

FACULTY APPROVAL

The Effect of Preschool on Letter Naming Fluency

Approved for the Faculty

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ABSTRACT

The study looked at two groups of students entering kindergarten, a group that had received preschool learning experiences and a group who had not received preschool experiences. This study asked the question does preschool make a significant difference in academic achievement, primarily in Letter Naming Fluency portion of the DIBELS test. The students in both groups were given the same pre and post assessments in the fall of 2009 and the spring of 2010. The data showed a significant difference in the two groups in the fall and no significant difference between the groups in the spring. Data of this study indicated that non-preschool students were able to stay up with and surpass their preschool attending counterparts over the course of one year.

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CHAPTER 1

Introduction

Background for the Project

Since 2006, Thrive by Five Washington, worked with families to bring together people, resources, and proven programs and practices—from around the state and around the world—to help create the early learning supports, services and system Washington families needed. Thrive by Five Washington was committed to making sure all children have the opportunity to thrive by the time they were five (Thrive by Five Washington, 2008). The years before a child reached Kindergarten were among the most critical in his or her life to influence learning. President Obama was committed to providing the support that our youngest children needed to prepare to succeed later in school. The President supported a seamless and comprehensive set of services and support for children, from birth through age five. Because the President committed to helping all children succeed - regardless of where they spend their day - he urged states to impose high standards across all publicly funded early learning settings, develop new programs to improve opportunities and outcomes, engage parents in their child's early learning and development, and improve the early education workforce (The White House, 2010).

Statement of the Problem

Nationwide budgets have been cut and tough decisions have been made. There was no longer room in the budget for preschool to be funded by the district in Sunnyside. There was no longer public preschool, with free transportation, provided for the young children of this district.

Purpose of the Project

The researcher knew that preschool was the foundation for children to learn the skills to begin school. The purpose the of the experimental study was to determine if preschool had an impact on the academic achievement, specifically in letter naming fluency, on the Dynamic Indicator of Basic Early Literacy Skills (DIBELS) test on children in Kindergarten. Data was collected at two different points in the year, the fall and the spring.

Delimitation

The study took place in 2009-2010. The DIBELS test was administered in September, January, and May. The study was conducted at a Kindergarten only school, Sun Valley Elementary, in Sunnyside, Washington. The school consisted of 436 Kindergarten students. The school used Open Court curriculum and the DIBELS test.

Assumptions

All teachers at Sun Valley Elementary were highly qualified to teach Kindergarten. Every teacher had been trained in the Open Court curriculum. The DIBELS test was over the same material but was a different test administered in September than the test in May. The DIBELS test was valid in determining fluency and students' ability in reading in the future. Students wanted to be successful on all DIBELS assessments. The DIBELS test was an accurate way to assess students' early literacy skills. Timidness, unfamiliarity to school and testing, and unfamiliar tester may have skewed the fall and/or spring DIBELS scores.

Hypothesis

It was important for students to get a head start in their learning. Kindergarteners who attended preschool have higher scores on the DIBELS letter naming test than Kindergarteners who do not attend preschool.

Null Hypothesis

There was no significant difference between Kindergarten DIBELS reading scores of students who attended preschool and those who did not attend preschool. Significance was determined for $p \geq .05, .01, \text{ and } .001$.

Significance of the Project

The upcoming Kindergarten class was the first class that was not offered public preschool. Public preschool was very expensive for the district to provide. The district saw no value in keeping public preschool as part of the district. Preschool was the first experience for many children in a school setting. Many families could not afford the costs to send their child to private preschool. Sun Valley Elementary looked at public preschool as a valued asset to offer their up and coming students. If the project showed a significant difference between reading scores of Kindergarteners who attended preschool and Kindergarteners who did not attend preschool, the district considered allowing the budget to incorporate preschool back into the district. If the project proved no significant difference the district would see no educational reason to bring public preschool back to the district.

Procedure

The researcher first got permission from the principal of Sun Valley Elementary to conduct the project. Sun Valley had a diverse population. Sun Valley consisted of 423 Kindergarten students. The researcher took the September, fall, DIBELS scores and used a t-test for independent groups and compared the scores of the students that attended preschool to the scores of those students that did not attend preschool. The researcher then let

the teachers each go through the year teaching their students from the same curriculum as each other, Open Court. Each student was also progress monitored on a daily basis. Progress monitoring was a lot like the actual DIBELS test. The para-educator administered a practice test to each student that was timed just as the actual test was. The researcher then took the May (spring) DIBELS scores and used a t-test for non-independent groups and compared the scores once more.

Definition of Terms

Terms of importance used in the study have been defined as followed:

public preschool. Public preschool was defined as a preschool that was sponsored by the school district and had teachers with at least a Master's of Arts in teaching the class and used the same curriculum that the elementary grades did.

Kindergarten only school. Sun Valley was the first of its kind in the state of Washington. It was an elementary school that houses all of the Kindergarten students in the district.

benchmark. Benchmark was defined as the score the student needed to be at to be at standard.

school readiness. Giving all children access to the opportunities that promoted school success, recognized and supported children's individual differences, and

established reasonable and appropriate expectations for what children should be able to do when they enter school (National

Association for the Education of Young Children, 2009).

t-test for independent samples. A parametric test of significance used to determine where there was a significant difference between the means of two independent samples at a selected probability level, .05, .01, and .001.

progress monitoring. Daily monitoring protocol for intentional practice of specific skills assessed by the DIBELS test.

