program group significantly outperformed the non-program group. The participants were scored on language, school achievement, and adult literacy tests (Wat, 2007). The High/Scope research study also indicated that participants were less likely to require special education services and were more likely to complete high school than the control group.

The United States Department of Education conducted an Early Childhood Longitudinal Study involving the Kindergarten Class of 1998–1999 (West, Denton, & Germino-Hausken, 2000). The study followed a nationally representative sample of children from kindergarten through fifth grade and assessed the academic, physical, and social development of kindergarten students. Data were gathered through individualized, in-person assessments with the children at the school, telephone interviews with parents, and self-administered questionnaires from the teachers. The research study findings indicated that children entering kindergarten with family risk factors such as lack of

parental support, high poverty, limited resources and experiences are associated with lower proficiency in early reading, math, and general knowledge.

Zigler, Gilliam, and Barnett (2011) reported that the Tulsa prekindergarten research study provided compelling evidence that supports prekindergarten as being effective in a comparison of kindergarteners having experience with children who were not eligible for prekindergarten participation. The Tulsa study indicated that children who participated in the prekindergarten programs scored higher on the Woodcock-Johnson Tests of Achievement III for letter-word identification, spelling, and applied problems. Effects ranged from a five- to nine-month advantage over the peers who did not participate in any prekindergarten program.

The High-Quality Center-Based Early Childhood Education study is cited as the most favorable strategy for supporting readiness and preparing children for kindergarten. In addition, the National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network (2004) recognized enhanced child performance outcomes when children are enrolled in high-quality childcare settings that provide appropriate learning opportunities and have caregivers who are emotionally supportive and responsive. Raver et al. (2011) also supported this belief, noting that the positive effects of high quality programs for children with disadvantages are even more pronounced than children with advantages. For example, Wat (2007) stated that a study of the Perry Preschool and Abecedarian programs on children with disadvantages revealed gains in IQ and achievement test scores upon kindergarten entry. Data also showed that the effects on reading and math skills were even larger for high-need

children. Wat (2007) indicated that children in a high-quality urban Head Start program showed faster rates of growth in vocabulary, phonemic awareness, and pre-literacy skills than those who were not able to enroll. This was the first major preschool program study conducted in Michigan.

The state of Michigan is known as one of the first to address the achievement gap, or the disparity in academic performance between children born to low-income, high challenged families with multiple risk factors for academic failure as well as children from more advantaged backgrounds (Nelson, 2006). The Michigan School Readiness Program (MSRP) revealed that kindergarteners who attended the MSRP scored significantly higher on five out of six domains of the High/Scope Child Observation Record and received higher ratings from their teachers (Wat, 2010).

Another study that supports preschool as having a positive impact on children's early literacy and reading skills is known as the Judy Centers and was implemented by the Maryland State Department of Education (2009). The research study indicated that kindergarten students who received services prior to and during the first year of school showed greater increases in literacy than those who did not. The students attained full readiness at the same level as all kindergarteners at the end of the year. Other studies have also shown that high-quality early childhood education increases the likelihood that children, especially those with disadvantages, will have successful school outcomes (Reynolds, 2000). These studies include the Chicago Longitudinal Study, an ongoing federally-funded investigation of the academic and social development of low-income youths that started in 1986 (Mann & Reynolds, 2006), and the Cost, Quality, and Child

Outcomes in Child Care Centers Study, a longitudinal study of at-risk students which started in 1993 during their preschool years (Peisner-Feinberg et al., 1999). The Chicago Child-Parent Centers study results showed that pre-k program participants had a 29% increase in high school completion rates, including a 47% higher rate of school completion for boys. There was also a 33% lower rate of juvenile arrests and a 41% lower rate of arrests for violent crimes for the participant group.

An increased number of children across the U.S. attend early childhood education programs to develop early literacy skills (Justice, Kaderavreck, Fran, Sofka, & Hunt, 2009). One recent research study that promoted early literacy skills in preschool programs involved two emergent literacy contexts – storybook reading and post-story writing (Girard, Girolametto, Weitzman, & Greenberg, 2013). A total of 76 preschoolers and 20 early childhood educators participated in the study. Preschoolers were observed on video tape in the preschool classroom using curriculum based strategies such as storybook reading, print references, alphabet letter names, alphabet letter sounds, and decontextualized language. In addition, educators completed the Early Literacy Education Questionnaire to assess classroom literacy practices. According to Girard et al. (2013), preschool educators were responsible for curriculum planning in their classrooms. The results of this study indicated that educators who frequently engaged children in conversation during storybook reading were promoting early literacy skills in early childhood classrooms. Girard et al. (2013) stated that educators should be provided professional development to improve their knowledge about early literacy skills and how they should be taught in preschool classrooms.

The U.S. is not the only country seeking education reform in efforts to increase student achievement. Asici (2009) conducted a research study that evaluated children's early literacy skills in preschool programs in Turkey. Participants included a total of 2,322 preschool students between the ages of four and five. The study was conducted to determine the foundational literacy knowledge and skills of students attending preschool in the Sakarya province of Turkey. An observation form was used to collect data for the study. Asici (2009) stated that foundational reading skills positively affected children's future reading achievement and enabled them to read more easily. The purpose of this study was to determine the foundational literacy prominence of children before schooling. The researcher noted that this study was intended to identify literacy activities that are necessary in preschool programs. The SPSS software package was used to collect data and findings. Data were interpreted based on the frequency of instructional strategies in preschool programs, percentages, and a chi-square analysis of the data. Concept Knowledge and Knowledge of Symbols of Written Language Skills were the two skill items used for observation. According to Asici (2009), findings indicated that 64.2% of the children who participated in the study lived in areas with middle socio-economic cultural status, 34.4% lower, and 4% upper class. The research participants lived in cities, villages, and city centers. Results revealed that more than half of the participants had not yet started formal reading and writing, but had knowledge of symbols of written language and ample skills to use reading materials. The skills were learned through conversations with parents, watching television, and interacting with written materials in the environment.

Although prekindergarten has been proven as beneficial for children with high needs, studies also show that it can significantly benefit all children in general (Magnuson et al., 2004). Nelson (2006) reported that many middle-income families face the issue of a school readiness gap. Families facing this readiness gap have monthly incomes that are often too high to qualify for programs for children with disadvantages, but are not high enough to afford high-quality programs. A study of the Tulsa, Oklahoma, prekindergarten program found that pre-k participants at the level of kindergarten entry had higher results on letter-word recognition and spelling. Middle-income children scored 41% higher in assessments of letter-word identification and 17% higher in spelling compared to middle-income children who did not attend prekindergarten (Wat, 2010).

According to Roberts (2008), storybook reading is an instructional strategy used in preschool programs to build children's language and literacy skills through an increase in vocabulary which is linked to conceptual knowledge. Roberts (2008) examined how the use of primary or English language storybooks for home reading and classroom storybook reading as well as vocabulary instruction in English influenced vocabulary acquisition. The participants of this study were preschoolers from low income families whose primary language was either Hmong or Spanish. Roberts (2008) indicated that two sessions of storybook reading combined with support from home storybook reading increased from 50% to 80% between the two 6-week sessions of story reading. The researchers stated that children's books play a critical role in building high levels of decontextualized language needed for fundamental reading and formal reading skills. The study involved two measures of analysis that examined the relationship between the

language of storybook reading and overall storybook vocabulary learning using the Peabody Picture Vocabulary Test and the Preschool IDEA and Language Proficiency Test. Two language and literacy surveys were administered to the participants' caregivers to elicit information about the primary and secondary language characteristics of the family resources in the homes and their participation in the program. A total of 12 storybooks were developed in the study. This research study provided data that supported primary language storybook reading in the home in English as a means for promoting English vocabulary learning in preschool.

Prekindergarten programs may be the best investment that parents, educators, community members, and elected officials can make for education and the nation's future. Based on the aforementioned research studies, regardless of ethnic background, socioeconomic status, or race, children who have rich literacy learning experiences achieve better in school and life. Therefore, many states may need to advocate for free universal preschool programs that include qualified, certified, and well-paid staff to ensure that all students maintain literate skills and are proficient readers.

Literature Related to the Theoretical Framework

Whitehurst and Lonigan (2002) indicated that emergent literacy describes the skills, knowledge, and attitudes of young children—particularly those in the developmental stages—when interacting with books and engaging in activities such as reading or writing. The researchers posited that early literacy consists of two domains: the inside-out domain comprised of information sources within the printed word that encourage a reader's ability to transform information between printed form and sound,

and the outside-in domain that includes information sources that reside outside of the printed word yet directly support or enhance a reader's understanding of the meaning of print (Whitehurst & Lonigan, 1998). Given this distinction between the two domains, the inside-out domain would include skills such as phonological awareness and letter knowledge, while outside-in skills include vocabulary and conceptual knowledge. The researchers stated that emergent literacy skills play an important role in students' later reading abilities.

Several researchers have verified and endorsed the aforementioned theory using listening and speaking experiments that trace the developmental changes in children's communication skills, with a specific focus on the effect of modeling in developing adequate referential communication (Ironsmith & Whitehurst, 1978; Storch & Whitehurst, 2001; Whitehurst, 1976; Whitehurst & Merkur, 1977; Whitehurst, Sonnenschein, & Ianfolla, 1981). This series of studies focused on the development of children's communication skills through different types of modeling. Throughout these investigations, three types of messages in the context of referential communication were defined: informative or contrastive messages provided enough information to identify the referent among non-referents; redundant messages provided more than the necessary information to identify the referent; and ambiguous or incomplete messages did not provide adequate information to distinguish the referent (Ironsmith & Whitehurst, 1978). Children were exposed to different forms of modeling that produced these types of messages. The researchers affirmed several hypotheses and reported similar conclusions.

Results revealed that incomplete responses decreased with age and were more likely to be produced in difficult problems (Whitehurst, 1976).

Whitehurst and Lonigan (1998) used the Early Childhood Environmental Rating Scale to measure the quality of 32 Head Start classes in North Carolina, which provided assessments of aspects of the curriculum, environment, teacher-child interactions, and teaching practices within the classrooms. The researchers found that children who were provided opportunities to engage in shared reading, writing, and activities had a positive correlation with higher levels of vocabulary, print concepts, and story comprehension (Whitehurst & Lonigan, 2002).

The research study provided data on the degree to which the prereading skills, as discussed by Whitehurst and Lonigan (2002), affect young learners' abilities to master the skills they label as formal reading. Similar to Whitehurst and Lonigan's (2002) theory, the comparison between the students who attended a prekindergarten program and those who did not attend was assessed using the Dynamic Indicator Basic Early Literacy Skills (DIBELS). The instrument was used to measure the early literacy and reading skills of kindergarten students to determine whether the public prekindergarten program helped in preparing them for formal reading in school.

In addition, this research utilized the constructivist theory of learning. The constructivist theory proposes that learning is based on previous knowledge, beliefs, and experiences (Lambert et al., 2002). According to Fallace (2010), the early work of John Dewey served as the basis for the constructivist theory. According to the theory, learning for children at the preschool level occurs through social interaction and engagement with

the environment (Powell & Kalina, 2009). Based on the constructivist theory, students learn and construct learning together from their individual and cooperative experiences (Creswell, 2009). In support of this theory, Goldring and Presbray (1986) conducted an evaluation study of the effectiveness of prekindergarten intervention programs. The researchers cited a positive homogeneous effect on the variables of IQ, mathematics, and reading achievement, as well as an increased percent of students meeting educational requirements who attended some type of prekindergarten program (Goldring & Presbay, 1986). The researchers examined the data to determine whether the acquisition of prereading skills could be expected to occur at an adequate level through social interaction and engagement with the environment, as described by constructivist theory, without formal pre-kindergarten instruction.

In addition, the influences of prominent learning theorists such as Piaget and Vygotsky were also used in the development of the theoretical framework for this study. Their philosophies and learning theories represent how children learn, adapt to various environments, and become socially skilled. Piaget (1958) described how children's intellectual development and processes are formed through various phases. He stated that preschool children begin to gain independence during the preoperational phase, whereby they are less egocentric with speech and become more social, with an intuitive grasp of logical concepts in some areas. According to Piaget (1958), children begin to learn and retain small pieces of knowledge during this phase. Vygotsky's (1978) Social Development Theory emphasized the concept that children gain an identity from their culture and environment. In addition, Vygotsky (1978) encouraged the use of

developmentally appropriate materials to challenge younger children. Whitehurst and Lonigan (1998) theorized that the development of skills is a continuous process that begins at a very young age. Therefore, the use of appropriate materials can help children in developing literacy and reading skills. The research study sought to determine whether children in the subject school district who participated in prekindergarten programs received adequate experience and instruction that aided them in developing the necessary early literacy skills needed to learn to read.

