

2012

The Impact of Preschool Education on Students' Kindergarten Readiness and Subsequent Kindergarten Performance

Kelsey Musselman Carroll
Gardner-Webb University

Follow this and additional works at: https://digitalcommons.gardner-webb.edu/education_etd



Part of the [Pre-Elementary, Early Childhood, Kindergarten Teacher Education Commons](#)

Recommended Citation

Carroll, Kelsey Musselman, "The Impact of Preschool Education on Students' Kindergarten Readiness and Subsequent Kindergarten Performance" (2012). *Education Dissertations and Projects*. 51.
https://digitalcommons.gardner-webb.edu/education_etd/51

This Dissertation is brought to you for free and open access by the School of Education at Digital Commons @ Gardner-Webb University. It has been accepted for inclusion in Education Dissertations and Projects by an authorized administrator of Digital Commons @ Gardner-Webb University. For more information, please see [Copyright and Publishing Info](#).

The Impact of Preschool Education on Students' Kindergarten Readiness
and Subsequent Kindergarten Performance

by
Kelsey Musselman Carroll

A Dissertation Submitted to the
Gardner-Webb University School of Education
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

Gardner-Webb University
2012

Approval Page

This dissertation was submitted by Kelsey Musselman Carroll under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

David Shellman, Ed.D.
Committee Chair

Date

Joe Bullis, Ed.D.
Committee Member

Date

Jeffrey Peal, Ed.D.
Committee Member

Date

Frances B. Burch, Ph.D.
Dean of the Graduate School

Date

Abstract

The Impact of Preschool Education on Students' Kindergarten Readiness and Subsequent Kindergarten Performance. Carroll, Kelsey Musselman, 2012: Dissertation, Gardner-Webb University, Prekindergarten Attendance/School Readiness/Kindergarten Student Achievement/Socioeconomic Status/Teacher Perceptions.

The purpose of this study was to examine the impact of preschool education on students' kindergarten readiness and subsequent kindergarten performance in a low socioeconomic primary school. There are several factors that influence a child's readiness for school, including the children's natural talents and abilities, their families, their early environments, their schools, and their communities.

The setting for this research was a primary school located within a small, urban school district in the piedmont area of North Carolina. For the purpose of this study, all kindergarten students were placed into three subgroups: kindergarten students who attended the prekindergarten program at the primary school, kindergarten students who attended an outside prekindergarten program in the surrounding community, and kindergarten students who have no record of prekindergarten attendance.

The study's methodology included assessing all kindergarten students prior to the start of the school year using the fourth edition of the Developmental Indicators for the Assessment of Learning (DIAL-4) kindergarten readiness screening assessment, and then comparing these scores to a) whether or not the student attended a prekindergarten program prior to starting school; and b) student achievement data recorded at three benchmark checkpoints (3, 5, and 7 months) throughout the kindergarten school year. Data on teacher perceptions of the effect of preschool on kindergarten readiness and student achievement were also collected and analyzed.

When looking at kindergarten readiness, results suggest that children who attended a prekindergarten program prior to starting school scored significantly higher on the DIAL-4 readiness screening assessment than their peers who did not attend prekindergarten. In further analyzing the data, students who attended a prekindergarten program in the surrounding community scored significantly higher on the DIAL-4 readiness screening assessment than students who either attended the district prekindergarten program or did not attend prekindergarten.

When looking at subsequent kindergarten performance, students who were originally identified as being ready for school did not, after 7 months of classroom instruction, score significantly higher in literacy, math or social development than their peers who were originally identified as being delayed. Additionally, students who attended a prekindergarten program prior to starting school did score significantly higher in math proficiency than their peers who did not attend prekindergarten, but there were no significant differences between the two groups for either literacy or social development.

Table of Contents

	Page
Chapter 1: Introduction	1
Nature of the Problem	1
Purpose of the Study	2
Background and Significance of the Problem	3
Research Questions	8
Setting	8
Definition of Terms	13
Summary	13
Chapter 2: Review of Related Literature	15
Introduction	15
Historical Background	15
Today's Kindergarten	17
Common Core State Standards	21
Kindergarten Readiness	23
Assessing Kindergarten Readiness	28
Prekindergarten and Socioeconomic Status	30
Additional Factors Affecting Kindergarten Readiness and Performance	36
Summary	42
Chapter 3: Methodology	44
Introduction	44
Participants	44
Instruments	45
Procedures	49
Limitations and Delimitations	53
Summary	53
Chapter 4: Results	54
Introduction	54
Findings	54
Summary	107
Chapter 5: Discussion	108
Introduction	108
Implications of Findings	108
Final Conclusions	130
Limitations	131
Recommendations	132
Summary	134
References	136
Appendices	
A Research Request and Consent	142
B Kindergarten Common Core State Standards for English Language Arts	146
C Kindergarten Common Core State Standards for Math	152
D Kindergarten Literacy Assessment Pack	156
E Kindergarten Math Assessment Pack	174
F Kindergarten Social Development Checklist	193

G	Kindergarten Teacher Survey	195
Tables		
1	Primary School Ethnicity Ratios.....	9
2	Kindergarten Ethnicity Ratios.....	10
3	Percentage of Kindergarten Students Qualifying for Free-Reduced Lunch	10
4	Percentage of Kindergarten Students with Preschool Experience	11
5	Breakdown of Preschool Attendance.....	11
6	DIAL-4 Kindergarten Readiness Count by Pre-K Participation.....	55
7	DIAL-4 Kindergarten Readiness Count by Pre-K Participation by Gender	57
8	ANOVA for DIAL-4 Mean Scores by Gender	59
9	ANOVA for Prekindergarten Students' DIAL-4 Scores by Gender	61
10	DIAL-4 Readiness Score Means by Pre-K Participation.....	61
11	ANOVA for DIAL-4 Scores by Pre-K Participation.....	62
12	DIAL-4 Kindergarten Readiness Count by Pre-K Experience	63
13	DIAL-4 Kindergarten Readiness Count by Pre-K Experience by Gender	65
14	ANOVA for District Prekindergarten Students' DIAL-4 Scores by Gender	67
15	DIAL-4 Readiness Score Means by Pre-K Experience	68
16	ANOVA for DIAL-4 Scores by Pre-K Experience	68
17	Post Hoc Bonferonni for DIAL-4 Scores by Prekindergarten Experience	69
18	Literacy Proficiency by Readiness by Pre-K Experience	71
19	ANCOVA for Literacy Means by Readiness.....	72
20	ANCOVA for Literacy Means by Pre-K Experience	74
21	Literacy Proficiency by Readiness by Pre-K Experience for Male Students	76
22	Literacy Proficiency by Readiness by Pre-K Experience for Female Students	78
23	Literacy Proficiency by Attendance.....	79
24	Math Proficiency by Readiness by Pre-K Experience	80
25	ANCOVA for Math Means by Readiness.....	81
26	ANCOVA for Math Means by Prekindergarten Experience	83
27	Math Proficiency by Readiness by Pre-K Experience for Male Students	85
28	Math Proficiency by Readiness by Pre-K Experience for Female Students	87
29	Math Proficiency by Attendance.....	88
30	Social Proficiency by Readiness by Pre-K Experience.....	89
31	ANCOVA for Social Development Means by Readiness.....	90
32	ANCOVA for Social Development Means by Pre-K Experience	92
33	Levene's Test of Equality of Error Variances.....	94
34	Social Proficiency by Readiness by Pre-K Experience for Male Students	95
35	Social Proficiency by Readiness by Pre-K Experience for Female Students	97
36	Social Proficiency by Attendance	98
37	ANCOVA for Literacy Means by Pre-K Participation	100
38	ANCOVA for Math Means by Pre-K Participation	102
39	ANCOVA for Social Development Means by Pre-K Participation.....	105
Figures		
1	DIAL-4 Readiness Score Mean by Pre-K Participation	56
2	DIAL-4 Readiness Score Mean by Gender	58
3	DIAL-4 Readiness Score Means Clustered by Gender and Pre-K	

	Participation	60
4	DIAL-4 Readiness Score Mean by Pre-K Experience.....	64
5	DIAL-4 Readiness Score Means Clustered by Gender and Pre-K Experience.....	66
6	Literacy Means Clustered on Readiness	73
7	Literacy Means Clustered on Pre-K Experience.....	75
8	Math Means Clustered on Readiness.....	82
9	Math Means Clustered on Pre-K Experience.....	84
10	Social Development Means Clustered on Readiness.....	91
11	Social Development Means Clustered on Pre-K Experience	93
12	Literacy Means Clustered on Pre-K Participation	101
13	Math Means Clustered on Pre-K Participation	103
14	Social Development Means Clustered on Pre-K Participation	106

Chapter 1: Introduction

Nature of the Problem

In recent years, the United States has experienced a major shift in the education and care that is expected to be provided to children prior to entering elementary school (Pianta & Howes, 2009). More focus is currently being put on failing schools and failing students than anything else in today's educational society (Cassidy, Mims, Rucker, & Boone, 2003) and as a result, preschools and other school readiness programs are becoming highly regarded as ways to help prepare students for the transition to the high academic accountability they will face in early elementary school (Pianta & Howes, 2009). This high level of accountability is particularly present in kindergarten classrooms in the United States today due to the explicit focus that the No Child Left Behind Act of 2001 placed on kindergarten students' abilities to obtain high academic achievement, especially in regards to reading (Justice, Turnbull, Bowles, & Skibbe, 2009). Justice et al. (2009) declared that "as kindergarten instruction and its documented relations to children's academic achievement are placed under greater scrutiny by policy makers and school administrators, increased demands are being placed upon children to arrive at kindergarten prepared to learn" (p. 460). This notion of being prepared for school is often referred to as school readiness (Justice et al., 2009).