EPIC. Every Person Influences Children, Inc. was a national not-for-profit organization dedicated to helping families, schools, and communities raise children to become responsible and capable adults (EPIC National Center for Parenting & Character Education, 2012).

Acronyms

CHCFC. Center for Healthier Children, Families and Communities.

DEL. Washington State Department of Early Learning.

DIBELS. Dynamic Indicator of Basic Early Literacy Skills.

ECEAP. Early Childhood Education and Assistance Program.

EPIC. Every Person Influences Children.

ERIC. Educational Resources Information Center.

ESL. English as a Second Language.

ISF. Initial Sound Fluency.

LNF. Letter Naming Fluency.

OSPI. Office of the Superintendent of Public Instruction.

PSF. Phoneme Segmentation Fluency.

RAND. Research and Development.

UCLA. University of California, Los Angeles.

CHAPTER 2

Review of Selected Literature

Introduction

Kindergarten was an age of varying maturity levels. The brain development and school readiness of a child were just a few of the factors that contributed to the academic level. The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) was a commonly used test in kindergarten through fifth grade to measure reading skills. The review of selected literature summarized in Chapter 2 has been structured to address the following:

1. Brain Development
2. DIBELS
3. School readiness
4. Preschool

Data currently and primarily within the last 10 years were identified through on-line computerized literature research of the Educational Resources Information Center (ERIC), the internet and Proquest. Additional information was retrieved from other classes, lectures and professional development days.

Brain Development

According to the University of California, Los Angeles (UCLA) Center for Healthier Children, Families and Communities (CHCFC) (2001), the scientific community has called the years 1990-2000 "the decade of the brain" because of previous work during the last two decades that the scientific understanding increased exponentially. The maturing of the brain laid the foundation for all other aspects of a child's development. The newborn infant has approximately the same number of neurons, or brain cells, as an adult, yet only about 25% of his or her brains volume had developed (Blinkov & Glezer, 1968). Early on, there were many more brain cells than the child needed, and connections between cells continued to form as the result of ongoing learning experiences. Honig (2009) and Perry, Pollard, Blakley, Baker, & Vigilante (1995) agreed that an infant's brain was more susceptible to change than a ten-year-olds and a teen's brain was more susceptible than an adult's. Before age two, children have more neural connections in the brain than adults do (Honig, 2009, p. 96). By age three, a child's brain has reached nearly 90 percent of its adult size; the growth in each part of the brain depended in a majority on receiving stimulation (Logan, 2010).

The most immature of all organs at birth was the brain. The brain continued to grow and develop during the first years of

life. Which played a more important role in brain development, genes or environment? Generally speaking, genes were responsible for the basic wiring plan - for forming of the cells (neurons)- while experience was responsible for fine tuning those connections, helping each child adapt to the particular environment to which he/she belonged (Zero to three, 2012).

Noble, Tottenham, and Casey (2005) agreed that children's brains remained plastic. Plasticity or neuroplasticity was the lifelong ability of the brain to reorganize neural pathways based on new experiences. As humans learned, humans acquired new knowledge and skills through instruction or experience. The brain's ability to reorganize itself by forming new neural connections throughout life was known as neuroplasticity (MedicineNet.com, 2012). Weber and Reynolds (2004) believed that during the period of brain plasticity, children were learning but were also vulnerable to stress and trauma, which can impact their brain development. Not all parts of the brain were plastic (Perry, 2002).

Scientists have found that with these brain cells in a child's life there was a use it or lose it, phenomenon. Only those connections that were used and reinforced will survive. If the connections were not solidified they were lost through a process known as pruning (Sen. Dodd, 1997). Pruning was a process where unused connections were discarded and the synapses

that were continuously activated were maintained (Cicchetti, 2002). Early experiences played a critical impact on the wiring process of the brain. The final number of synapses in the brain can increase or decrease by as much as 25% (Ounce of Prevention Fund, 1996). Humans have the opportunity to, within the first ten years determine how the brain will be wired.

According to Stein and Kendall (2004) the brain expanded to two and a half times its birth size during the first year of life. By the age of four, a child's brain has grown to 90% the size of an adult's brain (Perry, 2006). Because so much of the brain development happened in the early years of child's life, the environment in which a child was brought up in played a vital role in their brain development. Rutter as cited by UCLA CHCFC (2001) found the following:

It is clear that extreme deprivation can have serious consequences for human brain development and functioning. A series of recent studies examined institutionalized Romanian children who had been deprived of appropriate social interaction early in life. All exhibited signs of severe developmental impairment prior to their adoption into stable homes. Those who were adopted early-prior to six months- achieved nearly complete physical and cognitive catch up. While children adopted after six months of age did exhibit a significant catch-up, they nonetheless

continued to have lower cognitive scores and general developmental impairments compared with the children adopted earlier. (p. 9)

This study noted the impact that neglect, trauma, and deprivation played on the neurology of young children.

Dynamic Indicator of Basic Early Literacy Skills

In the current era of educational accountability, teachers and administrators were increasingly proactive in identifying and providing interventions for students at risk for reading failure (Good, Kaminiski, Smith, Simmons, Kame'enui, & Wallin, 2003). The DIBELS testing was created at the University of Oregon's Center on Teaching and Learning (U. of O., 2009). The Dynamic Indicator of Basic Early Literacy Skills (DIBELS) tests were designed as:

. . . a set of procedures and measures for assessing the acquisition of early literacy skills from Kindergarten through sixth grade. They are designed to be short (one minute) fluency measures used to regularly monitor the development of early literacy and early reading skills (University of Oregon, 2009, DIBELS, para. 1).