One perspective has shaped the theoretical framework of this study on how children learn to read. According to Vukelich and Christie (2009), emergent literacy and scientifically-based reading research should be integrated in order to provide students with effective early literacy instruction. The researchers suggested the following basic principles for an effective early literacy program: early language and literacy education focusing on core content, oral language laying the foundation for early literacy development, storybook reading as the cornerstone of early literacy instruction, a carefully planned classroom environment that enables literacy development to flourish, opportunities to engage in emergent forms of reading, developmentally appropriate forms of explicit instruction used to teach core literacy concepts and skills, teachers helping parents support their children's language and reading development, and oral language and early literacy instruction and assessment guided by standards that define the knowledge and skills young children need to become successful readers. All theories mentioned include elements of early active education that recognizes the importance of stages for developmentally appropriate learning, social interaction with others, and the physical

realms of the learning environment before formal educational learning experiences which may be found in preschool programs. The framework developed for the proposed study draws on the perspective that children learn about reading and writing before entering a formal educational program. In other words, "children acquire knowledge of vocabulary, syntax, narrative, structure, metalinguistic aspects of language, letters, and text that directly relate to the acquisition of conventional reading such as decoding and comprehension" (Whitehurst & Lonigan, 1998, p. 858). The components of emergent literacy provide the foundational skills that a child should acquire to become literate in a conventional sense.

Summary

This section provided an overview of historical and more recent research studies of early literacy skills and subsequent reading skills. The literature review also included scientific evidence on topics that relevant to the research study, such as initiatives that support early childhood education and how programs are funded. The goal was to provide evidence of the academic disparity among kindergarteners and research to determine whether students benefit from participating in preschool programs such as public pre-kindergarten. This section also identified factors that contribute to the achievement gaps in kindergarten, such as the lack of exposure to quality preschool programs and lack of funding. While NCLB set the standard for reading by holding all schools accountable for academic growth and improvement, students may be left behind as early as kindergarten due to inconsistencies in student participation with quality preschool programs. Another goal of the section was to demonstrate the need for research on past and current preschool

programs and their impact on students' early literacy and readiness skills. If it is determined that students benefit from participation in such programs, this may be the leverage legislation needed to advocate for complete funding of public prekindergarten programs. Children who have certain skills in kindergarten are likely to be at an advantage in classroom learning compared to those who do not possess these resources.

Section 3: Research Method

The purpose of this study was to compare the early literacy and reading skills of students who participated in the study district's public prekindergarten program with those who did not participate. This quantitative comparative research used existing archival data of the DIBELS to measure students' literacy and reading skills in kindergarten.

This section includes a discussion of the choice of rationale for the research design, method, and approach. There is also a discussion on the description of the population, sample, and sampling technique, in addition to the procedures followed in gathering, organizing, and analyzing data. The discussion also includes the measures taken to ensure participant confidentiality.

Research Design and Approach

I used a quantitative, comparative design to address the following research question: Is there a difference in early literacy and reading skill development between kindergarteners who attended the public prekindergarten program in the subject school district and those who did not participate in the public prekindergarten program? The results revealed that participation in the prekindergarten program in the subject school district had a positive effect on students' early literacy and reading skills, as measured by the DIBELS assessment and comparing the differences of the DIBELS scores between students who attended the public prekindergarten program and those who did not. The entry (August), midpoint (December), and end of the year (May) archived DIBELS scores from the 2011–2012 school year were compared using a one-way repeated

measure ANOVA. To address the research question and compare reading DIBELS data, a one-way repeated measure ANOVA statistical analysis was conducted. The independent variable was participation in the public prekindergarten program in the subject school district comprised of student participants who attended the public prekindergarten program in the subject school district and those who did not. The dependent variables were early literacy and reading achievement. The repeated measure ANOVA was used to determine whether there was a significant difference among the DIBELS scores of the independent student groups. The measure was also used to determine whether there was a difference between the DIBELS scores in three different time points in the school year between participants attending the public prekindergarten program as compared to those who did not attend.

A quantitative, comparative study with archival data was designed to determine whether participation in the subject school district public prekindergarten program had an effect on students' early literacy and reading skills in kindergarten. Quantitative research is a "formal, objective, systematic process in which numerical data is used to obtain information about the world" (Burns & Grove, 2005, p. 26). A comparative study was the most appropriate design because there was no manipulation of treatment. In other words, the comparative method was appropriate because it allowed me to uncover differences between groups and to reveal unique aspects of an entity that may be virtually impossible to detect otherwise, as explained by Mills, van de Bundt, and Bruijn (2006). Through this research design, I investigated similarities and variances in the dependent variable between different groups (Mills et al., 2006). This step allowed me to determine the

impact of the independent variable on the dependent variable after the event had already occurred (Meyers, Gamst, & Guarino, 2006). According to Cohen, Manion, and Morrison (2000), the basic purpose of comparative study is to discover or establish causal or functional differences among variables. In a comparative study with an extant data set, the researcher examines the effects of a naturally occurring treatment after it has occurred, rather than creating the treatment itself, and attempts to relate this after-the-fact treatment to an outcome or dependent measure. Retrospectively, the researcher studies the independent variables for possible differences and effects on the dependent variable. In this study, I compared the independent variable of early literacy scores and reading skills as measured by DIBELS at three different points in the school year: fall (start), winter (middle), and spring (end). Other methods were deemed inappropriate for the present study for several reasons. A correlational study approach was inappropriate because the objective is not to determine a correlation between variables. An experimental study was inappropriate because there was no manipulation of variables; rather, the grouping (participation or nonparticipation in prekindergarten programs) and the quantitative outcomes (DIBELS scores) served as historic data.

Setting and Sample

The population for this study was kindergarten students in the year 2011–2012, located in three of five elementary schools in a rural school district in a southeastern state. Members of the control group had not participated in the subject district's public prekindergarten program in the preceding school year, while members of the test group would have enrolled in a specific public prekindergarten program in the 2010–2011

school year. The subject school district's population was 67% low income as identified through eligibility for the free/reduced lunch program.

A convenience sampling plan was employed for the purpose of the study. The convenience sampling plan is a form of nonprobability sampling where the participants are selected according to their availability, accessibility, and proximity to the researcher (Urdan, 2005). Consent for participation was not submitted because the study utilized secondary data from an existing archived testing data set from student codes (no names) and numbers that represented individual participants.

When calculating a sample size for a study, three factors should be taken into consideration. The first factor is the power of the test. The power of the test measures the probability of rejecting a false null hypothesis (Keuhl, 2000). For the purpose of this study, a power of 80% was selected to adequately reject false null hypotheses (Moore & McCabe, 2006). A power of 80% ensured that the statistical analyses provided valid conclusions for the statistical analysis. The power provided 80% strength in terms of assessing the validity of the statistical test that was conducted. The second factor was the effect size, which measured the strength of the relationship between the variables in the study (Cohen, 1988). Cohen (1988) defined the effect size for different tests with three different categories: a small effect, moderate effect, and a large effect. For the purpose of this study, a moderate effect size was selected because this would once again provide evidence of a relationship between the independent and dependent variables without being too strict or lenient.

The final factor to be considered was the level of significance. The level of significance was the probability of rejecting a true null hypothesis and is generally defined as being equal to 5% (Moore & McCabe, 2006). The level of significance was selected prior to conducting the analysis, such that it could be determined whether there was a significant relationship between the variables. For this study, the level of significance selected was 5% because this provided a 95% confidence level that the conclusions drawn from the statistical tests were true (Moore & McCabe, 2006). Based on the above information, the minimum sample size was calculated through G*Power considering 80% power, medium effect size, ANOVA, and two groups to compare the scores of student participants. Therefore, the minimum sample size was 128 participants. The study used 65 participants with prekindergarten experience and 65 participants that did not participate in the public prekindergarten experience to achieve 80% power for the statistical tests. If the collected samples were less than 128 participants, the strength of the analysis decreased. Therefore, this decreased the validity and generalizability of the findings from the statistical tests.

Instrument and Materials

The 6th edition DIBELS was used to measure the reading readiness skills of kindergarteners. Good and Kaminiski (2002) created the DIBELS at the University of Oregon. The measure was developed to monitor early reading skills in children to provide intervention and to evaluate the acquisition of critical early reading skills (Good et al., 2001). This assessment is used to predict children's acquisition of essential literacy skills with an 80% probability of achieving the next reading goal (University of Oregon Center

on Teaching and Learning, 2008b). The measure is centered on phonological awareness, alphabetic principle, accuracy, and fluency. The DIBELS was selected because it measures the acquisition of early reading skills which are necessary for later reading success (Elliott, Lee, & Tollefson, 2001; Fischel et al., 2007; Molfese et al., 2006). These measures also help to predict future problems and allow educators to have the appropriate information to implement effective interventions for prevention (Good et al., 2003). The DIBELS can be used repeatedly and is an economical and simple assessment to administer (Good et al., 2003). Each subtest takes approximately one minute to administer per child and corresponds to the five major concepts of reading, as identified by the National Institute of Child Health and Human Development (Simmons et al., 2000).

Furthermore, the state in which the school is located encourages that DIBELS be administered in kindergarten through third grade. The state also provides training for local education agencies on the administration and analysis of DIBELS as part of an initiative to improve student reading achievement. Benchmark goals, as listed in Table 1, represent minimum levels of performance to be on track for becoming a proficient reader (University of Oregon Center on Teaching and Learning, 2008b). Table 1 represents research-based, criterion referenced scores for the probability of achieving early reading goals. Scores are listed in two different forms: (a) at risk, some risk, and low risk; and (b) deficit, emerging, and established. The first is used to identify whether a child is on track to reach the goal by the time the skill should be firmly established. The second refers to the point in time when the child should be established in the skill to become a fluent

reader (University of Oregon Center on Teaching and Learning, 2008b). The data for this study were continuous and appeared as the following:

Beginning of the year:

- 1 = 0–3 = At Risk
- 2 = 4–7 = Some Risk
- 3 = 8 < = Low Risk

These data were not computed to achieve the mean, but rather were used for descriptive frequencies. The use meant that SPSS automatically counted the number of responses at the beginning, middle, and end of the year.

Table 1

Kindergarten Measures and Benchmark Goals

DIBELS Measure	Beginning of Year	Middle of Year	End of Year
ISF	0-3 at risk 4-7 some risk 8≤ low risk	0-9 deficit 10-24 emerging 25≤ established	Not administered
LNF	0-1 at risk 2-7 some risk 8≤ low risk	0-14 at risk 15-26 some risk 27 ≤ low risk	0-28 at risk 29-39 some risk 40 ≤ low risk
PSF	Not administered	0-6 at risk 7-17 some risk 18 ≤ low risk	0-9 deficit 10-34 emerging 35 ≤ low risk
NWF	Not administered	0-4 at risk 5-12 some risk 13 ≤ low risk	0-14 at risk 15-24 some risk 25 ≤ low risk

Note. ISF = Initial Sound Fluency; LNF = Letter Naming Fluency; PSF = Phoneme Segmentation Fluency; NWF = Nonsense Word Fluency. Adapted from DIBELS benchmark goals: Three assessment periods per year by the University of Oregon Center on Teaching and Learning (2008a). Retrieved from http://dibels.uoregon.edu.

In addition, several other studies (Cummings, Dewey, Latimer, & Good, 2011; Wilson & Lonigan, 2010) have used the DIBELS measure in analyzing emergent literacy skills in prekindergarten and kindergarten students.