The term *school readiness* was first introduced in 1990 when the National Education Goals Panel, established by both federal and state officials, began working towards the goal that by the year 2000, "all children will start school ready to learn" (National Education Goals Report, 1999, p. 1). School readiness has continued to be a major objective in the field of education as pressures to increase student achievement rise and students are expected to learn and do more each year (Mashburn & Henry, 2004).

School readiness has been defined as a child's ability and readiness to learn when starting school, specifically in five categories: language use and development, cognition and general knowledge, physical health and motor development, social and emotional development, and approaches toward learning (Maxwell & Clifford, 2004). These five domains provide a much broader definition and context for determining school readiness rather than just looking at a child's alphabet and number knowledge; however, it is important to also note that, as Maxwell and Clifford (2004) pointed out,

School readiness is more than just about children. School readiness, in the broadest sense, is about children, families, early environments, schools, and communities. Children are not innately *ready* or *not ready* for school. Their skills and development are strongly influenced by their families and through their interactions with other people and environments before coming to school. (p. 1)

Therefore, assessing all aspects of school readiness at the start of school is crucial because it allows teachers and parents to better measure and understand the current state of a child's development, knowledge, and home life, thus providing information that can then be used to guide kindergarten classroom instruction (Mehaffi & McCall, 2002).

Purpose of the Study

The purpose of this study was to examine the impact of preschool education on students' kindergarten readiness and subsequent kindergarten performance in a low socioeconomic primary school. Research on preschool programs has shown that children receive many lasting educational benefits from attending preschool, and that preschool can in fact enhance children's success in school and even result in positive long-term academic and social benefits (Desimone, Payne, Fedoravicius, Henrich, & Finn-Stevenson, 2004); however, research also shows that there is a significant inequality

between the social classes, races, and ethnic groups of the students who attend preschool versus the students who do not (Farkas & Hibel, 2008). This variance in attendance of preschool attendance means that for some children, opportunities to learn and develop prior to starting school are many, but for other children, the opportunities are much less and in some cases are completely nonexistent (Bowman, Donovan, & Burns, 2001).

This study looked at kindergarten students in a primary school located within a small, urban school district in the piedmont area of North Carolina. It determined the overall school readiness of students who have attended a preschool program prior to starting kindergarten and compared their school readiness to a group of peers who did not attend a preschool program. It sought to determine if a gap is present in their readiness, and if so, in what areas. This study also compared students' readiness scores to their academic performances throughout the kindergarten year. The results of this study will help determine the effect preschool attendance has on kindergarten readiness and on student performance throughout the kindergarten year. The results of this study will also help to inform prekindergarten and kindergarten program planning at the district level.

Background and Significance of the Problem

Starting school is a significant event in a child's life, and it is often referred to as one of the biggest challenges, yet the most important transition, that young children face during their early years (Dockett & Perry, 2001). In fact, Dockett and Perry (2001) declared that "kindergarten is a context in which children make important conclusions about school as a place where they want to be and about themselves as learners" (p. 1). But in recent years, kindergarten has become much more academic and much less age-appropriate, requiring students to master curriculum that has been pushed down from upper grades and is often not developmentally appropriate for the average kindergarten

student (National Association for Education of Young Children [NAEYC], 2009).

According to McGill-Franzen (2006), there are more than four million children attending kindergarten today and each of those children brings with them varying preconceptions and degrees of knowledge about the concepts of reading and writing. These preconceptions and discrepancies in knowledge can present a challenge for kindergarten teachers everywhere because despite what children come to school with, the present-day goal of kindergarten is to develop students who are literate in all aspects of literacy and who can both read and write fluently before the end of the kindergarten year (Bennett-Armistead, Duke, & Moses, 2005). Rather than letting their students play all day like in the past, kindergarten teachers now seek to develop many different aspects of literacy within their students, including a strong concept of print awareness, a deep knowledge of alphabet letters and sounds, a strong speaking and listening vocabulary, a deep sense of phonemic awareness skills, and a solid base knowledge of all that it takes to become an emergent and fluent reader and writer (McGill-Franzen, 2006). These standards are a far cry from what has been previously expected from kindergarten students, so children who come in with a deficit in these areas are seemingly already behind in their literacy development (Fuller, 2007).

Similarly, the expectations that are put forth for students in the area of mathematics are equally as challenging for kindergarten students to master as most of them require the use of higher-level thinking skills (Nutbrown, 2006). The mathematical skills that children are expected to be able to master in kindergarten include but are not limited to counting, sorting objects by particular traits, matching sets and numbers, seeking and creating patterns, making connections between sets and numbers, recognizing relationships between numbers, identifying and working with shapes,

understanding space and measurement, and understanding simple addition and subtraction concepts (Nutbrown, 2006). Just as with literacy, if children come in unprepared to learn this material, they will start the school year already behind their peers who are ready for these higher-level concepts (NAEYC, 2009).

Aside from these literacy and math expectations, perhaps the most controversial area in the current kindergarten expectations is determining which of children's social and emotional behaviors are deemed appropriate and necessary to function in a school setting (Copple & Bredekamp, 2009). Kindergarten students of today are expected to be able to manage their emotions by taking turns, sharing, making friends, talking about how they feel, controlling their impulses, self-regulating their behaviors, following simple, multi-step directions, and striving to please others (Allen & Marotz, 2010). These can be extremely difficult tasks for children to understand and demonstrate on a daily basis, but developing these behaviors in young children will make them both socially and emotionally healthy, which will in turn make them stronger students in the future (Bruce & Cairone, 2011). In addition, Riley, San Juan, Klinkner, and Ramminger (2008) also stressed the importance of being able to develop appropriate peer relationships as well, stating that "the quality of peer relationships in early childhood predicts later success in intellectual growth, self-esteem, mental health, and school performance" (pp. 35-36).

The question of whether or not these new, challenging, higher-level kindergarten expectations represent developmentally appropriate instruction for kindergarteners often arises when discussing the new kindergarten (Copple & Bredekamp, 2009). But research described by Schiller (1999) on brain development explains that the way young brains are wired is directly linked to the amount of opportunities the brain has to learn from external forces. In fact, Schiller (1999) made clear that

Early experiences contribute significantly to the structure of the brain and its capacities. The quality, quantity, and consistency of stimulation will determine to a large extent the number of brain synapses that are formed and how those connections will function. This is true for both cognitive and emotional development, and the effect is lifelong. (p. 8)

Knowing this makes the idea that kindergarten children will be able to perform at these higher levels slightly more attainable, but only if they have had the opportunities to foster the brain development necessary to do so (Schiller, 1999). This thought brings an entirely different viewpoint to the idea of school readiness and what it takes to truly be ready for school (Copple & Bredekamp, 2009).

Most educators would agree with the statement that young children develop in very different ways and have varying rates of learning; however, because schools today in the United States have such high expectations for rising kindergartners, they frequently fail to recognize these differences in development, often putting children at risk before the school year even begins (NAEYC, 2009). Similarly, not only do children enter school with different developmental levels, but “growing numbers of children in the United States come from a variety of racial, ethnic, and cultural backgrounds, family types, parent-education levels, income strata, and language backgrounds” (Zill, Collins, West, & Hausken, 1995, p. 1) as well. These differences often lead to sizeable achievement gaps in learning, often seen as early as kindergarten, due to the fact that children come to school with such varying life experiences, abilities, and backgrounds (Rouse, Brooks-Gunn, & McLanahan, 2005).

Rouse et al. (2005) made it known that what happens or does not happen to children early in life can have a profound impact on their later school achievement,

specifically stating that “children who enter school not yet ready to learn, whether because of academic or emotional deficits, continue to have difficulties later in life” (p. 6). Their research also shows that children who perform poorly on cognitive skill tests during their preschool and kindergarten years are less likely to do well in elementary and high school, and are more likely to be unemployed in adulthood. This information alone helps to make a case for preschool programs everywhere, because a quality preschool program can help to not only meet children’s basic needs and support their emotional guidance, but also motivate, instruct, and support their early learning and development (Bowman et al., 2001).