The DIBELS were a set of pre-reading measures that encompassed a set of brief standardized measures for students in the primary grades (K-3), with additional measures available for students in the intermediate grades (4-6) (Kaminski & Good, 1996). The

reliability and validity of the DIBELS has been well established among general education students; the ability to identify students who were at risk of failure was a separate issue. Hintze et al., (2002) conducted a study that evaluated the predictive validity of DIBELS with this population. The study had a sample size of 86 general education Kindergarteners. The results indicated that the combination of initial sound fluency (ISF), phoneme segmentation fluency (PSF), and LNF were accurate in predicting membership in a poor reading group.

What does DIBELS look like at the Kindergarten level? The DIBELS testing at the Kindergarten level consisted of four different assessments given with varied frequencies throughout the school year to track student progress. The four areas assessed for Kindergarten were Initial Sound Fluency (ISF), Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF). According to the University of Oregon, DIBELS benchmark assessments were administered three times per year (fall, winter, spring).

The DIBELS was developed to assess three key early literacy domains (phonological awareness, alphabetic understanding, and fluency) identified by the National Reading Panel (2002). According to Kaminiski and Good (1996) scores from DIBELS have been linked to reading fluency in later elementary years. This was beneficial to educators so that they can identify and

provide intervention to struggling students that were at risk for future problems. The DIBELS not only was being utilized in districts with federal mandates but was widespread in many U.S. and Canadian districts. For example Goodman said in 2004-2005 school year, 8293 schools utilized the DIBELS data system, totaling over 1.7 million K-3 students (as cited by Hoffman, Jenkins, Dunlap, 2009). The University of Oregon (2009) reported that in 2008, over 15,000 schools used the K-3 DIBELS Data System.

The DIBELS (Good & Kaminski, 2002) consisted of five core indicators, each measuring a fundamental early literacy skill: Letter Naming Fluency (LNF), Initial Sound Fluency (ISF), Non-sense Word Fluency (NWF), Phonemic Segmentation Fluency (PSF) and Oral Reading Fluency (ORF). The DIBELS were repeatable 1-minute probes. The teacher assessed each student's level of fluency every week or two and designed and adjusted curricular interventions and time-in programs to the end of meeting the scientifically prescribed literacy benchmarks (Langdon, 2004).

One study conducted, indicated that not only at-risk students were being assessed with DIBELS; the primary use was with whole classes (Hoffman, et al. 2009). According to Langdon (2004), when a student was not making adequate progress the teacher knew very quickly and could act upon that just as quickly. The DIBELS provided teachers with quick data feedback

that allowed for quick intervention and change to occur. The data were sensitive to change; therefore, changes made by a teacher reflected quickly (Langdon, 2004). By identifying students who demonstrated a need for intervention, educators prevented future, more substantial skill deficits (Goffreda, Diperna, & Pedersen, 2009).

Even with many schools using the easily accessible DIBELS test to measure student's growth many teachers doubted the validity of the DIBELS, especially of the first two subtests. In DIBELS Nonsense Word Fluency, for example, children were asked to read aloud many words like foj and suv. Some teachers have reported that their students got low scores on this subtest because they took a long time trying to figure out what each word meant. The teachers who questioned the validity of the DIBELS were known to reliably provide graphophonic information in the context of meaningful reading. They also doubted the value of DIBELS Letter Naming Fluency because they knew that being able to name letters was not the same thing as being able to read (Goffreda, Diperna, & Pedersen, 2009).

School Readiness

According to the Washington State Department of Early Learning (DEL), starting Kindergarten was a big step for children. They met new people, spent time in a new classroom, and learned new rules. A parent or caregiver helped a child

start Kindergarten ready to succeed. Parents were a child's first and most important teachers. In their earliest years, children learned so many things simply through playing, exploring and reading with someone (DEL, 2010).

There were five key domains that encompassed the child's overall development according to the Office of the Superintendent of Public Instruction (OSPI): a) physical well-being, health, and motor development, b) social and emotional development, c) approaches towards learning, d) cognition and general knowledge, and e) language and literacy (OSPI, 2005). The Washington State Department of Early Learning (DEL) noted the Kindergarten readiness equation was: ready children + ready schools + ready parents and families + ready communities (DEL, 2010). According to the National Goals Panel, overall school readiness included: a) children's readiness to enter school, b) schools' readiness for children, and c) family and community support that contributed to the readiness of children (as cited by OSPI, 2005).

Improving children's success in school has become a leading concern for parents, educators, and policymakers (Children Now, 2009). Zau and Betts agreed with Gluck that assisting struggling students in the early grades was a more effective way to improve graduation rates than the state's current approach of targeting extra resources to those at risk of failing near the end of high

school (Zau & Betts, 2008). Acting Education Secretary Thomas E. Gluck stated:

Children who have access to quality early learning opportunities can overcome risk factors and succeed in school and in life. These children can start school on par with their peers and be less likely to require expensive special education services, providing an immediate savings to our school districts (2010, p.1).

One of the strongest movements in American education today has been the preschool education initiative. Children Now(2009) stated that over 40 states now have some public provision for education of preschool, either for children of poverty or all children, which was a major step up from ten years ago.