Reliability and Validity

Current empirical evidence indicates poor learning trajectories for students with early literacy skill deficits (Gamse et al., 2008; Jackson et al., 2007; Mathew, 2010; Mathis, 2009; Pruisner, 2009; Schoen & Fusarelli, 2008). Therefore, the reliable and valid detection of at-risk students through regular screening and progress monitoring is necessary to determine whether students require assistance in learning to read and write. One of the most frequently used progress-monitoring assessments for the detection of early literacy skills is the DIBELS (Good et al., 2001). The Early Childhood Research Institute on Measuring Growth and Development at the University of Oregon constructed DIBELS over seventeen years ago (Good & Kaminski, 2003). According to Good, Gruba, and Kaminski (2001), DIBELS is a nationally norm-referenced test, and its reliability, validity, and sensitivity have been investigated in a series of studies. In a published technical report, Good et al. (2001) analyzed data for each DIBELS subtest and found that the reliability of the DIBELS measure is generally considered adequate, ranging from .72 to .94 for the various indicators. The lowest reliability found was the Initial Sound Fluency at .72 (Good et al., 2001). Numerous researchers investigating the concurrent and predictive criterion-related validity of DIBELS scores with standardized test scores, particularly state assessments, have emerged in more recent years. For example, Shaw and Shaw (2002) observed oral reading fluency (ORF) scores to predict

third graders' performance on the Colorado State Assessment. The strongest correlation found was $r = 80$, which was a high association in predicting student performance. In another design, Vander Meer et al. (2005) compared fourth grade students' performance on the Ohio Proficiency Test in Reading to their third grade DIBELS scores. Results yielded nearly identical results, with 97% sensitivity and 72% specificity. Buck and Torgesen (2003) reported that third graders' ORF performance had a direct correlation with the Florida Comprehensive Assessment Test. The reading was $r = 72\%$, with a 92% specificity and 77% sensitivity. Examining the validity of DIBELS scores for identifying early elementary students at risk for future difficulties is one method to expedite preventive measures against literacy discrepancies. Hall (2006) reported that the RF committee also found DIBELS to be valid and reliable as a screening for progress monitoring and outcome measures.

Data Collection

This subsection provided the methods for collecting and analyzing the data used in this study. A secondary data analysis was conducted that included data pulled from reputable school databases. The DIBELS instruments were not administered in this study, as the goal was not to collect new data. Secondary data analysis evaluates data that already exists in historical records, databases, and documents. Analyzing pre-existing data is used to investigate new questions or to verify previously collected data (Andrews, Higgins, Andrews, & Lalor, 2012). This study involved the use of existing archived quantitative data from the office of the chosen school district, which allowed for an analysis systematically using statistical software in order to determine the effect of

participation in pre-kindergarten programs on early literacy and reading skills. Informed consent was not needed because there were no actual individuals participating in the study.

Prior to the study, school system personnel were contacted to discuss the nature of the research in detail. Because the archival DIBELS data were obtained from each school site, permission from the school's principal was obtained to collect archival DIBELS data for the study in the school database. A letter of request was also used and is included in the Appendix.

For the analysis using the repeated measure ANOVA, the independent variable in this study was categorical (i.e. participation or nonparticipation in public prekindergarten programs). The dependent variable was the students' raw DIBELS scores, which were continuous. However, the categorization of the students' DIBELS scores in terms of the ordinal scores of *at* or *above* benchmark, *below* benchmark, or *well below* benchmark summarize the data in the descriptive statistics analysis. Participants were first categorized on the basis of their participation in prekindergarten in the subject school's district public prekindergarten program (i.e. the independent variable). A coding system consisting of letters and numbers was used to ensure that the data remained anonymous. Each participant's performance data was assigned a number. This method of coding ensured the anonymity and confidentiality of each student. Data was entered into an SPSS program and organized by each student's assigned school to allow for coding. The student data consisted of three DIBELS test dates for Letter Name Fluency, Nonsense

Word Fluency, Phone Segmentation Fluency, and Initial Sound Fluency representing the school entry, midpoint, and end of the year benchmark scores.

Research Questions and Hypotheses

This comparative, quantitative study method allowed for a focus on the following research questions.

RQ 1: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the beginning of the kindergarten school year?

RQ 2: Is there a difference in the initial sound fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the beginning of the kindergarten school year?

RQ 3: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 4: Is there a difference in the nonsense word fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 5: Is there a difference in the phoneme segmentation fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 6: Is there a difference in the initial sound fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 7: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 8: Is there a difference in the phoneme segmentation fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 9: Is there a difference in the nonsense word fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

The research questions led to the below hypotheses, respectively.

$H1_0$: There is no difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H1_1$: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H2_0$: There is no difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H2_1$: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

$H3_0$: There is no difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H3_1$: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H4_0$: There is no difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H4_1$: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H5_0$: There is no difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H5_1$: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H6_0$: There is no difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H6_1$: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

$H7_0$: There is no difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H7_1$: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H8_0$: There is no difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H8_1$: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H9_0$: There is no difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

$H9_1$: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

The research questions were explored, addressed, and organized by the order of data collected (beginning of school year, middle of school year, and end of school year).

The beginning of school year data was used to address Research Questions 1 and 2.

Data Analysis

Archived data were analyzed using SPSS, and 2011–2012 Kindergarten DIBELS data were used for data analysis. Extant sets of data were also used. One set included the DIBELS data of students who participated in the subject school district's public prekindergarten program. The second set included DIBELS data of students in kindergarten who did not participate in the public prekindergarten program. Data was

analyzed to determine whether the two sets of data were statistically different from one other. A repeated measure ANOVA was conducted to determine any differences in the DIBELS scores of the two groups at different points in time for the data analysis. The data were coded with numbers to ensure that students' names were kept confidential.

The information requested included the following: class listing with a research code assigned by the school system for each child who attended pre-kindergarten in the four classes in the subject school district, and DIBELS scores for each subtest during kindergarten. The data were entered into a table as a Microsoft Excel file and were displayed in chart form. The Excel table was opened as a file in PSAW Statistics GradPack 18, more commonly referred to as SPSS version 18. Coding for nominal and ordinal data was completed, and SPSS was used to calculate the statistical results. A repeated measures ANOVA was conducted to determine whether there was a substantial difference among the student participants' early literacy and reading skills compared to those who attended the district public prekindergarten program and those who did not through the use of the DIBELS assessment.

A repeated measures ANOVA is also referred to as within-subjects ANOVA or ANOVA for correlated samples. Each of these names implies the nature of the repeated measures ANOVA to detect any overall differences between related means. This statistical tool is best used when investigating changes in scores over three or more time points, or differences in scores under three or more different conditions. This analysis determined differences in the DIBLES scores between the two independent groups at each of the three time periods. The independent variable was the grouping of the

participants in terms of the participation in the public prekindergarten program in the subject school district. The dependent variables were the students' early literacy and reading skills as measured by DIBELS scores. The repeated measures ANOVA captured a significant difference in the literacy skill development, as measured by total score on DIBELS, between students who attended the public prekindergarten program and those who did not participate in the program. The use of repeated measures ANOVA was justified because it accounted for the comparison of scores between the two student groups. A significance level of 0.05 was used as the *p*-value threshold for significance.

Protection of Participants' Rights

All features of this study were conducted ethically, professionally, and in accordance with the guidelines and requirements of Walden University's Institutional Review Board (IRB). The IRB is a necessary component of research that ensures proper ethical standards and that federal regulations will be adhered to during the research study process. The IRB approval number for this study is 07-03-14-0144719. The research proposal was reviewed and approved prior to conducting the research. The local requirements included meeting with the subject school district's superintendent, who was responsible for approving permission to retrieve the data, permission from all elementary principals in the district to collect the archived DIBELS data from each school site, and a data use agreement form allowing access to the extant data. The confidentiality of participants was protected using a number system as opposed to using participant's names when reporting data. No identifiable names were used when referring to the participating schools or districts. The terms "research subject school" or "district" were

used instead of the school or district's name. All data files were stored on a personal computer that is password protected. The computer is also linked to a secure home network. At the conclusion of the research study, all electronic information was stored on an offline storage device, which is to be stored in a lockbox for at least five years as regulated by the IRB guidelines of Walden University. Proper procedures for discarding the data will be strictly enforced at that time.

Role of the Researcher

I have served as a principal in one of the five elementary schools in the research study subject school district for nine years. I previously served in the subject school district as a classroom teacher for 16 years, teaching Grades 2, 4, 5, and 6. I was responsible for submitting IRB approval to the subject school district as well as Walden University. My role involved meeting with the school district's superintendent and central office director of instruction. This individual provided the archived DIBELS data and an access form to sign. I was also responsible for mailing a letter to elementary principals requesting permission to collect archived 2011–2012 DIBELS data at each elementary school site. As researcher, I did not have any involvement in administering the DIBELS assessment. All data analyzed for this study came from preexisting school data files. It was my responsibility to enter the data into the SPSS data system and analyze them for research conclusions.

Summary

Researchers have developed several studies and projects to determine the effects of prekindergarten programs on students' early literacy and reading skills. Section Three

provided the research methodology and in-depth knowledge about the research procedures as well as the role of the participants. This research study was unique in that it specifically focused on the public prekindergarten program in the subject school district. DIBELS is a reliable and valid early literacy screening that provided numerical data to determine the effects of student participation in the public prekindergarten program on early literacy and reading skills. The results of the data analysis are presented in Section Four. Section Five summarizes the findings and presents the implications, limitations, and recommendations for future research.

Section 4: Results

The purpose of this study was to compare the early literacy and reading skills of students who participated in the district public prekindergarten with students who did not participate in the program. Archival data of DIBELS in the year 2011–2012 from three of five elementary schools in a rural school district in a southeastern state were used in this quantitative comparative research. A Repeated measures ANOVA was the statistical technique used to address the research questions.

Descriptive Information

The beginning of school year data represents the archival data collected from kindergarten students in the beginning of the school year 2011–2012. This section presents the descriptive information of the study variables of class type, ISF and LNF scores, as well as supplementary information of categorization of the ratings of various scales. Figure 1 presents a bar chart for the students and their class type categorization. There were a total of 130 students from the beginning of school year data. As observed, half of the samples (n = 65, 50%) did not participate in the prekindergarten program, while the other half (n = 65, 50%) participated in the prekindergarten program.

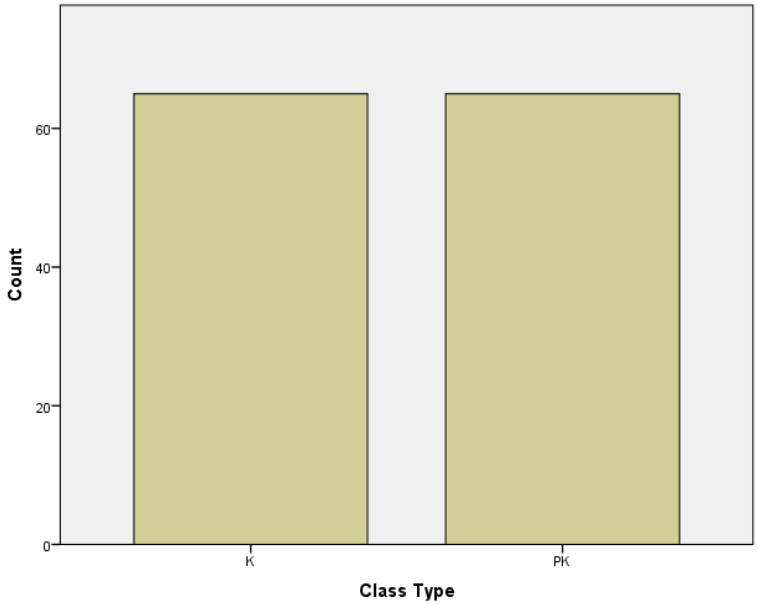

Figure 1. Bar chart of class type, beginning ($N = 130$).

Figure 2 presents a pie chart for the categorization of the initial sound fluency (ISF) ratings for the students. As observed, for ISF, 17.7% ($n = 23$) of the students were categorized as "At risk," 16.2% ($n = 21$) were categorized as "Some risk," and 66.2% ($n = 86$) were categorized as "Low risk."

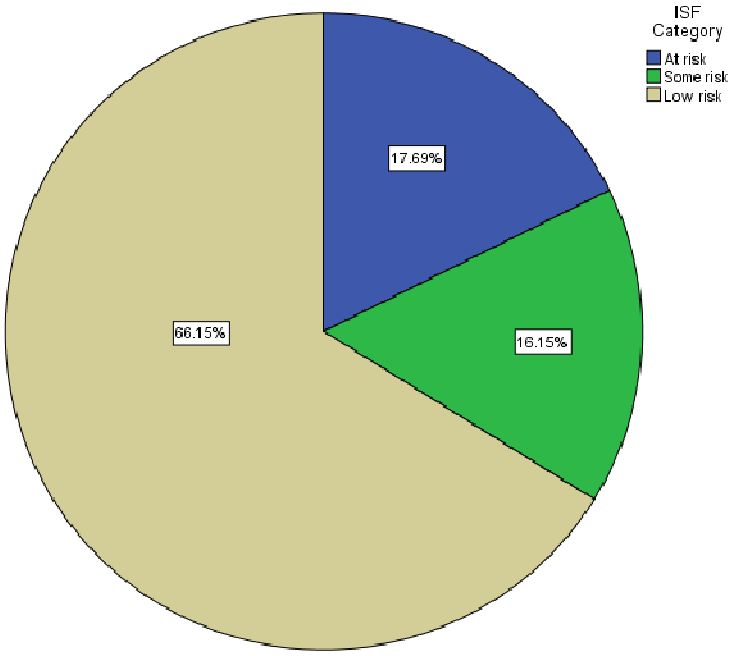

Figure 2. Pie chart of ISF rating categorization, beginning (N = 130).