Research collected by Bowman et al. (2001) strongly supported the fact that because children between the ages of two and five are much more capable learners than was previously thought, and “their acquisition of linguistic, mathematical, and other skills relevant to school readiness is influenced (and can be improved) by their educational and development experiences during those years” (p. 28), all children need to be given an opportunity to attend preschool and foster that development to its fullest potential. Their research also suggests that the potential advantages young children will have when early education is taken more seriously during a child’s preschool years far outweigh the disadvantages of early intervention. Bowman et al. (2001) made it known that

As recently as 50 years ago, it was widely believed that the major tasks for children during the preschool years were those of socialization: separating from home, learning how to interact with peers and unfamiliar adults, and experiencing new materials in a novel environment. Today we recognize the first five years as a time of enormous growth of linguistic, conceptual, and social competence.

(p. 37)

Similarly, Sprenger (2008) explained that during the preschool years, a child's brain is changing and developing at such a rapid pace that their language begins to greatly improve, their number sense continues to grow, and their curiosity about themselves and about the world around them greatly accelerates. Knowing that these years before a child starts school are some of the most fundamental learning and developing years of a child's life (Rawson & Rose, 2006), it is easy to see why the push for preschool programs and early childhood education programs for all children is so apparent in our society today (Fuller, 2007).

Research Questions

1. What are the differences in mean scores on the Developmental Indicators for the Assessment of Learning (DIAL-4) school readiness screening between kindergarten students who have prekindergarten experience and those who do not?

2. What are the differences in mean scores on the DIAL-4 school readiness screening among students who attended the prekindergarten program at the primary school, students who attended a different prekindergarten program in the surrounding community, and students who have no record of attending a prekindergarten program?

3. How does the initial screening data compare to student data collected 3, 5, and 7 months into kindergarten as measured by district benchmark assessments in the areas of literacy, math, and social development?

4. How do kindergarten teachers perceive the effect of prekindergarten experiences on student achievement during the kindergarten year?

Setting

This research took place in a primary school located within a small, urban school district in the piedmont area of North Carolina. There are a total of four schools within

this district: a primary school that serves grades prekindergarten through third grade; an elementary school that serves fourth and fifth grades; a middle school that serves grades sixth through eighth; and a high school that serves grades ninth through twelfth. In the 2010-2011 school year, 849 students were enrolled in the primary school: 74 preschool students, 202 kindergarten students, 168 first grade students, 201 second grade students, and 204 third grade students. Table 1 shows the ethnicity ratios for all students who were enrolled in the primary school for the 2010-2011 school year.

Table 1

Primary School Ethnicity Ratios – 2010-2011

Ethnicity	<i>n</i>	%
American Indian	6	0.7
Asian	13	1.5
Black	277	32.6
Hispanic	258	30.4
Multiracial	59	6.9
White	236	27.8
Total	849	100.0

Note: Permission was given from the school system to include this data.

Table 2 shows the ethnicity ratios when looking specifically at the kindergarten students from the 2010-2011 school year.

Table 2

Kindergarten Ethnicity Ratios – 2010-2011

Ethnicity	<i>n</i>	%
American Indian	2	1.0
Asian	5	2.5
Black	59	29.2
Hispanic	71	35.1
Multiracial	13	6.4
White	52	25.7
Total	202	100.0

Note: Permission was given from the school system to include this data.

Table 3 shows the percentage of kindergarten students who qualified for free-reduced lunch in the 2010-2011 school year.

Table 3

Percentage of Kindergarten Students Qualifying for Free-Reduced Lunch – 2010-2011

Lunch Status	<i>n</i>	%
Free	169	83.7
Reduced	17	8.4
Full Price	16	7.9
Total	202	100.0

Note: Permission was given from the school system to include this data.

Table 4 shows the percentage of kindergarten students from the 2011-2012 school year who entered school with preschool experience.

Table 4

Percentage of Kindergarten Students with Preschool Experience – 2011-2012

Attended Preschool Prior to Starting School	<i>n</i>	%
Yes	103	50.2
No	102	49.8
Total	205	100.0

Note: Permission was given from the school system to include this data.

Table 5 shows the breakdown of preschool attendance for the kindergarten students from the 2011-2012 school year.

Table 5

Breakdown of Preschool Attendance – 2011-2012

Preschool Attendance	#	%
At the Primary School	55	53.4
In the Surrounding Community	48	46.6
Total	103	100.0

Note: Permission was given from the school system to include this data.

At the time of this study, the prekindergarten program in place at the district primary school was partially funded by the state of North Carolina as part of the *More at Four Prekindergarten Program for At-Risk Four-Year-Olds*. This program originated in 2001 as one of Governor Mike Easley's key educational campaigns and it was later backed by a court ruling stating that every school district should provide prekindergarten to all at-risk four-year-olds in the state (Pre-K Now, 2011). Governor Easley originally planned to serve 1,200 children through the *More at Four* program, but between the years

of 2002 and 2005, the program had grown to serve over 12,000 children.

In 2007, the North Carolina *More at Four* program was recognized as being one of only two prekindergarten programs nationwide to have the state program meet all 10 quality benchmarks as outlined by the National Institute for Early Education Research (Barnett et al., 2010). Those 10 quality benchmarks include:

1. All teachers have a bachelor's degree in education
2. All teachers have specialized training in exceptional children (EC)
3. All assistants have a Child Development Associate credential or higher
4. All teachers have at least 15 hours of annual in-service training
5. All classrooms follow Early Learning Standards
6. All classrooms have a class size of 20 students or lower
7. All teacher-students ratios are 1:10 or better
8. All students have access to vision, hearing, and health screenings and referrals
9. All students receive at least 1 free meal per school day
10. All parents have access to parent education materials and site visits

According to the North Carolina Department of Public Instruction (NCDPI), the *More at Four* program in North Carolina has ranked among the top prekindergarten programs in the nation for the past 6 consecutive years, and has helped to close the achievement gap by providing a critical learning year for our most at-risk preschoolers and kindergarten students (NCDPI, 2011b).

The North Carolina *More at Four* initiative has proven to be an excellent program to help prepare prekindergarten students for school, but the budget for this program has been cut by more than \$10 million over the last 2 fiscal years (NCDPI, 2011b). Therefore, the district prekindergarten program in this study was partially funded

by the *More at Four* program, but was also dependent on other funds to keep the program running, including local funds from the school district and federal Title 1 funds.

Definition of Terms

For the purpose of this study, the terms preschool and prekindergarten were used synonymously. In addition, the following terms have been defined:

Preschool. A program that children attend prior to starting kindergarten that integrates pre-academic skills and social skills into a safe environment that also meets children's basic developmental needs (Rose, 2010).

Pre-academic skills. Early literacy behaviors, including book and print awareness skills, alphabet recognition, alphabet sound production, and vocabulary knowledge; and early math behaviors, including number identification 0-10, rote counting, and shape recognition.

Social skills. Taking turns, following directions, sharing, working well with others, working independently, and identifying basic needs and wants.

School readiness. A child's basic knowledge at the start of school and their ability to learn new things.

Proficiency. Scoring at least 80% proficient or higher on any given assessment.

Summary

In spite of all that has been done over recent years to promote school readiness and give all children opportunities to be successful in kindergarten, there are still many young children who come to school inadequately prepared for the rigorous demands of the public school curriculum (Cassidy et al., 2003). Yet research by Cassidy et al. (2003) also stated that "high-quality, developmentally appropriate curricula have been shown to result in positive cognitive and social outcomes for young children" (p. 194). Knowing

this, further study was warranted to determine exactly how attendance in a prekindergarten program prior to starting kindergarten impacted children's school readiness, as well as their subsequent performance throughout the kindergarten year.

Chapter 2: Review of Related Literature

Introduction

The purpose of this study was to examine the impact of preschool education on students' kindergarten readiness and subsequent kindergarten performance in a low socioeconomic primary school. Much research has been done on this topic and its relation to school reform in recent years, providing evidence specifically related to what preschool programs are available, why they are necessary in our current educational situation, and what the potential benefits of these programs can be for both our students and our schools in the world today (Pianta & Howes, 2009).

However, there are many different variables to take into consideration when discussing preschool programs, school readiness, and subsequent academic performance in school, including the ever-changing expectations of today's typical kindergarten classroom, the recent adoption of a national curriculum, the increasing expectations and requirements for school readiness, and the diverse backgrounds and socioeconomic status of the children entering schools today. Important literature and research associated with each of the aforementioned topics is discussed in further detail below.

Historical Background

The idea of creating early learning opportunities for children under the age of five originally comes from Friedrich Froebel, a German philosopher from the late 1700s, who believed that if children were given the right opportunities and placed under the right conditions, they would indeed grow and blossom into capable students (Fuller, 2007). Froebel was very passionate about fostering young children's growth through early learning programs, which led him to create a program first titled *The Institution for Fostering Small Children* that he later renamed *Kindergarten* (Fuller, 2007). His belief of

nurturing young children in a formal organization as the best way to teach them new things helped to pave the way for the kindergarten classrooms of today (Fuller, 2007).