Preschool

Most states in the United States have set up a state run preschool program. Washington State has the Early Childhood Education and Assistance Program (ECEAP). The ECEAP was a program that provided free services and support to eligible and qualifying children and their families, usually low income families. The goal of this program was to help ensure all Washington children enter Kindergarten ready to succeed. The program included:

1. Early learning preschool
2. Family support and parent involvement

3. Child health coordination and nutrition (DEL, 2010).

The services of ECEAP were targeted for three- and four-year-olds. The ECEAP helped children learn to manage their feelings, follow routines and procedures in the classroom, and was the building block for reading, math, and science. According to DEL, children in programs such as ECEAP were healthier when they started Kindergarten, were more likely to graduate from high school and attend college. They were also less likely to become pregnant as a teen and less likely to be in special education services or repeat a grade (2010, How will ECEAP help my child, para. 3). This program obviously was very crucial for those students that come from a poverty stricken background.

Also, in Washington State as of January 1, 2014, Thrive by Five Washington and the Foundation for Early Learning, two of the state's key early learning organizations, officially merged, forming a stronger public-private partnership with an annual budget of more than \$16 million (Thrive by Five Washington, 2014, About Thrive by Five, para.1) that will better serve Washington's youngest children and their families.

Head Start was a program funded by the U.S. Department of Health and Human Services that provided comprehensive education, health, and parent support to low-income families (Puma, M., S., Bell, R., Cook, & H., Camilla, 2010). An important goal of all Head Start programs was to offer the community an opportunity

for quality child care services and programs in locally owned or controlled spaces. The Head Start center design must meet the needs of children, their parents, classroom personnel, service personnel, and administrators (Early Childhood Learning and Knowledge Center, 2012).

Summary

The focus of this literature review was to look at the evidence to the topics of: a) brain development, b) DIBELS, c) school readiness, and d) preschool. Through the literature review the author was able to gain more information on the way the brain functioned in young children. The author also gained insight to the DIBELS test and school readiness and what preschool was and looked like. With the sudden demand on schools to have every student at grade level, the importance of having students ready by the time they entered Kindergarten was extremely vital. The researcher found it evident that the DIBELS was a test that was widely used to assess students, especially in the early grades K-3. The researcher was able to conclude that the brain began to make connections at a very young age and that's where the work of school readiness and early programs such as preschool came into play. There were not very many state-funded preschool programs that were available to all. There were many federally funded preschool programs geared to providing intervention for poverty stricken and at risk

children. These children have been identified as lacking those early birth-to-five brain connections that were so vital in preparing a child for school. Washington state has shown to be a leader in efforts to provide a high-quality preschool to all children with their Thrive by Five and Foundation for Early Learning partnerships.

CHAPTER 3

Methodology and Treatment of Data

Introduction

The researcher wanted to determine if preschool helped students achieve higher scores on the DIBELS test, specifically the letter naming portion, when the students went to Kindergarten. Many students were entering Kindergarten without any prior schooling. Schooling before Kindergarten allowed for children to be introduced to the learning targets they saw in Kindergarten. Pre-school began to familiarize students with the alphabet and sounds. Pre-school used the same reading curriculum that was used in grades Kindergarten through fifth grade. Pre-school was a place that began to acquaint students with a routine and structured play.

Although California was a different state the researcher concluded that the argument was well supported and could be used to support the role of preschool in any state. The Research and Development (RAND) Corporation decided to take a closer look at whether the state should fund preschool. The study found socioeconomically disadvantaged children enter school with lower levels of readiness than their more advantaged peers (RAND Corporation, 2009). When students entered Kindergarten with familiarity to reading materials, letters, and sounds, the students' brains made a quicker connection when the material was

presented a second time. The RAND study was conducted to try to encourage the state to fund public preschool institutions such as Every Person Influences Children (EPIC). Children with the largest gaps in school readiness and achievement were the least likely to participate in any preschool and the least likely to attend high-quality programs (RAND Corporation, 2009). The children who did not attend preschool were less likely to be at the entry level than their classmates, which attended preschool.

This report investigated the link between early childhood education and the benefits to the children who received early education and the readiness of these children. The report conducted the survey asking 77 Kindergarten teachers from Milwaukee. The teachers represented 55 different schools and had an average of 10 years teaching experience in Kindergarten. The teachers expressed their thoughts on five specific skill groups they believed were most important prior to entering Kindergarten. Of the five groups, the teachers noted that three were most important a) social and emotional development, b) cognition and general knowledge, and c) communication and language learning (Public Policy Forum, 2009). These were also the three skill groups that were most targeted in preschool. Thus, when students who have had preschool enter Kindergarten, these students were the best prepared. This survey conveyed the perceptions of a group of Kindergarten teachers that felt an

enriched early childhood education benefited the child in Kindergarten and beyond.

Methodology

This was an experimental study comparing school readiness between students who had received district preschool prior to Kindergarten to those that did not receive district preschool prior to Kindergarten. Readiness was measured by using the subtest, letter naming fluency, in the DIBELS testing. A t-test for independent samples was used for data analysis to determine significance between the treatment and control group. The same test was used for both groups. The researcher controlled the selection of participants as well as the variables.

Participants

Participants were randomly selected from a group of 436 Kindergarten students, at an all Kindergarten school, in Sunnyside, Washington. The school was the first of its kind in the state. A majority, approximately 90%, of the population was Hispanic. The researcher selected 229 students for the study. There were 148 students in the control group (Y), and 81 students in the treatment group (X). The students were selected from a group of attended preschool students and from a group of did not attend preschool. The researcher conducted the study by using random sampling. The researcher first divided the student body into two groups, those that attended preschool and those

that did not. Each student was given a number. The researcher then used a random number table that was found in the *Educational Research: Competencies for Analysis and Applications* (Gay, Mills, & Airasian, 2006) to select which students would be part of the control group and which would be part of the treatment group. A total of 148 students were selected for the control group and 80 students were selected for the treatment group. Some of those students were not included in the end results because they did not have a fall and spring score and needed both to be counted in the study.