Figure 3 presents a pie chart for the categorization of the letter naming fluency (LNF) ratings for the students. As observed, for LNF, 33.8% (n = 44) of the students were categorized as "At risk," 17.7% (n = 23) were categorized as "Some risk," and 48.5% (n = 63) were categorized as "Low risk."

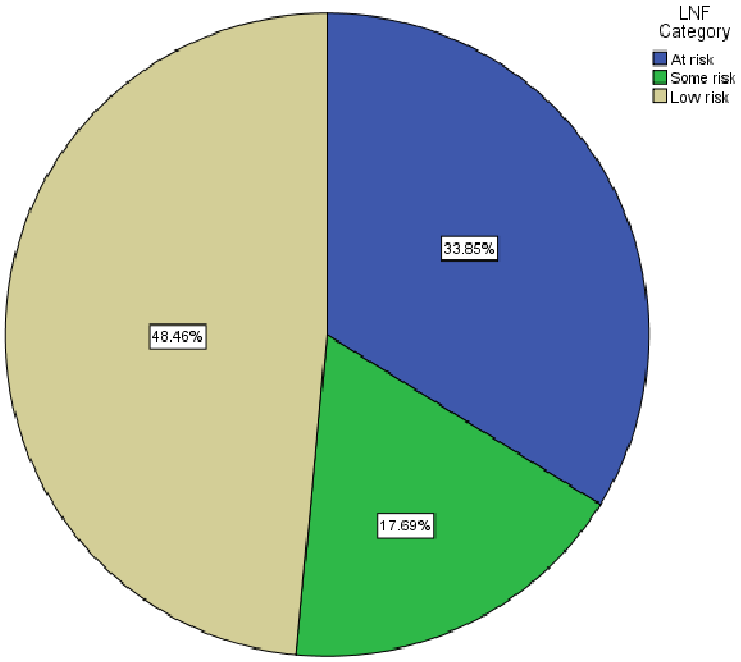

Figure 3. Pie chart of LNF rating categorization, beginning (N = 130).

Figure 4 presents a pie chart for the categorization of the instructional recommendation based on the DIBELS scores of the students. As observed, 41.5% (n = 54) were categorized as "Benchmark," 25.4% (n = 33) were categorized as "Intensive," and 33.1% (n = 43) were categorized as "Strategic."

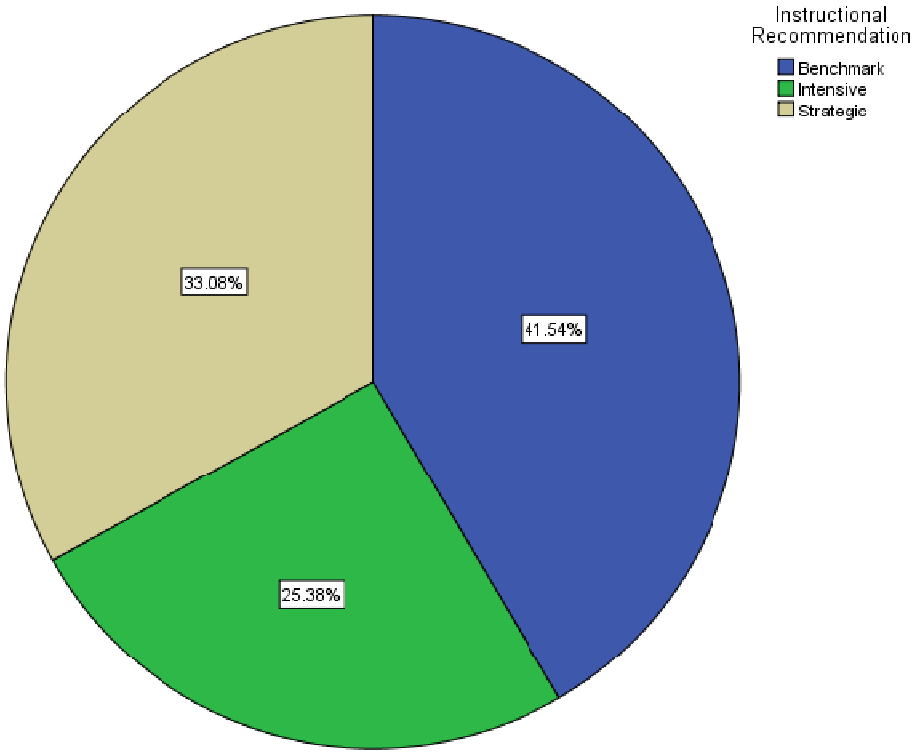

Figure 4. Pie chart of instructional recommendation categorization, beginning (N = 130).

Table 2 presents the descriptive statistics of the dependent variables of ISF score and LNF score for the beginning of the year data. For ISF score, there was a minimum score of 0, a maximum of 47, and an average of 12.31 (SD = 9.70). For LNF score, there was a minimum score of 0, a maximum of 75, and an average of 13.35 (SD = 15.58).

Table 2

Descriptive Statistics of Dependent Variables (Beginning)

	N	Minimum	Maximum	Mean	Std. Deviation
ISF Score	130	0.00	47.00	12.3077	9.70243
LNF Score	130	0.00	75.00	13.3462	15.58259

Test for Normality

To test for the normality of data, Shapiro-Wilk's test for normality was conducted. As observed in Table 3, both dependent variables (ISF score and LNF score) were not normally distributed ($p < 0.05$). However, ANOVA is robust to the violation of non-normality of data (Howell, 2002). As such, repeated measure ANOVA tests were conducted.

Table 3

Normality Test of Dependent Variables (Beginning)

	Shapiro-Wilk		
	Statistic	Df	Sig.
ISF Score	.921	130	.000
LNF Score	.827	130	.000

Research Question 1

A repeated measure ANOVA was conducted to address Research Question 1. Table 4 presents the descriptive statistics for the LNF score for each separate subgroup (No pre-k exposure and pre-k exposure), as well as the total.

Table 4

Descriptive Statistics of LNF Score by Subgroup (Beginning)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	9.2154	8.34134	1.03462	7.1485	11.2823	0.00	45.00
PK	65	15.4000	10.03712	1.24495	12.9129	17.8871	0.00	47.00
Total	130	12.3077	9.70243	.85096	10.6240	13.9913	0.00	47.00

Table 5 presents the output of the ANOVA analysis for LNF score. As observed, there was a statistically significant difference between “no pre-k exposure” and “had pre-k exposure” as determined by a repeated measures ANOVA (F (1, 128) = 14.60, $p <$ 0.001). Referring to Table 4, the mean score of LNF was higher for those that participated in the prekindergarten program (M = 15.4, SD = 10.04) than for those that did not (M = 9.22, SD = 8.34). As such, the LNF scores for those who participated in the prekindergarten program were statistically higher than for those who did not. The first null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

Table 5

ANOVA Test Results of LNF Score (Beginning)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1243.108	1	1243.108	14.597	.000
Within Groups	10900.585	128	85.161		
Total	12143.692	129			

Research Question 2

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 2. Table 6 presents the descriptive statistics for the ISF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 6

Descriptive Statistics of ISF Score by Subgroup (Beginning)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	10.2462	14.00896	1.73760	6.7749	13.7174	0.00	75.00
PK	65	16.4462	16.54259	2.05186	12.3471	20.5452	0.00	59.00
Total	130	13.3462	15.58259	1.36668	10.6421	16.0502	0.00	75.00

Table 6 presents the output of the ANOVA analysis for ISF score. As observed, there was a statistically significant difference between “no pre-k exposure” and “had pre-

k exposure," as determined by a repeated measure ANOVA (F (1, 128) = 5.317, p = 0.023). Referring to Table 7, the mean score of ISF was higher for those who participated in the prekindergarten program (M = 16.45, SD = 16.54) than for those who did not (M = 10.25, SD = 14.01). As such, the ISF scores for those who participated in the prekindergarten program were statistically and significantly higher than for those who did not. The second null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.

Table 7

ANOVA Test Results of ISF Score (Beginning)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1249.300	1	1249.300	5.317	.023
Within Groups	30074.123	128	234.954		
Total	31323.423	129			

Middle of school year data. The middle of school year data was used to address Research Questions 3 through 6.

Descriptive information. The middle of school year data represents the archival data collected from kindergarten students in the middle of the school year 2011-2012. This section presents the descriptive information of the study variables of class type, LNF, PSF, NWF, and ISF scores, as well as supplementary information of categorization

of the ratings of various scales. Figure 5 presents a bar chart for the students and their class type categorizations. There were a total of 130 students from the middle of school year data. As observed, half of the samples (n = 65, 50%) did not participate in the pre-kindergarten program, while the other half (n = 65, 50%) participated in the pre-kindergarten program.

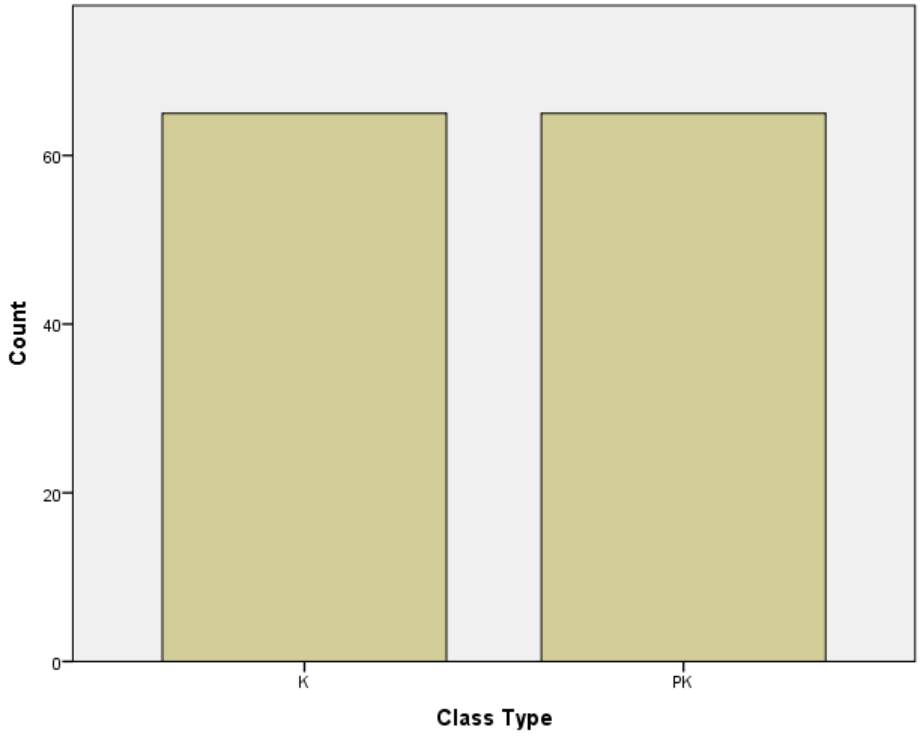

Figure 5. Bar chart of class type (middle) (N = 130).

Figure 6 presents a pie chart for the categorization of the letter naming fluency (LNF) ratings for the students. As observed, for LNF, 16.9% (n = 22) of the students were categorized as "At risk," 13.8% (n = 18) were categorized as "Some risk," and 69.2% (n = 90) were categorized as "Low risk."