As the inspiration of kindergarten started spreading throughout America, the first public kindergartens opened by the early 1900s and sought to provide 5-year-olds a transition year to formal education (Bryant, Clifford, Early, Howes, & Pianta, 2002). Just as many states and communities conveyed concern about 5-year-olds during this time period, they continue to express similar concerns about 3- and 4-year-olds today (Bryant et al., 2002). These concerns create a need for early childhood education services, also termed preschool or prekindergarten, to become widely available for 3- and 4-year-old children all over America (Bryant et al., 2002).

Preschool first began at the national level in 1965 with the creation of the Head Start program, which was developed by the federal government as a program to serve disadvantaged preschoolers and provide intervention to assist in their readiness for school (Rose, 2010). Rose (2010) explained that “Head Start was born in a time of enormous optimism, both about the impact early intervention could have on children’s development and life trajectories and about the federal government’s ability to solve deep-seated problems of poverty and inequality” (p. 13). With the development of this federal program to help prepare children for school, early intervention during the preschool years instantly became an important focus not just for individual students, but for society as a whole as well (Rose, 2010).

The term preschool is often interchangeable with other terms, such as prekindergarten, Head Start, child care, or nursery school, and although not all preschool settings are the same, most preschool programs maintain similar goals: to care for children while also providing some type of education (Rose, 2010). While there are some

programs that specifically choose one or the other, combining the two elements of care and structured learning is the most effective way to engage students and help truly prepare them for school (Sadowski, 2006). The question of what exactly children should learn in preschool is dependent on many different factors, but Rose (2010) wrote that “excellent preschool teaching requires the ability to integrate pre-academic skills and social skills into children’s imaginative play and chosen activities through extensive interaction and conversation as well as to construct a stimulating classroom environment” (pp. 203-204). This includes designing activities that will help foster children’s language acquisition, enrich their vocabulary, develop early literacy and math skills, and promote social and emotional skills, all while maintaining a playful sense of excitement and imagination (Rose, 2010). Finding the right balance between care and education is crucial to providing a meaningful preschool experience to children and aiding in their readiness for school (Rose, 2010). This balance also has the potential to really help prepare children be as ready as they can possibly be for the challenging kindergarten classrooms of which they will soon be a part (Litty & Hatch, 2006).

Today’s Kindergarten

Miller and Almon (2009), in conjunction with David Elkind and Vivian Gussin Paley, published a strong book entitled *Crisis In The Kindergarten: Why Children Need Play In School* where the introductory paragraph speaks loud and clear about the state of kindergarten classrooms in America today:

Kindergarten has changed radically in the last two decades in ways that few Americans are aware of. Children now spend far more time being taught and tested on literacy and math skills than they do learning through play and exploration, exercising their bodies, and using their imaginations. Many

kindergartens use highly prescriptive curricula geared to new state standards and linked to standardized tests. In an increasing number of kindergartens, teachers must follow scripts from which they may not deviate. These practices, which are not well grounded in research, violate long-established principles of child development and good teaching. It is increasingly clear that they are compromising both children's health and their long-term prospects for success in school. (p. 11)

Although many adults would like to think that the kindergarten classrooms of today are the same play and learn kindergarten classrooms that they grew up in many years ago, the fact of the matter is that they simply are not; kindergarten classrooms of today are like the first and second grade classrooms of the past (Litty & Hatch, 2006).

When discussing this topic, Litty and Hatch (2006) explained the factors that have influenced both the nature and the purpose of kindergarten today, including

the experience of being a child is vastly different than it was just a generation ago; advances in knowledge about what young children are capable of learning have challenged traditional perspectives on appropriate practice in kindergarten classrooms; and the standards-based accountability movement has worked its way down into early childhood classrooms. (p. 203).

Kindergarten teachers everywhere are being forced to move away from the play and learn teaching method and into a more standards-based curriculum that some educators actually believe hurries a child into academic development before they are truly ready for it (Litty & Hatch, 2006). This "educational hurrying" (Elkind, 2001, p. 7) has caused our kindergarten students of today to be much more stressed, both physically and emotionally, and to actually perform worse in kindergarten than ever before. Elkind

(1987), who researched developmentally appropriate practice for young children for more than 20 years, strongly disagreed with the idea of hurrying young students, stating that “when the first grade curriculum is pushed down into the kindergarten and the kindergarten curriculum is taught to four-year-olds...we see the results of this false concept of young children’s competence” (p. 59).

Litty and Hatch (2006) also make it known that, compared to years past, today’s kindergartens are “more rigorous, teaching methods are more direct, and expectations for academic achievement are much higher” (p. 204). In fact, it is common procedure in kindergarten classrooms of today to routinely assess kindergarten students on their proficiency of certain taught objectives and learning standards throughout the school year, pushing them to prove their learning in areas that were previously thought of as too difficult for a kindergartener to master (Lord, 2005). In a recent study done by Zeng and Zeng (2005), about 50% of kindergarten teachers in the United States agreed that assessing kindergarten students using standardized tests was vitally important for knowing what students are learning and exactly what they are capable of, but only if those assessments were developmentally appropriate for kindergarten students. As noted in Zeng and Zeng’s (2005) study, the question of whether or not kindergarten assessments are developmentally appropriate continues to remain unanswered.

In North Carolina, the Board of Education has recently charged all teachers to provide a learning environment for students that will ensure that all students will graduate from a rigorous, relevant academic program that prepares them to be an active citizen and employee in the 21st century (North Carolina State Board of Education, 2007). Recognizing these qualities, kindergarten teachers in North Carolina are now charged with creating opportunities on a daily basis for:

1. Interactive, challenging, and relevant learning experiences.
2. Inquiry-based learning.
3. Construction of knowledge.
4. Solving of real life problems.
5. Emotional/social growth and development.
6. Physical growth and development.
7. Language growth and development
8. Collaboration.
9. Creativity, imagination and innovation.
10. Decision making.

For “it is through these types of experiences that kindergarten students develop and demonstrate the 21st Century life skills of critical thinking, communication, leadership, collaboration, contextual learning, global awareness, information and media literacy, and citizenship” (North Carolina State Board of Education, 2007, p. 4).

Quite often, arguments are made and questions arise as to whether or not 5- and 6-year-old children are cognitively and emotionally mature enough to handle the new expectations that surround kindergarten classrooms today (Litty & Hatch, 2006). According to Zeng and Zeng (2005), after analyzing much of Piaget’s early work, “developmental psychologists believe that five-year-old children have generally not made the major shift in cognition that has been found to occur in children six or seven years old which would enable them to gain increased ability for logical thinking and self-direction” (p. 714). This leads to a difficult job for a majority of early childhood teachers, who are quick to admit that they struggle on a daily basis between teaching their students the mandated curriculum standards and teaching their students what they know is

developmentally appropriate (Goldstein, 2008). In fact, as Goldstein (2008) pointed out:

The buzz about teaching the standards, the ever-increasing emphasis on early development of literacy and mathematics skills, and the pressures of “accountability shovedown” have sparked questions, concerns, disagreements, and confusion about the most suitable curriculum content and the most effective instructional strategies for teaching young children in preschool and kindergarten settings. (p. 253)

Yet unfortunately, because standards-based education is an explicit feature of public education in the United States, “schools and teachers have no choice but to reconstitute kindergarten curricular, instructional, and assessment practices in an effort to meet increasing accountability requirements” (Litty & Hatch, 2006, p. 205). And these increasing accountability requirements are not just for kindergarten students but for every student grades kindergarten through twelfth grade, as seen in the new Common Core State Standards Initiative that is now sweeping over the nation (Boulard, 2010).

Common Core State Standards

Boulard (2010) makes it known that

Although the idea of common standards at the state level has long been talked about by educators and policymakers, the movement received its most significant support last year. That was when the Common Core State Standards Initiative was announced, promoting the same set of standards for use in English-language arts and mathematics for grades K-12. (p. 12)

The Common Core State Standards, released in June 2010, are national curriculum standards developed in the content areas of English Language Arts and Mathematics by the National Governor’s Association and the Council of the Chief State School Officers

(Conley, 2011). Although states have not been required to adopt these standards, 47 states have signed on to replace their current state learning standards for Math and English Language Arts with the new Common Core State Standards, as reported in March 2011 (Conley, 2011). The overarching goal of creating these new standards is “to specify key knowledge and skills in a format that makes it clear what teachers and assessments need to focus on, and to raise the achievement bar to a level comparable to those of the best education systems in the world” (Conley, 2011, p. 17). Yet Conley (2011) continued to explain that “the standards developers also hope that creating national consistency in expectations will lead to better uses of student learning data, higher-quality curriculum materials, teacher-preparation programs aligned with key content standards, and research results that identify what works” (p. 17).