Instruments

The researcher used the Dynamic Indicator of Early Literacy Skills (DIBELS) test. The DIBELS measured and assessed the five Big Ideas in early literacy identified by the National Reading Panel: phonemic awareness, alphabetic principle, accuracy and fluency, vocabulary, and comprehension. At the Kindergarten level, the DIBELS test was given in September, January, and May. Students were tested by para-professionals. Throughout the year the students were tested, called progress monitoring, that used the same format and materials as the DIBELS test.

Design

This study had a pretest-posttest control group design. The researcher did not select the students who participated. The students enrolled in Sun Valley Elementary for the 2009-2010,

school year were used. The students were divided into the control group, those that did not attend district preschool, and the treatment group, those that did attend district preschool. The amount of students in the groups may not be equal because of this. The control and treatment group were both given the same pre- and posttest. A t-test for independent samples was used to determine significance.

Procedure

In September, two weeks into the school year, the DIBELS test was administered to each student individually. Following the test, students were put into groups for intervention. If a student scored really low they were pulled on a daily basis for intervention and offered intervention by the para-professional administering the progress monitoring test. If a student scored just shy of benchmark, that student was pulled for intervention depending on how many students in their classroom were really low and offered help by the para-professional during progress monitoring. If the student was at benchmark, the student was only pulled for progress monitoring testing. All students were given small group and whole group help from the teacher.

Treatment of the Data

The researcher analyzed the results of the treatment and control group on the LNF DIBELS test using the Windows STATPAK which came with the *Educational Research: Competencies for*

Analysis and Applications (Gay, Mills, & Airasian, 2006).

Summary

Chapter 3 was about the methodology and treatment of data that was used to determine if preschool prior to Kindergarten played a significant role in the test scores of Kindergartners. An experimental study was used with a group of Kindergartners who went to preschool being part of the treatment group and a group of Kindergartners who did not receive preschool as the control group. The DIBELS subtest, LNF, was used, partially because it was the only DIBELS subtest that was tested year round. Mobility of students was why the beginning sample size was different from the ending sample size.

CHAPTER 4

Analysis of the Data

Introduction

Pre-school was considered to have a positive impact and prepare students for academic achievement in Kindergarten. The researcher believed that there was a connection between students who attended preschool and scored high on the DIBELS test in Kindergarten.

Description of the Environment

The study was conducted at an all Kindergarten only school, Sun Valley Elementary, in Sunnyside, Washington. There were 436 students enrolled in Kindergarten. Of those students, 236 were male and 206 were female. Over 87% of the population was Hispanic and over 94% qualified for free or reduced-price lunch. The researcher conducted the study by using random sampling. The researcher first divided the student body into two groups, those that attended preschool and those that did not. Each student was given a number. The researcher then used a random number table that was found in the *Educational Research: Competencies for Analysis and Applications* (Gay, Mills, & Airasian, 2006) to select which students would be part of the control group and which would be part of the treatment group. A total of 148 students were selected for the control group and 80 students were selected for the treatment group. Some of those

students were not included in the end results because they did not have a fall and spring score and needed both to be counted in the study.

The author used the scores of the fall DIBELS letter naming test, which was done in September and the spring DIBELS letter naming test, which was done in May of the students' Kindergarten year.

Hypothesis/Research Question

It was important for students to get a head start in their learning. Kindergarteners who attend preschool have higher scores on the DIBELS letter naming test than Kindergarteners who do not attend preschool.

Null Hypothesis

There was no significant difference between Kindergarten DIBELS reading scores of students who attend preschool and those who do not attend preschool. Significance was determined for $p > .05$, $.01$, and $.001$.

Results of the Study

Table 1 contained the raw scores from the fall 2009 DIBELS LNF (pre-test), spring 2010 DIBELS LNF (post-test) assessments and the gain. Scores were listed for the control group, the group that did not have any preschool. The mean for the control group for the fall was 9.39. The mean for the control group for the spring was 49.48. In the 145 sample student scores ranged

from 0 to 32 in the fall and scores ranged from 21 to 95 in the spring. The growth score was determined by subtracting the fall score from the spring score. Scores for every student may be found in the Appendix A.

Table 1

Control Group Data

Students	Fall	Spring	Growth
A	0	49	49
B	0	50	50
C	0	50	50
.	.	.	.
.	.	.	.
.	.	.	.
ppp	0	60	60
qqq	20	45	25
rrr	0	60	60

Table 2 contained the raw scores from the fall 2009 DIBELS LNF (pre-test), spring 2010 DIBELS LNF (post-test) assessments and gain. Scores were listed for the treatment group, the group that had received preschool. The mean for the treatment group for the fall was 14.98. The mean for the control group for the spring was 50.43. In the sample of 81, the scores ranged from 0 to 42 in the fall and ranged from 9 to 103 in the spring. The growth scores were determined by subtracting the fall score from the spring score. All the scores for each student are contained in Appendix B.