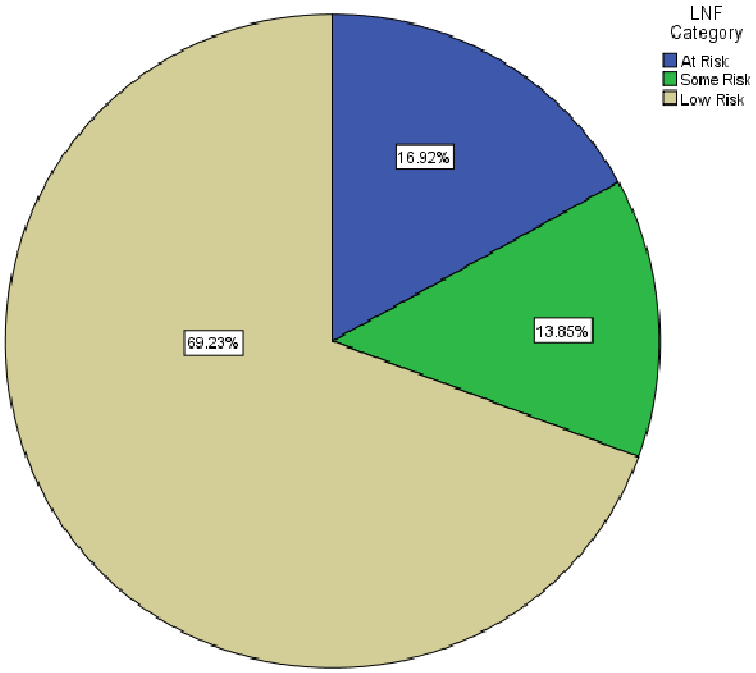

Figure 6. Pie chart of LNF rating categorization (middle) (N = 130).

Figure 7 presents a pie chart for the categorization of the phoneme segmentation fluency (PSF) ratings for the students. As observed, for PSF, 17.7% (n = 23) of the students were categorized as "At risk," 20.8% (n = 27) were categorized as "Some risk," and 61.5% (n = 80) were categorized as "Low risk."

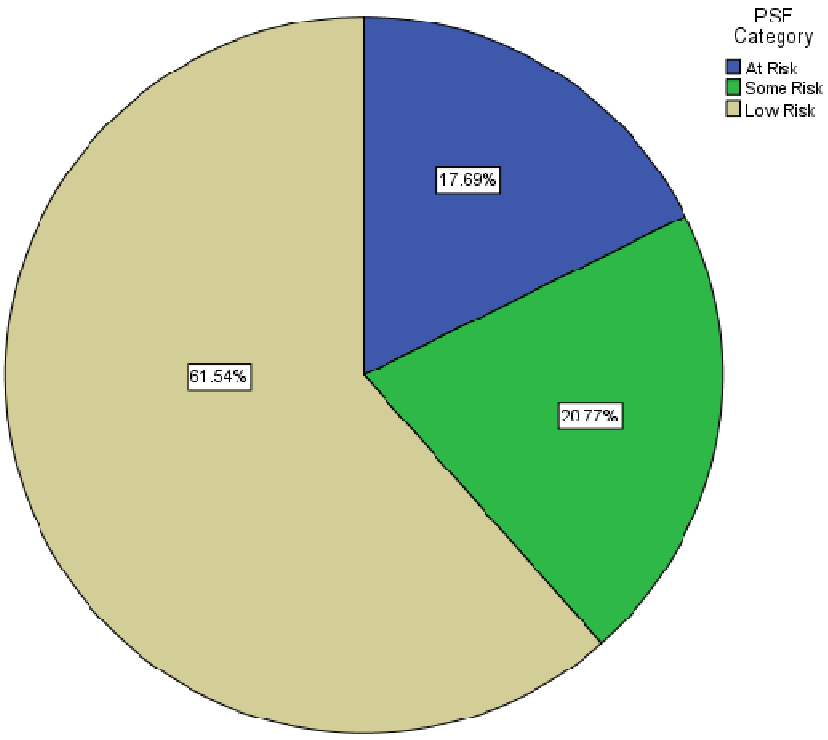

Figure 7. Pie chart of PSF rating categorization (middle) ($N = 130$).

Figure 8 presents a pie chart for the categorization of the nonsense word fluency (NWF) ratings for the students. As observed, for NWF, 14.6% ($n = 19$) of the students were categorized as "At risk," 15.4% ($n = 20$) were categorized as "Some risk," and 70% ($n = 91$) were categorized as "Low risk."

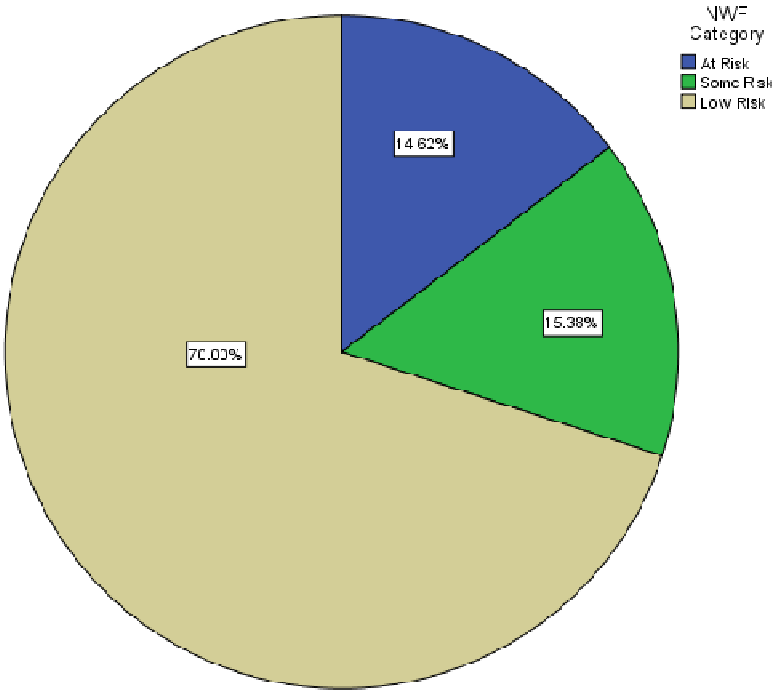

Figure 8. Pie chart of NWF rating categorization (middle) ($N = 130$).

Figure 9 presents a pie chart for the categorization of the initial sound fluency (ISF) ratings for the students. As observed, for ISF, 1.5% ($n = 2$) of the students were categorized as "Deficit," 13.1% ($n = 17$) were categorized as "Emerging," and 85.4% ($n = 111$) were categorized as "Established."

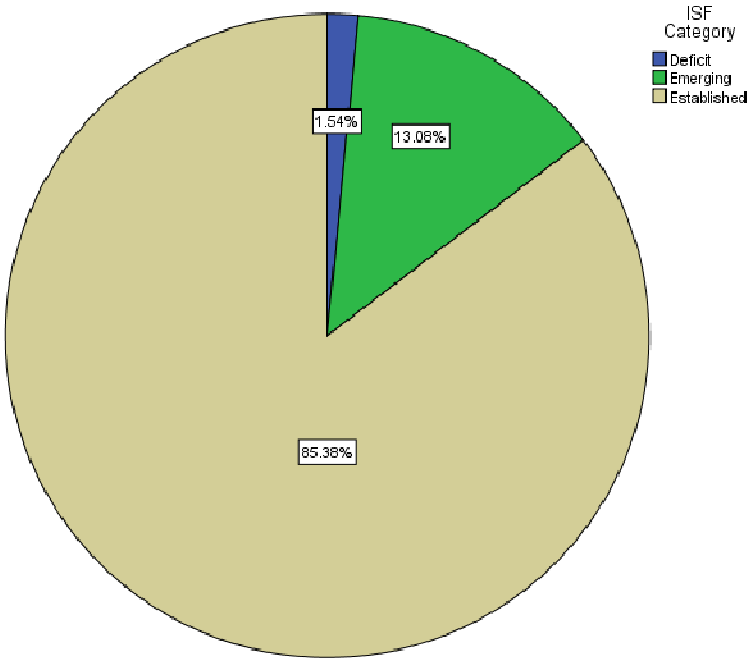

Figure 9. Pie chart of ISF rating categorization (middle) (N = 130).

Figure 10 presents a pie chart for the categorization of the instructional recommendation based on the DIBELS scores of the students. As observed, 73.1% (n = 95) were categorized as "Benchmark," 6.2% (n = 8) were categorized as "Intensive," and 20.8% (n = 27) were categorized as "Strategic."

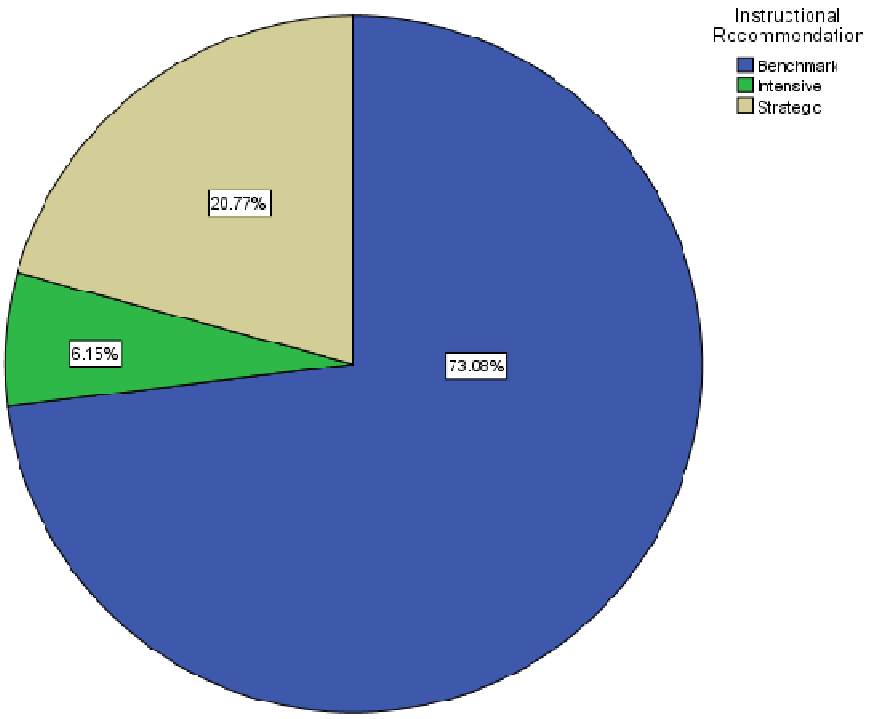

Figure 10. Pie chart of instructional recommendation categorization (middle) (*N* = 130).

Table 8 presents the descriptive statistics of the dependent variables of LNF score, PSF score, NWF score, and ISF score for the middle of the year data. As observed, for LNF score, there was a minimum score of 1, a maximum of 88, and an average of 36.02 (*SD* = 18.93). For PSF score, there was a minimum score of 0, a maximum of 61, and an average of 24.9 (*SD* = 15.94). For NWF score, there was a minimum score of 0, a maximum of 98, and an average of 23.44 (*SD* = 16.94).

Table 8

Descriptive Statistics of Dependent Variables (Middle)

	N	Minimum	Maximum	Mean	Std. Deviation
LNF Score	130	1.00	88.00	36.0154	18.93071
PSF Score	130	0.00	61.00	24.9000	15.94168
NWF Score	130	0.00	98.00	23.4385	16.94130
ISF Score	130	2.00	120.00	44.6615	23.04816

Test for normality. To test for the normality of data, Shapiro-Wilk's test for normality was conducted. As observed in Table 9, only LNF score was found to be normally distributed (p = 0.0.064), while the dependent variables of PSF score, NWF score, and ISF score were not normally distributed (p<0.001). However, ANOVA is robust to the violation of non-normality of data (Howell, 2002). As such, repeated measure ANOVA tests were conducted.