In general, the new Common Core State Standards are composed of standards that, as compared to current standards, are “fewer, clearer, higher” (Phillips & Wong, 2010, p. 38), and take students deeper into the 21st century themes and skills that are necessary for success in the world today. Some of those skills include academic skills that encompass big ideas within disciplines; cognitive skills, such as problem solving, collaboration, and risk taking; and academic grit, such as being engaged and being motivated to do demanding work (Phillips & Wong, 2010). Educators everywhere must change their focus in the classroom from preparing students for an end-of-the-year test to preparing them to be globally competitive in the workplace when they graduate (Ginn, 2010). This idea of global awareness has become a prominent element in North Carolina’s planning and implementing of several new initiatives, including the Common Core State Standards and Essential Standards, as well as the McRel New Teacher Evaluation Instrument for teachers and administrators (NDCPI, 2011a).

Although many state representatives are pleased with a standards initiative that is committed to helping America's students become more globally competitive and career ready, much debate has occurred over the development of these new common standards (Boulard, 2010). Texas Representative Rob Eissler, when speaking about why his state decided not to adopt these new standards, said that "You have to dig deep into what these standards are all about. What are they going to emphasize? Will they fit your state? Will they fit the kids in your state?" (Boulard, 2010, p. 12). Until these questions can be answered, Eissler feels that states should wait before deciding to implement these new standards to all students K-12 (Boulard, 2010). Vermont Governor Jim Douglas, however, feels strongly the opposite, stating that "Common standards that allow us to internationally benchmark our students' performance with other top countries have the potential to bring about a real and meaningful transformation of our education system to the benefit of all Americans" (Boulard, 2010, p. 13).

Despite these ongoing debates over the last 2 years, North Carolina was one of the 45 states to adopt the Common Core State Standards, and some school districts will begin implementation of the new standards as early as the upcoming 2011-2012 school year (Ginn, 2010). As part of this implementation, teachers will be trained on how to unpack and teach the new standards, new assessments will be created, and classroom expectations as educators currently know them will be completely transformed, thus making it extremely important for teachers, parents, and students everywhere to be ready for these changes, starting with today's kindergarten classrooms and extending all the way up to high school (Ginn, 2010).

Kindergarten Readiness

As previously mentioned, it is becoming well known in society that getting ready

for kindergarten has drastically changed over the last few decades as learning standards and student expectations have continued to rise higher and higher (Justice et al., 2009). Analysts from the Educational Testing Service (ETS) recently published a report entitled *An Uneven Start: Indicators for Inequality in School Readiness*, where they define kindergarten readiness as “the young child’s ability to recognize letters and numbers and the phonemic utterances used by youngsters in sounding-out words, as well as reading alongside parents” (Fuller, 2007, p. 34). In this report, the analysts also wrote about the change in the way America now looks at children not as part of a family, but rather as something that always needs to be readied for the world (Fuller, 2007). One author of this report, Richard Coley, specifically noted that “rationale for interest in school readiness lies in the evidence from various studies that greater school readiness is associated with subsequent school success” (Fuller, 2007, pp. 34-35). Knowing this, it is important for educators everywhere to understand what school readiness is and how it may or may not affect the students in their classrooms (Fuller, 2007).

In Zeng and Zeng’s (2005) study involving over 3,000 kindergarten teachers from around the United States, kindergarten teachers identified the following skills, in order of importance, as the best predictors for school readiness: following directions, sitting still, paying attention, and not being disruptive. Even though these skills are considered to be nonacademic skills, they are often used to gauge school readiness just as much as performance in academic areas (Zeng & Zeng, 2005). Other areas that are often addressed when discussing kindergarten readiness include both receptive language skills and visual memory skills in academic areas such as math, reading, and writing (Agostin & Bain, 1997).

Although it is clear that educators have many different definitions of what being

ready for school actually means, after examining data from the National Household Education Survey, Kim, Murdock, and Choi (2005) found that many parents have differing views about what they consider kindergarten readiness to actually mean as well. In their study, Kim et al. (2005) reviewed data from the 1993 National Household Education Survey in which over 4,000 parents were randomly selected to be interviewed about their perceptions of the importance of children's pre-academic abilities and other school-related behaviors prior to starting kindergarten, including these seven skills: "count to 20 or more, able to use pencils and paint brushes, knows the letters of the alphabet, takes turns and shares, communicates his or her needs, wants, and thoughts verbally, enthusiastic and curious in approaching new activities and sits still & pays attention" (p. 6). The data collected in this study helps to clarify parents' beliefs about school readiness, with the results showing that parents who have preschool children, in general, believe that all seven areas listed above are important for school readiness; however, the skills related to social growth and interactions were reported as being more important to parents than academic skills. These results are inconsistent with the current changes that kindergarten classrooms all over the world are facing, as kindergarten curriculum is looking more towards academics and less towards socialization and play, thus showing that many parents are unaware of what is happening in our kindergarten classrooms today or they simply have a higher concern for whether or not their children are socially ready for school, regardless of their academic abilities (Kim et al., 2005).

A similar study by the Starting School Research Project based out of the University of Sydney, Australia interviewed various groups of children, parents, and early childhood educators during the years of 1998-2000 in hopes of determining what each of these groups of individuals considered the most important issues that children

face as they start school (Dockett & Perry, 2001). In addition to interviews, they also developed an extensive questionnaire and conducted a detailed review of related literature in order to define the eight most important categories related to school readiness and the transition to kindergarten, those being:

1. The knowledge children needed to have in order to start school,
2. Elements of social adjustment required in the transition to school,
3. Specific skills children needed to have mastered,
4. Dispositions conducive to a successful start to school,
5. The rules of school,
6. Physical aspects of starting school,
7. Family issues, and
8. The nature of the educational environment within school.

Once these categories were identified and confirmed through the use of both national and international literature, the children, parents, and early childhood educators were asked to rank these categories from most important to least important (Dockett & Perry, 2001).

The results of the study showed that children were most concerned with rules first, then dispositions, then the social adjustment, and then having the correct knowledge; parents were most concerned with the social adjustment first, then the educational environment, then dispositions, and then physical abilities; and early childhood educators were most concerned with the social adjustment first, then dispositions, then the necessary skills, and then the educational environment. This research shows that even though children, parents, and educators are not in agreement as to which skills are the most important for a successful kindergarten transition, there are many different areas that need to be addressed with children before they start the kindergarten year (Dockett & Perry, 2001).

When looking specifically at North Carolina's idea of readiness in recent years, the definition of school readiness has come to encompass more than just a ready child; it now also includes the idea of having ready schools (NC Ready Schools Initiative, 2011). In June of 2000, a report entitled *School Readiness in North Carolina* was issued by the North Carolina Ready for School Goal Team. This report outlined several recommendations for what was needed in North Carolina to assure that "all children were arriving at school 'ready' and that schools were, in turn, 'ready' for all children" (NC Ready Schools Initiative, 2011). According to North Carolina's School Readiness Definition (NC School Readiness Assessment, 2002), in order to be a ready school in North Carolina, each school is responsible for maintaining the following four cornerstones:

1. Knowledge of growth and development of typically and atypically developing children;
2. Knowledge of the strengths, interests, and needs of each child;
3. Knowledge of the social and cultural contexts in which each child and family lives; and
4. Ability to translate developmental knowledge into developmentally appropriate practices.

Since the ready schools report was published, the idea of having all schools ready for all children has rapidly spread across North Carolina, and 103 out of the 115 school districts in the state have moved forward with establishing ready schools in their district (NC Ready Schools Initiative, 2011). Although districts within North Carolina seem to be making great progress in making their schools ready for the students they will serve each year, assessing the level of readiness that students possess when they enter kindergarten

in a ready school is still equally as important in determining specific student needs and their overall school readiness (NC Ready Schools Initiative, 2011).

Assessing Kindergarten Readiness

Kindergarten readiness assessments can be an important tool to use when determining how ready a child is to start school, and Augustyniak, Cook-Cottone, and Calabrese (2004) specifically stated that “although it is important for researchers to continue to refine practical applications of an ecological approach to readiness, to date, empirical methods have proven to be effective predictors of later school success” (p. 509). With increasing accountability demands constantly seeking out early childhood classrooms and students, it is critical for educators everywhere to have access to accurate screening tools and information (Costenbader, Rohrer, & DiFonzo, 2000). Access to quality school readiness screeners and assessment tools has increased substantially over the last few years and will continue to do so over the next decade; however, this can only be used to an advantage if schools understand how to select an appropriate screening tool and train their staff accordingly (Costenbader et al., 2000).

According to Costenbader et al. (2000), instruments used to screen upcoming kindergarten students are typically classified as being either a screening instrument or a skill-oriented readiness assessment. Screening instruments often measure students’ gross and fine-motor coordination skills, memory skills, receptive and expressive language skills, and social-emotional development skills; some of the most well-known readiness screeners include the Gesell School Readiness Test, the Early Screening Inventory, and the Denver Developmental Screening Test (Costenbader et al., 2000). Skill-oriented readiness assessments often measure the degree to which specific skills that are thought to be related to beginning kindergarten instruction have already been learned; some of the

most well-known skill-oriented readiness assessments include the Brigance Diagnostic Inventory of Early Development and the Developmental Indicators for the Assessment of Learning (Costenbader et al., 2000). There are many other published screening and readiness assessments that can be used, districts can choose to create their own kindergarten screeners, or there are some schools that use both, depending on exactly what information they are seeking about their upcoming kindergarteners (Costenbader et al., 2000).