Table 2

Treatment Group Data

Students	Fall	Spring	Growth
A	0	42	42
B	34	56	22
C	0	26	26
.	.	.	.
.	.	.	.
.	.	.	.
Aa	5	51	46
Bb	4	41	37
Cc	22	70	48

In Table 3, the author entered the fall scores of both the treatment group (X) and the control group (Y) into the Windows STATPAK which came with the *Educational Research: Competencies for Analysis and Applications* (Gay, Mills, & Airasian, 2006) for a t-test for independent samples to calculate the difference between the LNF scores of the control and treatment group in the fall. Table 3, showed a t-value of 3.49. This showed that in the fall, the treatment group, the kids that came to Kindergarten with preschool, came to school with a significant advantage over the students in the control group, the students that came to Kindergarten with no preschool. The students came in the fall with a significant learning advantage over the students in the control group.

Table 3

t-Test For Independent Samples Fall Scores

Statistic	Values
No. of Scores in Group X	57
Sum of Scores in Group X	854.0000
Mean of Group X	14.98
Sum of Squared Scores in Group X	19196.00
SS of Group X	6400.98
No. of Scores in Group Y	85
Sum of Scores in Group Y	798.0000
Mean of Group Y	9.39
Sum of Squared Scores in Group Y	13358.00
SS of Group Y	5866.19
t-Value	3.49
Degrees of Freedom	140

In Table 4, the author entered the spring scores into the Windows STATPAK which came with the *Educational Research: Competencies for Analysis and Applications* (Gay, Mills, & Airasian, 2006), t-test for independent samples to calculate the difference between the LNF scores of the control, the group that did not come to Kindergarten with preschool, and treatment group, the group that came to Kindergarten with preschool, in the spring. Table 4, showed a t-value of 0.47. This showed that in the spring, there was no significant difference between the control group that did not have preschool and the treatment group that did receive preschool.

Table 4

t-Test For Independent Samples Spring Scores

Statistic	Values
No. of Scores in Group X	81
Sum of Scores in Group X	4085.00
Mean of Group X	50.43
Sum of Squared Scores in Group X	229451.00
SS of Group X	23435.88
No. of Scores in Group Y	145
Sum of Scores in Group Y	7175.00
Mean of Group Y	49.48
Sum of Squared Scores in Group Y	3796603.00
SS of Group Y	24564.21
t-Value	0.47
Degrees of Freedom	224

Table 5 contained the gained scores of the control group as well as the gained scores of the treatment group. There were a total of 81 students in the treatment group and 145 students in the control group. The mean gained scores for treatment group was 40.02. The mean gained scores for the control group was 44.19. The degree of freedom was 224. The t-value was -2.27.

Table 5

t-Test For Independent Samples Gained Scores

Statistic	Values
No. of Scores in Group X	81
Sum of Scores in Group X	3242.00
Mean of Group X	40.02
Sum of Squared Scores in Group X	147094.00
SS of Group X	17333.95
No. of Scores in Group Y	145
Sum of Scores in Group Y	6408.00
Mean of Group Y	44.19
Sum of Squared Scores in Group Y	304984.00
SS of Group Y	21794.58
t-Value	-2.27
Degrees of Freedom	224

To determine significance the calculated t-value was 3.49 in the fall and the degree of freedom was 140. The calculated t-value was greater than the critical values for t at .05, .01, and .001 as provided by Gay, Mills, and Airasian (2009). Consequently the null hypothesis was rejected at .05, .01 and .001 and there was support for the hypothesis that the treatment helped the students that went to preschool have higher letter naming scores on their DIBELS test. The calculated t-value of the spring was 0.47. The degrees of freedom of 140 and the t-value of 0.47 were used by the author to determine the significance in regards to the spring DIBELS LNF scores for the control and treatment group. The calculated t-value was less than the critical values for t at .05, .01, and .001 as provided by Gay, Mills, and Airasian (2009). The null hypothesis was accepted at .05, .01, and .001 and there was no support for the hypothesis. By the spring the control group had not only caught up but surpassed the treatment group in the LNF portion of the DIBELS test. The calculated t-value of the growth scores was -2.27. With the degree of freedom of 140 and the t-value at -2.27 the t-value was less than the critical values for t at .05, .01, and .001. The null hypothesis was accepted at .05, .01, and .001 and there was no support for the hypothesis. This meant that the control group, the students that did not receive preschool before Kindergarten, had surpassed the treatment group, the students

that had received preschool prior to Kindergarten. The treatment group came in knowing their letters from attending preschool. Once a human knows something they could not relearn it. In this case, it was letter knowledge. The students who had preschool could not learn their letters again. The control group, the students that did not receive preschool, did not know their letters when they entered Kindergarten. This allowed for the control group to spend the school year learning the names of the letters. Even though the degree of freedom varied between the group in the fall at 140 and the spring at 224, the reference point the author used was 140 as provided by Gay, Mills, and Airasian (2006). This degree of freedom of 140 was the last available data provided by Gay, Mills, and Airasian (2006).

Table 6

Distribution of t with 140 Degrees of Freedom

df	<u>p</u>		
	.05	.01	.001
140	1.96	2.57	3.29

(Gay, Mills, & Airasian, 2009)

Findings

The researcher determined that preschool learning experiences prior to Kindergarten had a positive effect on student's fall DIBELS letter naming test scores. The hypothesis was Kindergarteners who attended preschool had higher scores on the DIBELS letter naming test than Kindergarteners who do not attend preschool, which was supported by the fall analysis. The researcher compared the fall letter naming scores of those children that received preschool and those children that did not receive preschool and found that there was a significant difference at .05, .01, and .001.

The researcher did find that those students that had not received preschool prior to Kindergarten caught up to the students that did receive preschool by the end of the school year as apparent by the spring data analysis.