Table 9

Normality Test of Dependent Variables (Middle)

	Shapiro-Wilk		
	Statistic	Df	Sig.
LNF Score	.981	130	.064
PSF Score	.956	130	.000
NWF Score	.932	130	.000
ISF Score	.939	130	.000

Research Question 3

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 3. Table 10 presents the descriptive statistics for the LNF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 10

Descriptive Statistics of LNF Score by Subgroup (Middle)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	30.5231	16.65749	2.06611	26.3956	34.6506	1.00	83.00
PK	65	41.5077	19.58565	2.42930	36.6546	46.3608	2.00	88.00
Total	130	36.0154	18.93071	1.66033	32.7304	39.3004	1.00	88.00

Table 11 presents the output of the ANOVA analysis for LNF score. As observed, there was a statistically significant difference between "No pre-k exposure" and "had pre-k exposure" as determined by a repeated measure ANOVA (F (1, 128) = 11.86, p=0.001). Referring to Table 9, the mean score of LNF was higher for those who participated in the prekindergarten program (M = 41.51, SD = 19.59) than of those who did not (M = 30.52, SD = 16.66). As such, the LNF scores for those who participated in the prekindergarten program were statistically and significantly higher than for those who did not. The third null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the letter name fluency between students who participated in the

prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

Table 11

ANOVA Test Results of LNF Score (Middle)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	3921.508	1	3921.508	11.864	.001
Within Groups	42308.462	128	330.535		
Total	46229.969	129			

Research Question 4

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 4. Table 12 presents the descriptive statistics for the NWF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 12

Descriptive Statistics of NWF Score by Subgroup (Middle)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	17.9077	12.62280	1.56567	14.7799	21.0355	0.00	54.00
PK	65	28.9692	18.89525	2.34367	24.2872	33.6512	0.00	98.00
Total	130	23.4385	16.94130	1.48585	20.4987	26.3783	0.00	98.00

Table 13 presents the output of the ANOVA analysis for NWF score. As observed, there was no statistically significant difference between "no pre-k exposure" and "had pre-k exposure," as determined by a repeated measure ANOVA (F (1, 128) = 15.402, p<0.001). Referring to Table 11, the mean score of NWF was higher for those who participated in the prekindergarten program (M = 28.97, SD = 18.90) than for those who did not (M = 17.91, SD = 12.62). As such, the NWF scores for those who participated in the prekindergarten program were statistically and significantly higher than for those who did not. The fourth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

Table 13

ANOVA Test Results of NWF Score (Middle)

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	3976.623	1	3976.623	15.402	.000
Within Groups	33047.385	128	258.183		
Total	37024.008	129			

Research Question 5

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 5. Table 14 presents the descriptive statistics for the PSF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 14

Descriptive Statistics of PSF Score by Subgroup (Middle)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	19.2462	14.47199	1.79503	15.6602	22.8321	0.00	54.00
PK	65	30.5538	15.42323	1.91302	26.7322	34.3755	0.00	61.00
Total	130	24.9000	15.94168	1.39818	22.1337	27.6663	0.00	61.00

Table 15 presents the output of the ANOVA analysis for PSF score. As observed, there was statistically a significant difference between "no pre-k exposure" and "had pre-k exposure," as determined by a repeated measure ANOVA (F (1, 128) = 18.58, p<0.001). Referring to Table 15, the mean score of PSF was higher for those who participated in the prekindergarten program (M = 30.55, SD = 15.42) than for those who did not (M=19.25, SD=14.47). As such, the PSF scores for those who participated in the prekindergarten program were statistically and significantly higher than for those who did not. The fifth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

Table 15

ANOVA Test Results of PSF Score (Middle)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	4155.577	1	4155.577	18.580	.000
Within Groups	28628.123	128	223.657		
Total	32783.700	129			

Research Question 6

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 6. Table 16 presents the descriptive statistics for the ISF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 16

Descriptive Statistics of ISF Score by Subgroup (Middle)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	37.5538	20.18123	2.50317	32.5532	42.5545	2.00	97.00
PK	65	51.7692	23.68199	2.93739	45.9011	57.6373	14.00	120.00
Total	130	44.6615	23.04816	2.02146	40.6620	48.6610	2.00	120.00

Table 17 presents the output of the ANOVA analysis for ISF score. As observed, there was a statistically significant difference between “no pre-k exposure” and “had pre-

k exposure," as determined by a repeated measure ANOVA (F (1, 128) = 13.568, p<0.001). Referring to Table 17, the mean score of ISF was higher for those who participated in the prekindergarten program (M = 51.77, SD = 23.68) than for those who did not (M=37.55, SD = 20.18). As such, the ISF scores for those that participated in the prekindergarten program were statistically and significantly higher than for those who did not. The sixth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

Table 17

ANOVA Test Results of ISF Score (Middle)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	6567.508	1	6567.508	13.568	.000
Within Groups	61959.600	128	484.059		
Total	68527.108	129			

End of school year data. The end of school year data was used to address Research Questions 7 through 9.

Descriptive information. The end of school year data represents the archival data collected from kindergarten students at the end of the 2011-2012 school year. This section presents the descriptive information for the study variables of class type, LNF, PSF, and NWF scores, as well as supplementary information of categorization of the

ratings of various scales. Figure 11 presents a bar chart for the students and their class type categorization. There were a total of 130 students from the middle of school year data. As observed, half of the samples (n = 65, 50%) did not participate in the pre-kindergarten program, while the other half (n = 65, 50%) participated in the pre-kindergarten program.

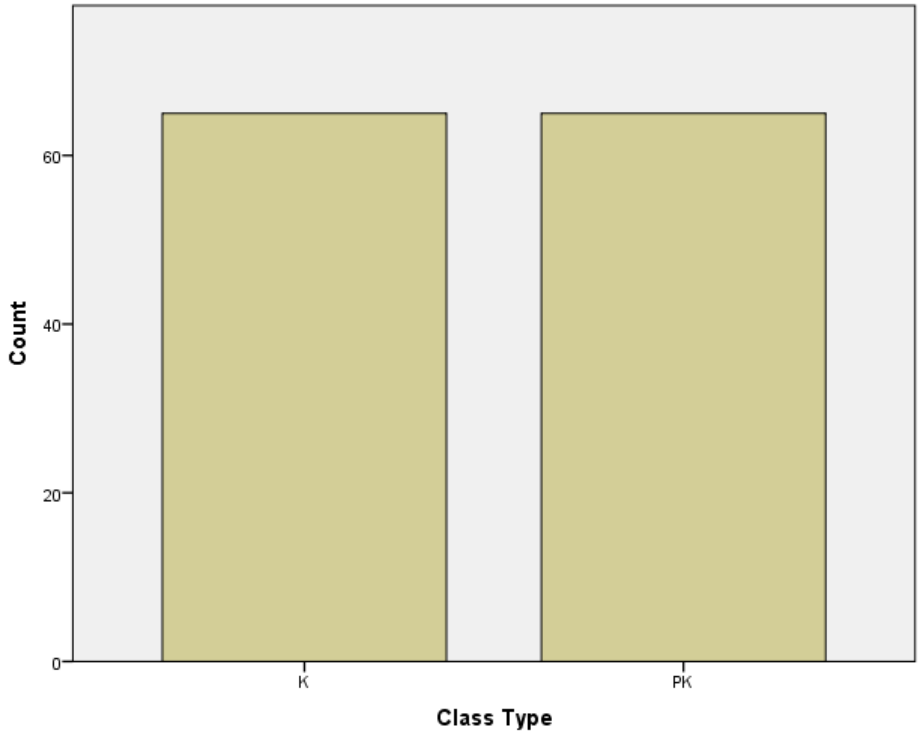

Figure 11. Bar chart of class type (end) (N = 130).

Figure 12 presents a pie chart for the categorization of the letter naming fluency (LNF) ratings for the students. As observed, for LNF, 14.6% (n = 19) of the students were categorized as "At risk," 15.4% (n = 20) were categorized as "Some risk," and 70% (n = 91) were categorized as "Low risk."

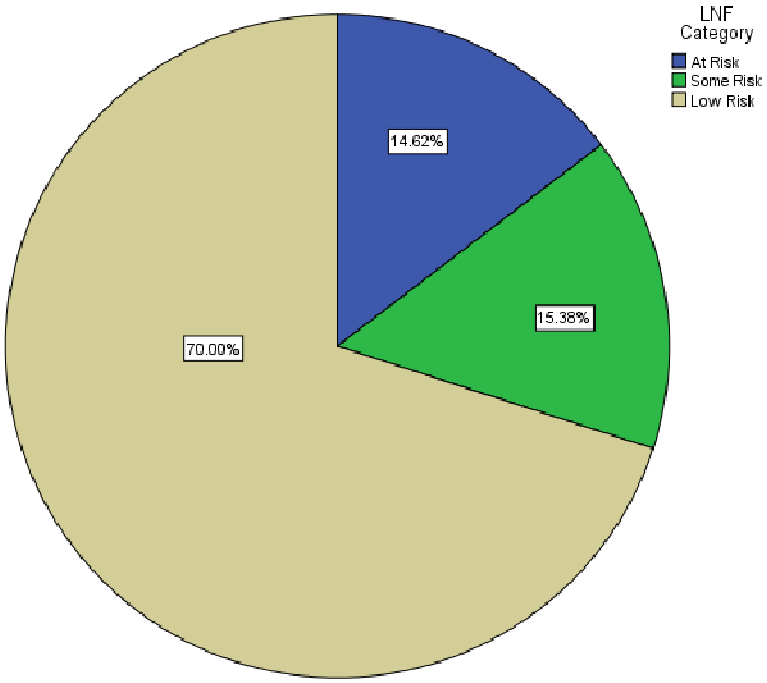

Figure 12. Pie chart of LNF rating categorization (end) (N = 130).

Figure 13 presents a pie chart for the categorization of the phoneme segmentation fluency (PSF) ratings for the students. As observed, for PSF, 2.3% (n = 3) of the students were categorized as "Deficit," 3.8% (n = 5) of the students were categorized as "Emerging," and 93.8% (n = 122) were categorized as "Established."

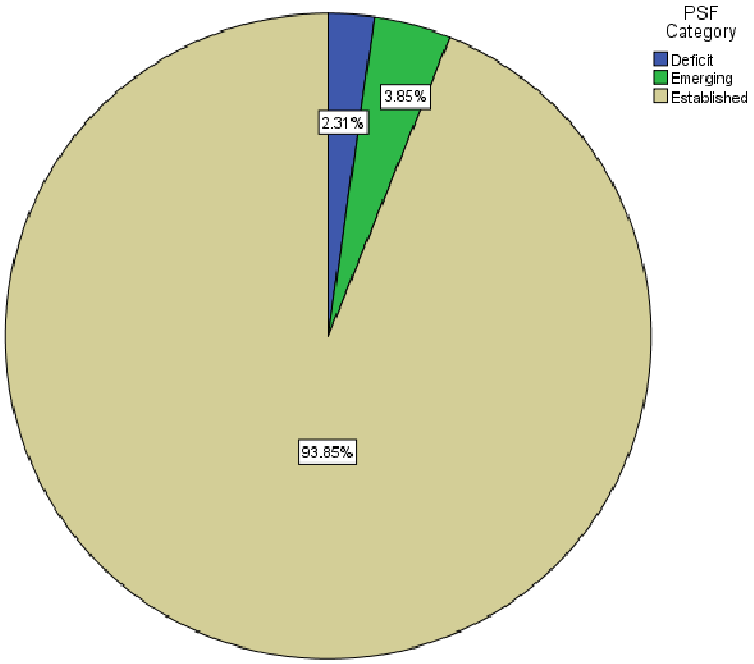

Figure 13. Pie chart of PSF rating categorization (end) ($N = 130$).

Figure 14 presents a pie chart for the categorization of the nonsense word fluency (NWF) ratings for the students. As observed, for NWF, 5.4% ($n = 7$) of the students were categorized as "At risk," 7.7% ($n = 10$) were categorized as "Some risk," and 86.9% ($n = 113$) were categorized as "Low risk."

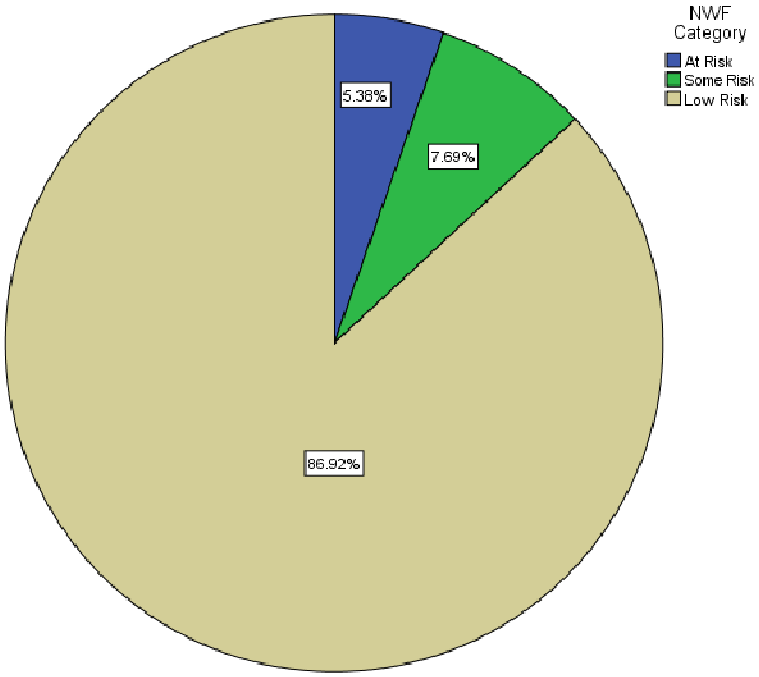

Figure 14. Pie chart of NWF rating categorization (end) (*N* = 130).