Costenbader et al. (2000) pointed out that “no single test assesses all domains that impact on the educational performance of kindergarten children” (p. 324); therefore, it is important for school districts to understand that the screener they choose to use, whether it is a purchased, standardized assessment or a locally created assessment, will not necessarily provide all of the information needed to make appropriate decisions for each upcoming kindergartener. Also, it is important for teachers to understand that regardless of what score a student receives on their kindergarten readiness assessment, they still may or may not be ready for school (Costenbader et al., 2000). Kindergarten screeners and readiness assessments can yield a large amount of beneficial information to teachers and parents about their child’s readiness for school, but no test can specifically answer whether or not a child is ready for school, nor can it predict exactly how a child will function and behave once placed in the regular school setting (Costenbader et al., 2000).

It is important to note here that, even though it is often assumed that being ready for kindergarten will lead to a very smooth transition to school for students, this is not always the case (Wildenger, McIntyre, Fiese, & Eckert (2008). Rimm-Kaufman, Pianta, and Cox (2000) surveyed 3,595 kindergarten teachers and found that approximately 50% of all kindergarten students have a very smooth transition to school, with another 34%

having minor difficulties with the transition, and the remaining 16% having major difficulties with the transition; however, even though a majority of students in this study transitioned to school with minor or no difficulties at all, that does not mean that they were actually ready to learn when they entered kindergarten (Pianta, Cox, & Snow, 2007). In fact, the teachers admitted that they felt that for every two children that were ready for kindergarten, three children were not ready, specifically noting difficulties with academic skills, working with others, and following directions. Knowing that kindergarten children have the potential to face many difficult issues as they get ready for school and begin the kindergarten transition, much research has been done on using prekindergarten and preschools programs as a universal way to help children get ready for school (Clifford et al., 2005).

Prekindergarten and Socioeconomic Status

Despite recent research, there are still large numbers of children that enter kindergarten with no preschool experience, the underlying reason being that they simply cannot afford it (Rose, 2010). This has sparked a great deal of conversation and debate around the issue of socioeconomic status and how it plays a role in what school readiness opportunities are available for low socioeconomic families (Rouse et al., 2005). Sadowski (2006) reported that “the likelihood that a child will attend some type of preschool is largely tied to socioeconomic status” (p. 2), because the fact is that economically disadvantaged families face many constraints in what they can provide for their children after having already provided what is necessary to live (Rose, 2010). In 2010, approximately 67% of American 4-year-olds and 40% of American 3-year-olds were attending preschool (Rose, 2010); however, research from 2006 shows that on average, less than half of children from families with incomes below \$50,000 attend preschool

while nearly 80% of children from families with incomes over \$100,000 attend, creating a gap that is too large to ignore (Sadowski, 2006).

The research from Sadowski (2006) and Rose (2010) show a connection between socioeconomic status and preschool attendance, but Sadowski (2006) goes on to create an even stronger connection between socioeconomic status and school readiness, explaining that there are vast disparities in what different children know when they come to school due to their life experiences, which greatly affects how well they will do in the classroom. He noted that “most researchers agree that socioeconomic status – closely associated with race and ethnicity – is one of the strongest predictors of low skills at school entry” (Sadowski, 2006, p. 1). Rouse et al. (2005) further explained this connection, including commentary on how race and ethnicity can come to play a role as well:

10% of white children, as against 37% of Hispanic and 42% of black children, live in poverty. Further, the better the socioeconomic status of a child’s family, the more likely that child is to be “ready” for school. Given the close links between race and ethnicity and family socioeconomic status, on the one hand, and socioeconomic status and school readiness, on the other, it is not surprising that family socioeconomic status appears to explain a substantial portion of the racial and ethnic gaps in readiness. (p. 8)

Research such as this is what prompted presidential campaign slogans of recent years to be centered around the idea of creating a universal prekindergarten program for all students to attend, regardless of family income, so that children all over the United States would have equal opportunities to learn and grow together while preparing for kindergarten (Besharov & Call, 2008). Although this sounds like a step in the right

direction, the case for universal prekindergarten is not as strong as was originally thought because research shows that, in reality, not every child benefits from preschool (Fuller, 2007). Studies consistently show that while children from lower class families do seem to benefit from attending preschool programs, few middle class children and almost no upper class children show any benefit from attending (Fuller, 2007). This lack of benefits for two of the three social classes makes it hard to reinforce universal prekindergarten as a logical way to use our nation's money and resources (Fuller, 2007); however, many states have developed their own preschool programs to help children prepare for kindergarten, some offering free services to everyone and others offering services only to families that qualify (Cavalluzzo, Clinton, Holian, Marr, & Taylor, 2009).

Research compiled by the National Center for Education Statistics (NCES, 1993) reported that most kindergarten teachers agreed that school readiness is something that cannot be pushed because it comes as children grow and mature, and those same teachers also believed that children come to school to get the things that they need, not what they already have, therefore believing that preschool opportunities do not make a significant difference in kindergarten success. A similar study conducted by Zeng and Zeng (2005) reported that only 34.8% of kindergarten teachers felt that it was beneficial for preschool-aged children to receive literacy and math instruction before starting school. Even so, educators and education organizations around the globe continue to review research on the positive impact preschool can have on children from low socioeconomic families, and they continue to believe that preschool opportunities are crucial in helping every child get ready for school (Clifford et al., 2005; Fuller, 2007; Pianta & Howes, 2009).

Pagani, Jalbert, and Girard (2006) made a strong statement when they said that “a most remarkable consequence of growing up poor is school failure” (p. 133). Pagani et al.

(2006) went on to describe the differences that are often seen between poor and non-poor households, stating that children from low-income families are not read to as often as they should be, do not have an enriching environment in the home, and participate in fewer cognitively stimulating activities in the home, all of which greatly affect their potential for school success and their ability to learn new things. Although there are many other factors that can affect a child's ability to be successful in school, the years before a child starts school are often seen as the most crucial time to intervene with young children and get an early start in preparing them for future school success (Pagani et al., 2006).

Research on preschool children from low socioeconomic classes dates back to the 1960s and 1970s with researchers like Labov (1970), Bernstein (1977), and Heath (1983) working to begin large-scale efforts in assisting low socioeconomic, disadvantaged children with school readiness (as cited by Farkas & Hibel, 2008). These researchers concluded that, overall, the effects of having a low income drastically change the family factors involved in child rearing, such as having low vocabulary usage in the home, experiencing family distress and disorder in the home, and displaying harsh and ineffective parenting in the home (Farkas & Hibel, 2008). Because these factors are vastly different than the cognitive skill instruction that happens within warm and responsive parenting styles of higher-income families, children from low-income families are often not as developmentally ready for kindergarten as their peers (Farkas & Hibel, 2008).

Zill et al. (1995) studied the percentage of students displaying signs of emerging literacy, mathematical, and small-motor skills in 4,423 children nationwide from 3 to 5 years of age prior to their start of kindergarten. In their study, parents were asked to rate

how well their children demonstrated certain emergent literacy, numeracy, and motor-skill behaviors, such as pretending to read stories, counting to 20, or holding a pencil properly; parents were also asked to rate the amount of difficulty their children had with physical activities or attention as well, including activities such as sitting still and paying attention (Zill et al., 1995). The results of their study concluded that Hispanic and Black preschoolers had a much lower percentage of emerging literacy, mathematical, and motor skills than their White peers, listing factors such as low maternal education, poverty, and single parenthood as strong indicators for these differences. Zill et al. (1995) recommended that, based on their results, there is a growing need for developing inventive approaches in providing early education services for children from low socioeconomic families.

Because of the many needs that children from low-income families have when starting school and their lack of preschool experience due mostly to funding issues, many states and school districts have considered implementing or have already implemented the idea of a universal prekindergarten program for all children (Fuller, 2007). A study done on the effects of universal prekindergarten in Oklahoma, yielding a sample size of 3,560 children, showed that children who were exposed to the universal prekindergarten program showed positive gains in language, cognitive skills, and motor skills, with Hispanic and Black children showing the highest percentage of growth (Gormley & Phillips, 2005). For this study, the researchers gave all participants a pretest prior to starting the prekindergarten program and then retested them using the same test after having experienced the prekindergarten program. This method allowed the researchers to measure specific areas of growth, as well as to compare their data to a control group of students who were tested at the same times as the participants but did not receive

preschool instruction (Gormley & Phillips, 2005).