The researcher found that according to the growth t-value of -2.27 in the spring, that the control group, the students who did not receive preschool prior to Kindergarten, had outperformed their preschool attending peers by the end of the year. The control group was able to learn their letters and showed higher scores on the DIBELS LNF portion.

Discussion

As shown in the preceding tables and analysis in the fall, the hypothesis was supported. The students who received district

preschool prior to entering Kindergarten had higher LNF scores on their fall DIBELS test. However, in the spring the analysis showed that the hypothesis was not supported. Students who received district preschool did not show a significant difference than their classmates, who did not receive district preschool, on their LNF Spring DIBELS test. As Hoffman's study suggested, DIBELS was used for not only at risk students but was great for use with the whole class. Langdon was correct about when a student wasn't making adequate progress a teacher knew right away and could make immediate interventions.

Summary

Emphasis has been placed on students being ready once they enter Kindergarten. There was an alarming rate of achievement gap already seen in Kindergarten. Much of this was due to children not getting the brain stimulation they needed in the first few years of life. This study showed whether students who went to preschool would score better on the LNF portion of the DIBELS test in Kindergarten than those students who did not have preschool. The DIBELS test was used and participants were randomly selected from a school of all Kindergarteners.

The author reviewed literature about brain development and the importance of making those early connections. These findings tied into the other literature that was reviewed, about school readiness, preschool, and the DIBELS test. Readiness for school

required that parents work in preparing their students' for school by engaging in conversation, play, and exploration. A great way to prepare your child for school was to get them into a preschool program. A high-quality preschool program was one that allowed for creativity but still began to teach in the main domains of reading and math.

The author used an experimental study with a group of Kindergartners who went to preschool being part of the treatment group and a group of Kindergartners who did not receive preschool as the control group. The LNF portion of the DIBELS test was used.

Data was collected and the Window's STATPAK was used to determine a t-value. The t-value was used to determine significance. There was significant difference found in the fall. In the spring there was no significance found. The control group and the treatment group were even by the end of the school year. The growth t-value showed that the students who did not receive preschool prior to Kindergarten, the control group, had caught up and even passed the group of students that had received preschool prior to Kindergarten. The author's hypothesis was not supported and the null hypothesis was accepted at the end of the year.

CHAPTER 5

Summary, Conclusions, and Recommendations

Introduction

The purpose of the project was to determine if preschool prior to Kindergarten had a positive effect on Kindergarteners' achievement, in particular letter naming. An experimental design was used to determine whether there was significance between the treatment group, students that received preschool, and control group, students that did not have preschool learning experiences.

Summary

The researcher developed the idea to do such a study of students that did receive preschool and those that did not receive preschool because preschool was no longer going to be funded by the district, due to budget cuts. The researcher conducted a study using a random sample at a Kindergarten only school and selected participants from the 2009-2010 school year. The data were collected and entered into the Windows STATPAK to find the t-value and degree of freedom to determine significance. After looking at the t-value in the fall there was significant difference between the treatment, the group that did receive preschool, and the control group, the group that did not receive preschool. The test was then taken again in the spring. The data was analyzed and t-value showed that there was no

significant difference between the group that received preschool learning experiences and the group that did not receive preschool learning experiences.

Conclusions

Brain development and school readiness were found to be major indicators of a student's success in school. Early in life, when the brain was developing at such a rapid speed, every second counts to make those synaptic connections that lasted a lifetime. School readiness at Kindergarten did not mean that that was a child's first experience in a school setting. School readiness was having equipped the child with early literacy experiences prior to entering the Kindergarten setting.

The researcher found significant difference in the fall. The researcher concluded this showed that preschool did play an important role in school readiness. The treatment group, the group that received preschool, showed that they started Kindergarten academically ahead of the students that did not receive preschool. However, in the spring there was not a significant difference the two groups. Both groups were shown to have gained but the control group gained more than the treatment group. The researcher noted reasons why this occurred. The first being that the curriculum used at Sun Valley, Open Court, provided sufficient work in learning the letters. This was evident because of how the control group caught up and even

surpassed the treatment group. The second reason was that once something was learned, in this case letter naming, continued growth in that learning was limited. The treatment group came in knowing their letters so the instructor moved those student's to the next level of learning how to read. The treatment group started learning the sounds and how to blend while the control group continued to learn their letters. This was great for teachers because they now knew that they can create more open learning for those student's that received preschool. They could push beyond teaching and reinforcing letter naming and move those students learning to a higher level.

Many factors that were beyond the researcher's control contributed to the study. Some of the factors were: students who moved away, students who had speech problems and were receiving speech services that may or may not have played a factor, some of the students were English as Second Language (ESL) students; some of students were not yet identified as special education students.

Though there was not a significant difference found in the spring, the researcher found the data supported that preschool was an excellent starting point in a student's educational career. This was evident in the significant difference found in the fall data.

Recommendations

The author would strongly recommend that another form of testing be used to collect data. Letter Naming Fluency is only one subtest of the DIBELS test and was used because it is the only subtest that is tested throughout the year. School readiness does not only incorporate being academically ready for school but includes being socially, physically, and emotionally ready for school. The author would recommend using a data collecting tool that encompasses all of these factors such as Washington Kindergarten Inventory of Developing Skills (WaKIDS) which assesses the whole child. The LNF test was also used because of the easy access to the data and it is a test that is commonly used throughout the district and around the surrounding districts.