Figure 15 presents a pie chart for the categorization of the instructional recommendation based on the DIBELS scores of the students. As observed, 79.2% (*n* = 103) were categorized as "Benchmark," 6.9% (*n* = 9) were categorized as "Intensive," and 13.8% (*n* = 18) were categorized as "Strategic."

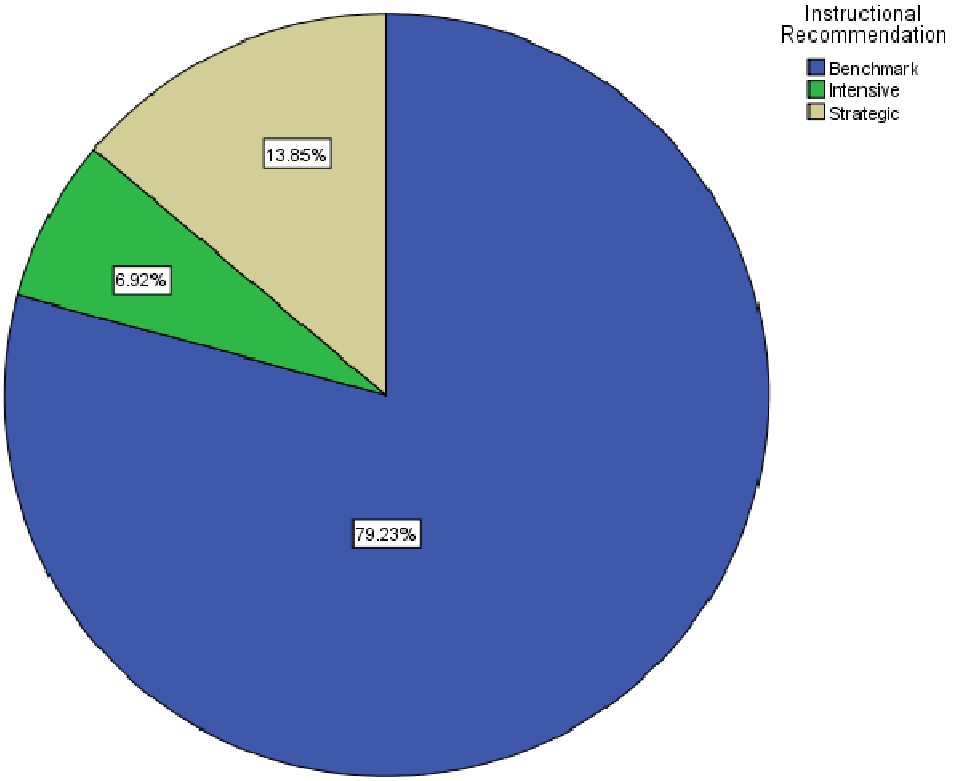

Figure 15. Pie chart of instructional recommendation categorization (end) (*N* = 130).

Table 18 presents the descriptive statistics of the dependent variables of LNF score, PSF score, and NWF score for the end of the year data. As observed, for LNF score, there was a minimum score of 5, a maximum of 104, and an average of 49.07 (*SD* = 19.31). For PSF score, there was a minimum score of 7, a maximum of 80, and an average of 53.78 (*SD* = 14.00). For NWF score, there was a minimum score of 4, a maximum of 145, and an average of 45.64 (*SD* = 24.43).

Table 18

Descriptive Statistics of Dependent Variables (End)

	N	Minimum	Maximum	Mean	Std. Deviation
LNF Score	130	5.00	104.00	49.0692	19.31108
PSF Score	130	7.00	80.00	53.7846	13.99667
NWF Score	130	4.00	145.00	45.6385	24.42994

Test for normality. To test for the normality of data, Shapiro-Wilk's test for normality was conducted. As observed in Table 19, only LNF score was found to be normally distributed (p=0.551), while both dependent PSF score and NWF score were not normally distributed (p<0.001 for both). However, ANOVA is robust to the violation of non-normality of data (Howell, 2002). As such, repeated measure ANOVA tests were conducted.

Table 19

Normality Test of Dependent Variables (End)

	Shapiro-Wilk		
	Statistic	Df	Sig.
LNF Score	.991	130	.551
PSF Score	.902	130	.000
NWF Score	.878	130	.000

Research Question 7

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 7. Table 20 presents the descriptive statistics for the LNF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 20

Descriptive Statistics of LNF Score by Subgroup (End)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	46.1231	18.91800	2.34649	41.4354	50.8107	5.00	104.00
PK	65	52.0154	19.39434	2.40557	47.2097	56.8211	7.00	104.00
Total	130	49.0692	19.31108	1.69369	45.7182	52.4202	5.00	104.00

Table 21 presents the output of the ANOVA analysis for LNF score. As observed, there was no statistically significant difference between “no pre-k exposure” and “had pre-k exposure,” as determined by repeated measure ANOVA (F (1, 128) = 3.074, p=0.084). As such, the LNF scores for those who participated in the prekindergarten program were not statistically or significantly different from those who did not. There was no sufficient evidence to reject the seventh null hypothesis: There is no significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

Table 21

ANOVA Test Results of LNF Score (End)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1128.377	1	1128.377	3.074	.082
Within Groups	46978.000	128	367.016		
Total	48106.377	129			

Research Question 8

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 8. Table 22 presents the descriptive statistics for the NWF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 22

Descriptive Statistics of NWF Score by Subgroup (End)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	40.8462	22.61307	2.80481	35.2429	46.4494	4.00	145.00
PK	65	50.4308	25.39622	3.15001	44.1379	56.7236	4.00	145.00
Total	130	45.6385	24.42994	2.14265	41.3992	49.8777	4.00	145.00

Table 23 presents the output of the ANOVA analysis for NWF score. As observed, there was a statistically significant difference between “no pre-k exposure” and

"had pre-k exposure," as determined by a repeated measure ANOVA (F (1, 128) = 5.164, p=0.025). As such, the NWF scores for those who participated in the prekindergarten program (M = 50.43, SD = 25.40) were statistically and significantly higher than for those who did not (M = 40.85, SD = 22.61). The eighth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

Table 23

ANOVA Test Results of NWF Score (End)

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	2985.608	1	2985.608	5.164	.025
Within Groups	74004.400	128	578.159		
Total	76990.008	129			

Research Question 9

A repeated measure analysis of variance (ANOVA) was conducted to address Research Question 9. Table 24 presents the descriptive statistics for the PSF score for each separate subgroup (no pre-k exposure and had pre-k exposure), as well as the total.

Table 24

Descriptive Statistics of PSF Score by Subgroup (End)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
No PK	65	50.5538	14.34511	1.77929	46.9993	54.1084	7.00	70.00
PK	65	57.0154	12.95725	1.60715	53.8047	60.2260	9.00	80.00
Total	130	53.7846	13.99667	1.22759	51.3558	56.2134	7.00	80.00

Table 25 presents the output of the ANOVA analysis for PSF score. As observed, there was a statistically significant difference between "no pre-k exposure" and "had pre-k exposure," as determined by a repeated measure ANOVA (F (1, 128) = 7.263, p=0.008). As such, the PSF scores for those who participated in the prekindergarten program (M = 57.02, SD = 12.96) were statistically and significantly higher than for those who did not (M = 50.55, SD = 14.35). The ninth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

Table 25

ANOVA Test Results of NWF Score (End)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1356.923	1	1356.923	7.263	.008
Within Groups	23915.046	128	186.836		
Total	25271.969	129			

Summary of Findings

A series of repeated measure analysis of variance (ANOVA) tests were conducted to address the nine research questions. From the results of the tests, the research arrived at the following findings:

- The first null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.
- The second null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year.
- The third null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the letter name fluency between students

who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.

- The fourth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.
- The fifth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the phoneme segmentation fluency between G students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.
- The sixth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year.
- There was no sufficient evidence to reject the seventh null hypothesis: There is no significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.
- The eighth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the nonsense word fluency between

students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

- The ninth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year.

In addition to these findings, with the exception of Research Question 7, the mean scale scores for each respective research question were higher for students who participated in the subject school district's prekindergarten program than for those who did not participate.

Section 5: Discussion, Conclusions, and Recommendations

Introduction

The NCLB Act has raised the standards concerning teacher accountability and student performance in schools. The standards for teachers in schools should be of paramount importance because these individuals inculcate knowledge to students. In an effort to accomplish the mandates of NCLB, educators must explore early learning programs among the students affected through prekindergarten programs that prepare children with readiness skills to enter kindergarten. In doing so, foundational skills will be developed early among children, leading to the resolution of achievement gaps. The goal is aligned with the general perspective that preparedness among children in schools before entering kindergarten is most important because students' future performance will be based on prekindergarten training and education. The NICHHD (2000) indicated that literacy skills taught in prekindergarten programs, such as concepts of print, PA, and letter naming, contribute to helping children learn to read because the structure of the English writing system is alphabetic.

The implications of this work includes the positive changes that it can bring to society and to the students who will benefit if there is ever more funding and policies that support mandatory early intervention and prekindergarten programs. This study contributes to the body of research and specifically supports reinvestment funding to retain early intervention and public prekindergarten programs in the subject school district of focus. The results may also contribute to public schools across the U.S. if there is a positive impact of intervention on students. According to the research of the National

Institute of Early Education Research, children who attended prekindergarten programs performed higher on reading and math assessments at the start of school and through sixth grade (Barnett et al., 2008). In addition, Hustedt, Barnett, Jung, and Throw (2007) conducted a 5-year longitudinal study and determined that early intervention among students was critical in developing basic reading skill achievement, specifically indicating that such programs have a positive effect on student learning.

Examining the effects of prekindergarten educational programs also helps determine whether the mandate on raising the standards of education is accomplished. Cunningham (2010) reported that a positive trajectory in children's reading is predicted by their acquisition of early core literacy skills provided in high quality prekindergarten programs. The core skills that children engaged in prekindergarten education need, according to Cunningham (2010), are phonological awareness (ability to identify and manipulate sounds), alphabet knowledge (awareness of individual letters and letter names), concept of word (ability to segment spoken sentences/phrases into words and to match spoken words to text), and grapheme–phoneme correspondence (ability to identify correspondence between letters and sounds). Cunningham (2010) indicated that children's abilities across these four core skills serve as important predictors of subsequent reading achievement.

Review of the Research Problem and Purpose

The subject school district has been faced with ongoing budget cuts. Due to these cuts, the district dropped the public prekindergarten program in August of the 2011–2012 academic school year. According to the subject school district's 2011–2012 budget, the

district saved $200,000 by eliminating the public prekindergarten program. The United States Department of Education (2011) reported that the NCLB mandate requiring all students to be proficient readers by 2014 is no longer in effect. Instead, all states will have flexibility to establish attainable goals in reading to support improvement efforts for all schools and students. As such, steps must still be taken to ensure that this goal is accomplished.

This study compared the early literacy, reading skills, and development of student participants who attended the district's public prekindergarten program with students who did not participate in the prekindergarten experience, as measured by the DIBELS assessment. More specifically, by conducting an ANOVA, the study aimed to determine whether attendance or participation in a prekindergarten program influenced a child's DIBELS scores. The statistical analysis revealed that participation in the program positively influenced children's DIBELS scores, which implies that the program effectively aided in the development of early literacy. This identification serves to encourage the school district to reopen or revive the prekindergarten program in public schools. Therefore, the purpose of this study was to statistically determine using SPSS whether students who attended public prekindergarten programs demonstrated higher early literacy and reading skills compared to those students who did not participate in the prekindergarten program.

The aim of this study was to determine the effect, if any, of prekindergarten educational programs on the development of children's early literacy skills. This is in conjunction with the mandates that NCLB provides in Section 1221 to support early

literacy and prekindergarten programs. Gamse et al. (2008) reported that the purpose of this subsection in NCLB is to enhance the early language, literacy, and prereading development of preschool age children, particularly those from low-income families, through strategies and professional development based on scientific reading research in order for all students to be fluent and proficient readers. The following research questions were investigated.

RQ 1: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the beginning of the kindergarten school year?

RQ 2: Is there a difference in the initial sound fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the beginning of the kindergarten school year?

RQ 3: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 4: Is there a difference in the nonsense word fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 5: Is there a difference in the phoneme segmentation fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the middle of the kindergarten school year?

RQ 6: Is there a difference in the initial sound fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 7: Is there a difference in the letter name fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 8: Is there a difference in the phoneme segmentation fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

RQ 9: Is there a difference in the nonsense word fluency, as measured by DIBELS, between students who participated in the subject public prekindergarten program and students who did not participate in the subject prekindergarten program at the end of the kindergarten school year?