In the past, school readiness scores of kindergarten students were also analyzed in Georgia in order to determine whether or not school readiness is influenced by participation in preschool programs prior to starting school (Taylor, Gibbs, and Slate, 2000). In this study, there were 171 kindergarten student participants, with 76% of those participants being labeled as at-risk, low income students as determined by their participation in the free and reduced lunch program in Georgia. The school readiness scores of these 171 participants were documented over the course of several months, and were then compared to the factor of whether the students had attended a preschool program or not. The results yielded that the students who attended some type of preschool program demonstrated statistically higher overall school readiness, including having higher physical scores and higher personal scores than those students who did not attend a preschool program. And although it is important to note that the type of preschool attended and the length of time spent in the preschool program were factors in these results, no difference was found when these factors were compared to the general results of preschool effectiveness.

Similar research done by Umek, Kranjc, Fekonja, and Bajc (2008) studied the effect of preschool on children's school readiness in Slovenia, proving that connections between preschool attendance and school readiness are significant issues universally. In this particular study, 219 children were assessed using various language development scales, intellectual progressive assessments, and school readiness tests to determine whether or not preschool had an effect on children's school readiness, specifically in connection to their intellectual abilities, language competence, and parents' education level. Of the 219 children who were assessed, 159 children had attended some type of

preschool program prior to starting school, while 60 children had not. The children were tested during the first 3 months of school, and the results yielded that children's school readiness is most highly correlated with language competence, although the correlations to intellectual ability and parental education were also significant and presented moderate to high correlations. Further analysis of the results also showed that children who had parents with high educational levels scored well on the school readiness test, regardless of whether or not they had attended preschool; however, children who had parents with low educational levels and had attended preschool scored significantly better on the school readiness test than their peers who also had low parent educational levels but did not attend preschool. These cumulative results help to show that although there are many other factors than can affect children's school readiness, preschool can be, in fact, a significant predictor of children's success when starting school (Umek et al., 2008).

Additional Factors Affecting Kindergarten Readiness and Performance

Not only is there a growing amount of research that supports prekindergarten experience as a major influence on school readiness and subsequent student success, but there are other factors that can affect student success as well, including student gender (Boyd, 2006) and student attendance rates (Chang & Romero, 2008). Looking at student gender as a variable that affects readiness for school and subsequent student success dates back to the early 1970s where researchers like Rubin (1972) paired longitudinal studies of more than 900 kindergarten through second-grade students' school readiness and subsequent academic performance with numerous personal testimonials from kindergarten and first-grade teachers to determine whether or not gender differences were present at the start of school and whether or not they can affect student success. Rubin's (1972) studies found an extensive body of research to support the notion that "girls tend

to enter school with greater readiness for school learning activities than boys of the same age” and “girls were ahead of boys particularly from the age of five to the age of six” (p. 265).

According to Eliot (2010), “Boys and girls differ in many ways – in physical activity level, self-control, and performance levels in reading, writing, and math” (p. 32). When looking specifically at performance levels on the National Assessment of Educational Performance (NAEP) over the last 40 years, girls have consistently outperformed boys in reading and writing (Eliot, 2010), and are developmentally ahead of their male peers by nearly one and one half years in these content areas (Gurian & Stevens, 2004). And although boys have consistently outperformed girls in math and science, the gap is marginal and is gradually closing (Gurian & Stevens, 2004). Gurian and Stevens (2004) also make it known that “boys are now losing frightening ground in school” (p. 24), giving the following statistics concerning boys learning and academic achievement in school:

- Boys earn 70% of *Ds* and *Fs* and fewer than half of the *As*
- Boys account for two-thirds of learning disability diagnoses
- Boys represent 90% of discipline referrals
- Boys dominate such brain-related learning disorders as ADD/ADHD, with millions now medicated in schools
- 80% of high school dropouts are male
- Males make up fewer than 40% of college students

These statistics not only hold true for the male students in the United States, but around the world as well, with girls typically outperforming boys in Canada, Australia, Japan,

and the European countries as well (Gurian & Stevens, 2004).

Eliot (2010) explained that the learning differences that male and female children show as early as kindergarten have a lot to do with the experiences and opportunities they have prior to starting school. For example, as boys and girls progress through childhood, girls tend to spend more time talking, drawing, and role-playing in relational ways with dolls and animals; whereas boys spend more time moving, building, and playing with active toys like trucks, blocks, and balls (Eliot, 2010). Knowing and understanding these differences are extremely important for teachers and educators because these are the factors that greatly influence what children will bring to a classroom when they start school (Eliot, 2010). And, knowing that kindergarteners of today are often expected to dive right into the world of academics rather than simply coloring, cutting, gluing, and playing as in the past, such drastic learning differences between girls and boys can cause students to become over-stressed and under-confident from the very start (Boyd, 2006).

While most people would agree that any type of play or social experience for children prior to starting school is of positive influence and is beneficial to children's intellectual and academic growth, parents and teachers must understand that "because of the potency of early experience on children's brain wiring, the differences between typical 'girl' and 'boy' play have deep consequences for cognitive and emotional functions" (Eliot, 2010, p. 33). Researchers offer many suggestions for addressing the gender differences seen in classrooms today (Eliot, 2010; Gurian & Stevens, 2004; King & Gurian, 2006), all of which they encourage starting as early as the toddler years and continuing through preschool and kindergarten. Additionally, it is important to note that these same researchers specifically stress that gender stereotypes must be challenged for both genders, not just for males who appear to be significantly behind their female peers

in academic achievement.

Gurian and Stevens (2004) suggested the following preschool and early childhood instruction for boys: make lessons experiential and kinesthetic regardless of the content area, keep verbal instructions to no more than 1 minute, turn play opportunities into verbal discussions where students have to explain their thinking, and use more manipulatives to promote fine motor development; and for girls: play more physical games to promote gross motor skills, use lots of puzzles to foster perceptual learning, and form cooperative groups and teams to promote leadership roles and negotiation skills. Similarly, King and Gurian (2006), encouraged offering more purposeful reading and writing opportunities for boys and offering more hands-on opportunities for girls, attempting to motivate their weaknesses early on and develop more well-rounded learners at an early age. And Eliot (2010) encouraged parents and early childhood educators to reduce opportunities for gaps between boys and girls early by doing the following during the preschool years: strengthen spatial awareness for girls, allowing them more opportunities to complete puzzles, read maps, play sports, and build things at an early age; and offer boys more language opportunities by engaging in one-on-one dialogue, word play, stories, songs, and every kind of text. Addressing these gender differences during preschool years can offer a much greater chance that children will enter school with less of an achievement gap between genders (Gurian & Stevens, 2004).

Although there appear to be many striking ability differences between genders, it is important to note that there are actually greater differences found between students of the same gender than between students of different genders, so learning how to teach to the differences students possess, whether male or female, is crucial to reaching all students and providing appropriate instruction to children both during their early

childhood years and after they begin school (Eliot, 2010). Providing this appropriate instruction for all children can be a challenge, however, if students are not given opportunities to have these meaningful experiences prior to starting school or if they are prone to chronic absences throughout the school year once they begin (Chang & Romero, 2008).

Chronic absences throughout any given school year have the potential to negatively affect school performance in any grade level because, as Chang and Romero (2008) openly stated, “Students have to be present and engaged in order to learn” (p. 1). Studies show that children gain basic social and academic skills during the elementary years that are critical to later academic success, and students who enter third grade without these essential skills in place are already at greater risk for being academically delayed, requiring additional educational services, and dropping out of school (Chang & Romero, 2008).

A study done by Ready (2010) used data from the Early Childhood Longitudinal Study (ECLS-K) to look at over 13,600 children from within 903 public and private schools across the country and compare attendance data, socioeconomic status, and academic growth shown in over 42,000 literacy and math achievement scores. After analyzing this data and comparing student proficiency scores to both student attendance and socioeconomic status, results suggested that the effects of good attendance on cognitive development were stronger for lower socioeconomic status children (Ready, 2010). And while the National Center for Children in Poverty (NCCP) also reported that there is a very strong relationship between the effects of chronic absences on children of minority ethnicities and low socioeconomic status and subsequent academic achievement, the NCCP also reported that chronic absences in kindergarten are greatly associated with

lower academic performance in first grade, regardless of gender, ethnicity, or socioeconomic status (Chang & Romero, 2008).

A new study commissioned by Attendance Works (2011) suggested that attendance in the early grades is critical to sustaining the school readiness skills that young children develop in prekindergarten programs prior to starting school. The study compared the academic progress of over 600 kindergarten students who entered the school year *ready to learn* to attendance rates in both kindergarten and first grade and to third-grade reading and math proficiencies. Results of the study showed that students who had no attendance risks across kindergarten and first grade had significantly higher third-grade scores in both reading and math than students who had chronic absences in both kindergarten and first grade (Attendance Works, 2011). Students with chronic absences scored, on average, 60 points below their peers in literacy and nearly 100 points below in math (Attendance Works, 2011).

Another key finding from the Attendance Works (2011) study is that chronic absences in kindergarten and first grade may erase many of the benefits of entering kindergarten with strong readiness skills. Of students who entered school identified as being *ready* and who showed good attendance rates in kindergarten and first grade, 77% were performing on grade level in third grade, as opposed to only 13% of these *ready* students performing on grade level when they had chronic absence issues in kindergarten and first grade (Attendance Works, 2011). This data suggests that attendance can have a significant impact on school success, especially in the early elementary grades (Attendance Works, 2011).