REFERENCES

- Blinkov, S. M. & Glezer, I. I. The human brain in figures and tables: a quantitative handbook.
- Childrennow.org. (2009). *Children now*. [online] Retrieved from: <http://childrennow.org> [Accessed: 10 jan 2014].
- Cicchetti, D. (2002). How a child builds a brain: insights from normality and psychopathology. *Lawrence Erlbaum Associates Publishers*.
- Ctl.uoregon.edu. (2009). *Ctl | center on teaching and learning*. [online] Retrieved from: <http://ctl.uoregon.edu> [Accessed: 10 Feb 2012].
- Del.wa.gov. (2010). *Department of early learning page*. [online] Retrieved from: <http://del.wa.gov> [Accessed: 10 Dec 2013].
- Dodd, S. (1997). Senate committee on labor & human resources, *Pre To 3; Policy Implications Of Child Brain Development*. [podcast] June 5.
- Eclkc.ohs.acf.hhs.gov. (2012). *Early childhood learning and knowledge center*. [online] Retrieved from: <https://eclkc.ohs.acf.hhs.gov/hslc> [Accessed: 10 jan2014].
- Epicforchildren.org. (2012). *Epic - every person influences children*. [online] Retrieved from: <http://epicforchildren.org> [Accessed: 10 jan 2014].
- Gay, L. R., Mills, G. E. & Airasian, P. W. (2009). *Educational research*. Upper Saddle River, N.J.: Merrill/Pearson.
- Goffreda, C. T., Diperna, J. C. & Pedersen, J. A. (2009). Preventive screening for early readers: predictive validity

- of the dynamic indicators of basic early literacy skills (dibels). *Psychology In The Schools*, 46 (6), pp. 539--552.
- Good, R. H. & Kaminski, R. A. (2002). *Dynamic indicators of basic early literacy skills*. 6th ed. Longmont, Colo.: Sopris West.
- Good, R., Kaminski, R., Simmons, D. & Kame'enui, E. (2003). Using dibels in an outcomes-driven model: steps to reading outcomes. *Unpublished Manuscript*.
- Healthychild.ucla.edu. (2001). *Ucla center for healthier children, families, & communities*. [online] Retrieved from: <http://www.healthychild.ucla.edu/>.
- Hintze, J., Ryan, A. & Stoner, G. (2002). *Concurrent validity and diagnostic accuracy of the dibels and comprehensive test of phonological awareness*. Amherst, MA: University Of Massachusetts.
- Hoffman, A. R., Jenkins, J. E. & Dunlap, S. K. (2009). Using dibels: a survey of purposes and practices. *Reading Psychology*, 30 (1), pp. 1--16.
- Honig, A. (2009). Want to engage your baby's brain? try a little tenderness. *Scholastic Parent And Child*, 17 (1), p. 96.
- Kaminski, R. A., Good III, R. & H (1996). Toward a technology for assessing basic early literacy skills. *School Psychology Review*.
- Langdon, T. (2004). Dibels a teacher-friendly basic literacy accountability tool for the primary classroom. *Teaching Exceptional Children*, 37 (2), pp. 54--58.

- Logan, C. (2010). Brain development in infants and early childhood.
- Medicinenet.com. (2012). [online] Retrieved from:
<http://medicinenet.com> [Accessed: 21 Jan 2014].
- Naeyc.org. (2009). *National association for the education of young children | naeyc*. [online] Retrieved from:
<http://naeyc.org> [Accessed: 10 jan, 2014].
- Nichd.nih.gov. (2002). *National reading panel*. [online] Retrieved from:
<http://www.nichd.nih.gov/research/supported/Pages/nrp.aspx> [Accessed: 9 JUL 2013].
- Noble, K., Tottenham, N. & Casey, B. (2005). Neuroscience perspectives on disparities in school readings and cognitive achievement. *The Future Of Children*, 15 (1).
- Ounceofprevention.org. (1996). *Starting smart: how early experiences affect brain development*. [online] Retrieved from: <http://ounceofprevention.org> [Accessed: 10 Feb 2012].
- Perry, B. (2002). Childhood experiences and the expression of genetic potential: what childhood neglect tells us about nature and nurture. *Brain And Mind*, 3.
- Perry, B. D. (2006). Applying principles of neurodevelopment to clinical work with maltreated and traumatized children: the neurosequential model of therapeutics. *Guilford Press*.
- Perry, B., Pollard, R., Blakley, T., Baker, W. & Vigilante, D. (1995). Childhood trauma, the neurobiology of adaptation, and "use-dependent" development of the brain: how "states" become "traits". *Infant Mental Health Journal*, 16 (4), pp. 271-291.

- Puma, M., Bell, S., Cook, R. & Heid, C. (2010). *Head start impact study final report*. [report].
- Stien, P. T. & Kendall, J. C. (2004). *Psychological trauma and the developing brain*. New York: Haworth Maltreatment And Trauma Press.
- Thrive By Five WA. (2008). *Home- welcome to thrive by five washington*. [online] Retrieved from:
<http://thrivebyfivewa.org>.
- Weber, D. A. & Reynolds, C. R. (2004). Clinical perspectives on neurobiological effects of psychological trauma. *Neuropsychology Review*, 14 (2), pp. 115--129.
- Zau, A. & Betts, J. R. (2008). *Predicting success, preventing failure*. San Francisco: Public Policy Institute Of California.
- Zerotothree.org. (2012). *Zero to three: homepage*. [online] Retrieved from: <http://zerotothree.org> [Accessed: 21Jan 2014].