Implications for Social Change

The subject school district, like many other school districts across the U.S., is seeking ways to increase student achievement. According to the subject school district, students are experiencing difficulty with mastering state-mandated reading goals. I studied and observed whether student participants who attended the public prekindergarten program in the subject school district demonstrated higher early literacy and reading skills, as measured by DIBELS. Therefore, the significance of this study was twofold: First, it provided scientific data and analysis on the effect of attendance in a prekindergarten program on kindergarten students' early literacy and reading skills. Second, the study provided data to inspire social change in the school district board, specifically in the consideration of reopening or reviving the public prekindergarten program to aid young children in developing early literacy and reading skills.

Social change is important because it allows normative questions to capture how power and competing value systems can be applied to daily life (Cote & Nightingale, 2011). The normative question in this study was how literacy is able to contribute to the educational system and development of students. In this study, DIBELS is viewed as an assessment that provides data to improve the quality of instruction to increase the early literacy skills of students. In addition, the schools are guided by the results of the study on the possible assessments and alternatives to interventions that can be applied in a specific school setting.

Analysis, Synthesis, and Evaluation

The purpose of this comparative study was to compare the early literacy and reading skills of students who participated in the district public prekindergarten with students who did not participate in the experience. The early literacy and reading skills of students who participated in a public prekindergarten program in the subject school district were compared to those who did not attend the prekindergarten program for this research study. Archival data of the DIBELS in the year 2011–2012 from three of five elementary schools in a rural school district in a southeastern state were used in this quantitative, comparative research. A repeated measure ANOVA was the statistical technique used to address the research questions.

The first null hypothesis presented in the study was rejected in favor of its alternate hypothesis: There is a significant difference in the letter name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year. The LNF scores for those who participated in the prekindergarten program were statistically and significantly higher than for those that did not. The second null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program prior to the kindergarten year. The ISF scores for those who participated in the prekindergarten program were statistically and significantly higher than for those who did not. The third null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the letter

name fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year. The mean score of LNF was higher for those who participated in the prekindergarten program (M = 41.51, SD = 19.59) than for those who did not (M = 30.52, SD = 16.66).

The mean score of NWF was higher for those that participated in the prekindergarten program (M = 28.97, SD = 18.90) than for those that did not (M = 17.91, SD = 12.62). As such, the NWF scores for those that participated in the prekindergarten program were statistically and significantly higher than for those who did not. The fifth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year. The mean score of PSF was higher for those who participated in the prekindergarten program (M = 30.55, SD = 15.42) than for those who did not (M = 19.25, SD = 14.47). The sixth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the initial sound fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program during the kindergarten year. The mean score of ISF was higher for those who participated in the prekindergarten program (M = 51.77, SD = 23.68) than for those who did not (M = 37.55, SD = 20.18). There was not sufficient evidence to reject the seventh null hypothesis: There is no significant difference in the letter name fluency between students who participated in the prekindergarten program

and students who did not participate in the prekindergarten program at the end of the kindergarten year.

The eighth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the nonsense word fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year. The NWF scores for those who participated in the prekindergarten program (M = 50.43, SD = 25.40) were statistically and significantly higher than for those who did not (M = 40.85, SD = 22.61). The ninth null hypothesis was rejected in favor of its alternate hypothesis: There is a significant difference in the phoneme segmentation fluency between students who participated in the prekindergarten program and students who did not participate in the prekindergarten program at the end of the kindergarten year. The PSF scores for those who participated in the prekindergarten program (M = 57.02, SD = 12.96) were statistically and significantly higher than for those who did not (M = 50.55, SD = 14.35).

Discussion of the Conclusions in Relation to Literature in the Field

Early childhood educators have the responsibility of preparing students for later reading success by implementing and focusing on instructional activities that promote early literacy skills. Early literacy refers to the knowledge, skills, and dispositions that children acquire prior to actually learning to read and write (Justice et al., 2009; Roskos et al., 2009; Strickland, 2010). Young children may have complicated educational requirements and thus may need a rich range of child-centered, hands-on, play-based experiences and intentional teaching to develop the early learning required for future

academic achievement (Jay, Knaus, & Hesterman, 2014). It is paramount for young children to be engaged in high-quality early childhood education programs if later academic success is to be achieved (Jay et al., 2014).

Although formal reading instruction is typically provided in elementary school, the acquisition of early reading and literacy skills is a continuous process that can begin before a child goes into formal schooling (Whitehurst & Lonigan, 1998). Wilson and Lonigan (2010) supported this claim and indicated that early literacy is a precursor to later reading achievement in formal schooling. Cunningham (2010) also conveyed that children's reading success throughout elementary school can be predicted from their early literacy skill development in preschools. Backed by statistics and literature, some states have developed preschool programs that are aligned with kindergarten through twelfth grade curricula and standards (Dessoff, 2010). It is also noteworthy that the standards for the curricula to be followed change due to the performance of the students.

The No Child Left Behind Act of 2001 supports early childhood education as it emphasizes the need for prekindergarten educational programs. As NCLB requires accountability of the reading proficiency of all students in grades K-12, it also provides strong motivation to promote participation in prekindergarten programs. The purpose of the NCLB legislation is to close the achievement gap and to improve students' reading skills (Darling-Hammond, 2007; Harris, 2007; Hess & Finn, 2007; Sphon, 2008). NCLB requires states to establish standards to measure student progress and improve proficiency levels (Finn & Hess, 2004). Student achievement and progress are the main focuses of the NCLB Act and are determined by outcome measures (Maleyko & Gawlik, 2011).

The impermeability of schooling among younger students to reform is a frequent conclusion of studies of educational organizations. However, historical accounts suggest that kindergarteners have undergone a significant transformation in terms of learning development (Russell, 2011). Once a transitional year emphasizing child development in the academic sector, kindergarten now marks the beginning of formal academic instruction (Russell, 2011). Guided by the institutional theory of education, this article explores the evolution of public discourse about kindergarten by analyzing newspaper articles, policy documents, and professional association activities (Russell, 2011). The case of kindergarten students surfaces general implications for understanding educational change, highlighting how new ideas and practices are advanced by a diverse set of actors in the organizational field (Russell, 2011).

Algozzine and Wang (2008) conducted a quasi-experimental research design whereby children with severe reading problems received targeted intervention approaches to address early literacy skills. This group was compared to a control group who did not receive intervention. The Behavior and Reading Improvement Center provided services to struggling readers in six different public elementary schools. Participants consisted of first graders of diverse ethnic backgrounds and genders. The DIBELS assessment was used to identify students at-risk for reading failure. Targeted Intervention entailed additional instruction of phonemic awareness, alphabetic understanding, decoding skills, and fluency of targeted students. The researchers reported that the reading skills were assessed using the Woodcock Reading Mastery Test-Revised and DIBELS. Based on the findings of the research study, Algozzine and Wang (2008) concluded that both the

treatment and control groups made statistically significant gains, but the treatment group gained more early literacy and reading skills improvement. In context, intervention may be necessary for children who do not receive adequate home instruction or experience, and one available approach may be public or private prekindergarten programs.

Fitzpatrick, Grissmer, and Hastedt (2011) suggested that increases in school quality on the extensive margin may have the potential to be just as effective as other targeted or untargeted intensive interventions. The results of the study are important for helping researchers and practitioners understand how much children learn with an extra day of schooling for kindergarten (Fitzpatrick et al., 2011). The results suggested that there may be substantial positive effects on reading and math test scores if the school year were to be extended. Even if additional school days were are twice as expensive as current school days, the improvements in test scores of the students are still as large as those from schools that did not have to increase tuition fees (Fitzpatrick et al., 2011). Therefore, it is noteworthy that most students would still opt to go to school despite the higher rate of tuition fees.

Monitoring and assessing student development is an important part of an effective early literacy program. Assessment can be used for the purpose of monitoring students' mastery of skills taught, to guide teacher planning and teaching, and to identify at-risk and struggling students to provide intervention. Roskos et al. (2009) recommended that preschools use cost effective but quality assessments to identify at-risk students. Wilson and Lonigan (2010) conducted a study to determine the value of two early literacy screenings to measure students' skills. The purpose of the assessment was to identify

children who may be at-risk of later reading problems to provide early intervention and close reading achievement gaps in kindergarten. The two screenings were the Get Ready to Read (GRTR) screening and the Individual Growth and Development Indicators (IGDI).

Recommendations for Action

Based on the review of related literature examined in this study and the summary of findings in testing the hypotheses to answer the research questions, the following recommendations are suggested by the findings of this work:

1. Provide more information about students such as demographics, background, parents or guardians, and home environment.
2. Development of an effective plan regarding policy changes of prekindergarten programs and the possible interventions to kindergarten students. Different stakeholders should be invited to be part of the planning. Stakeholders may include teachers, school administrators, students, parents, and the guardians of the students.
3. An effective intervention strategy should be implemented by teachers in all schools and applied to the kindergarten students in terms of word fluency. This recommendation defines “effective” as positive and quality academic changes in the instructional program and policy that will result in the betterment of the learning experiences of students.

4. The intervention should be regularly introduced and updated by the schools and implementers of the program. Regular updating is necessary to ensure that the program will be able to adapt to the changing needs of the students.
5. There should be a mechanism to make learning intervention consistent by expanding practices at home. The participation of parents will aid in the success of the intervention in word fluency among kindergarten students.
6. It would be more affective to assess the future performance of students even after their attendance in kindergarten, such as reassessing performance two and four years after the intervention.

Recommendations for Further Study

In addition to practical recommendations based on the findings in this study, there are also recommendations in relation to the necessity to conduct further research in this field. It is recommended that further research be conducted based on other interventions in the educational field. It is also recommended that researchers conduct this experiment in other schools. Further research can also focus on the effectiveness of the findings and recommendations stated above in terms of their usefulness in the practical level.

This study compared the early literacy, reading skills, and development of student participants who attended the district's public prekindergarten program with students who did not participate, as measured by the DIBELS assessment. More specifically, by conducting an analysis of variance, the study aimed to determine whether attendance or participation in a prekindergarten program influences a child's DIBELS scores. The aim of this study was to determine the effect, if any, of prekindergarten educational programs

on the development of children's early literacy skills. This chapter was divided into several sections.

Another possible focus of future research is early childhood literacy and how it can be differentiated from literacy in higher education. Furthermore, literacy in reading can also be separated from literacy in reading comprehension. Another aspect of future study could be more focused on the educational attainment of teachers offering the intervention for improved literacy.

Future studies in this field can also focus on the time period when the intervention or the topic of study is observed. For example, the results over a longer span of time may differ from those of the short-term intervention. Additionally, a longer length of time for reassessing the performance of participants and their performance as university students may also be helpful. Students' chosen career paths can also be examined in relation to their performance in early educational literacy.

Based on the literature of the study, it was determined that there is a value in ensuring that the literacy skills of students are developed at an early age or at an early stage in their lives. The findings of the study supports the details in the literature review that literacy should always include readings and other related skills. The DIBELS assessment can improve literacy skills because the result of the evaluation will aid teachers in finding possible solutions to issues regarding student literacy.

Summary

Cunningham (2010) found that a positive trajectory in children's reading is predicted by their acquisition of early core literacy skills, such as reading and writing,

provided in high quality pre-kindergarten programs. The research questions of this study focused on the importance of literacy and how it is taught in schools through interventions such as the DIBELS assessment. Gamse et al. (2008) showed that the real intent and purpose of the literacy branch of the NCLB Act is to enhance the early language, literacy, and prereading development of preschool age children. In particular, focusing on those from low-income families through strategies and professional development with scientifically-based reading research in order for all students to be fluent and proficient readers. This study examined how literacy interventions correlated to the proficiency of students. The study utilized the constructivist theory of learning. The constructivist theory proposes that learning is based on previous knowledge, beliefs, and experiences (Lambert et al., 2002). Based on this theory, it is postulated that the learning of students accumulates with the basic learning taught in higher education.

The problem statement and research questions were revisited in this section. The significance of the findings was also explained. The first section was the introduction which introduced the nature of the study, while second involved a review of the research problem and purpose. The third section included the significance of the results and findings of the study. The fourth section included the analysis, synthesis and evaluation of the results. The fifth section involved a discussion of the conclusions in relation to the literature in the field. Finally, the last section included the recommendation based on the findings and results of the study. The findings were then analyzed in lieu of the available related literature. The last portion of the section provided recommendations for future

research. Recommendations included the necessity of having an intervention program to ensure that students are able to learn progressively.

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