While research strongly supports the fact that attending school regularly is important for ensuring that children receive a strong knowledge foundation for

subsequent learning and maintain previous knowledge, research shows that little is often done to prevent chronic absences in schools today, especially in the early grades (Chang & Romero, 2008). Chang and Romero (2008) explained that “high overall school-wide attendance rates can easily mask significant numbers of chronically absent students...; as a result, many school districts do not know the extent to which chronic early absence is a problem in any of all of their schools” (p. 2). In order to address chronic absences in the early grades, Chang and Romero (2008) suggested that educational institutions and communities execute the following:

- Provide a rich, engaging learning experience for all children so that they are motivated to attend each day
- Have stable, experienced, and skilled teachers in place that will actively engage parents in their children’s education
- Actively communicate the importance of going to school regularly to all students and their parents
- Reach out to families when their children begin to show patterns of excessive absence

And, perhaps most importantly, schools and communities should make significant efforts to provide appropriate prekindergarten experiences that will better prepare children and families for entry into formal education and the many expectations that accompany that transition (Chang & Romero, 2008).

Summary

Research by Pianta et al. (2007) concluded that “a substantial portion – about half – of the achievement test gap in high school exists at the time children enter

kindergarten” (p. 283), and also pointed out that children who do poorly in kindergarten are more likely to do poorly in elementary and high school as well. In fact, on a recent Early Childhood Longitudinal Study, kindergarten test scores accounted for almost 60% of the variance in third-grade test scores, showing that gaps from the kindergarten year are indeed predictive of similar gaps in later years (Pianta et al., 2007). And similar research from the Early Childhood Longitudinal Study explains that when children enter school with less knowledge and lower ability levels than their peers, it can take years for these students to catch up, and some never do (Douglas & Montiel, 2008). This research alone helps to build a strong case for the use of preschool as an important factor in early childhood learning, but further study was warranted to see if preschool helps prevent gaps in learning for low-income children, if gaps do in fact exist in kindergarten classrooms, and if so, in what particular areas.

Chapter 3: Methodology

Introduction

Zigler and Styfco (2004) stated that “when children from low-income, multi-risk families and communities participate in intensive, high-quality preschool programs, the children show benefits” (p. 3). Similarly, Pianta et al. (2007) expressed that the opportunities provided to low-income students through preschool and prekindergarten programs can have a direct impact on their educational and developmental growth. The purpose of this study was to examine the impact of preschool education on students’ kindergarten readiness and subsequent kindergarten performance in a low socioeconomic primary school.

Participants

Participants for this study were kindergarten students and kindergarten teachers from a primary school located within a small, urban school district in the piedmont area of North Carolina. Permission was granted from both the superintendent of the district and the principal of the school used within this study (Appendix A). At the time of the study, there were 10 kindergarten teachers employed at the primary school, with a total of 205 kindergarten students enrolled for the 2011-2012 school year. Over 90% of those kindergarten students came from low socioeconomic families and homes, as determined by free and reduced school lunch status. The average age of the students fell between 4 and 6 years old.

As requested by the district, school personnel collected data on every kindergarten student in the school to ensure both student and teacher anonymity from the researcher. School personnel randomly assigned all students a participant number, represented by A-1, A-2, A-3, etc., and all teachers a participant letter, represented by T-A, T-B, T-C, etc.,

before releasing the data to the researcher. The results of this study will be presented based on these participant numbers, not by name, age, race, class, teacher, or any other identifying information.

Of the 205 kindergarten students enrolled for the 2011-2012 school year, 55 of the students (26.8%) attended the primary school prekindergarten program, 48 of the students (23.4%) attended an outside prekindergarten program, and the remaining 102 of the students (49.8%) had no record of attending a prekindergarten program prior to starting school.

Instruments

The fourth edition of Pearson's *Developmental Indicators for the Assessment of Learning* (DIAL-4) screening test was used to screen all registered kindergarten students within the 3 months prior to their start of school. Due to copyright laws, test security, and validity concerns, Pearson Education would not allow a copy of this assessment to be included as an appendix; however, Pearson did give permission for a detailed description of the assessment, the purpose and structure of the test, and how it is to be administered to be included, which follows (Pearson, personal communication, July 26, 2011).

According to Mardell and Goldenberg (2011), "the DIAL-4 is an individually administered developmental screener designed to identify children ages 2:6 through 5:11 who are in need of intervention or diagnostic assessment in the following areas: motor, concepts, language, self-help, and social-emotional skills" (p. 1). It measures children's behaviors and intelligibility within the five domains that are mandated by federal law, which are the physical, cognitive, communication, social or emotional, and adaptive domains, assessing children's gross and fine motor development; children's knowledge of basic concepts such as counting and colors; children's use of receptive and expressive

language; children's daily living skills in areas like drinking, eating, and dressing; and children's skills in relating to peers, siblings, parents, teachers, and other adults (Mardell & Goldenberg, 2011).

The DIAL-4 screener, available in both English and Spanish, is a revised edition of the *Developmental Indicators for the Assessment of Learning, Third Edition*, which was created and released by Mardell-Czudnowski and Goldenberg in 1998. The DIAL-4 contains many of the original features of the first DIAL edition that was created almost 40 years ago, including the use of dials to present visual stimulus to children one at a time so as to avoid distractions, the use of a station approach which allows multiple children to be screened at the same time, and the use of handbooks that includes administration instructions and scoring criteria for each section of the assessment (Mardell & Goldenberg, 2011).

According to Mardell and Goldenberg (2011), the DIAL-4 serves as an excellent tool for screening large groups of children, and it is well-suited particularly for minority populations due to the large ethnic component including in the standardization sample. The source of the standardization sample for the DIAL-4 includes screening data from children all across the United States between the years of 2009-2010, ranging in age from 2 years 6 months to 5 years 11 months, with 13% having been screened using the Spanish version (Mardell & Goldenberg, 2011).

The reliability and validity of the DIAL-4 were both tested before the assessment was published for use as a developmental screener (Mardell & Goldenberg, 2011). The statistical methods of internal consistency, test-retest stability, standard error of measurement and confidence intervals were used to determine the reliability of the screener as a consistent measure of children's basic developmental skills, and the

statistical methods of content validity, construct validity, and clinical validity were used to determine the validity of the screener as a measure of basic developmental skills in children (Mardell & Goldenberg, 2011). The reliability coefficients for both the English and Spanish versions of the DIAL-4 were good, with most mean coefficients in the .80s and .90s; the validity of the DIAL-4 was also proven strong as it was highly correlated to many other screening instruments that claim to do the same thing this assessment does, including the DIAL-3, the *Batelle Developmental Inventory (BDI-2)*, the *Differential Ability Scales-Second Edition (DAS-II)*, and the *Vineland Adaptive Behavior Scales-Second Edition (Vineland-II)* (Mardell & Goldenberg, 2011).

According to Mardell and Goldenberg (2011), in order to score the DIAL-4 assessment, assessors must first total up the raw score for each item on the test and then add the raw scores together within each section of the assessment to get a total score for each area. The DIAL-4 total is then computed by adding together the total scores for the Motor, Concepts, and Language Areas. To determine if a child's performance indicates a potential developmental delay in readiness for one of the three areas, DIAL-4 users decide, as a district, where the cutoff level will be based on an expected percentage of children that will be identified as having a delay (Mardell & Goldenberg, 2011). For the purpose of this study, that cutoff level was 7%; therefore, if a student scored below the developmentally acceptable score for their age under the 7% expected score range, that student was flagged as having one or more areas in which a potential delay may affect their ability to perform on grade level throughout the kindergarten year.

In addition to the use of the DIAL-4 as an instrument in this study, a collection of district-created kindergarten assessments were also used to assess students' progress on quarterly expectations and learning objectives in the areas of literacy, math, and social

development. The researcher worked in conjunction with district office and primary school personnel to develop kindergarten quarterly benchmark assessments that directly aligned to the North Carolina Common Core State Standards for Kindergarten, which are detailed in Appendices B and C. The assessments created include a Kindergarten Literacy Assessment Pack (Appendix D), a Kindergarten Math Assessment Pack (Appendix E), and a Kindergarten Social Development Checklist (Appendix F), which are described in further detail below.

In order to create the quarterly assessments and the social development checklist, the researcher met with a group of district office and primary school personnel to determine which skills from the Common Core State Standards were most important for kindergarten literacy, math, and social development growth, and in what order those skills should be assessed throughout the school year. District pacing guides were reviewed to establish a timeline of when the skills were taught during the school year, and assessments were then created and paced to match the list of important skills and align with the district pacing guides. Quarterly benchmark expectations were also established for each skill so that the teachers and the researcher would have consistent expectations and proficiency cutoffs for each assessment, allowing for comparisons to be made between all students in all areas. For the purpose of this study, students needed to score at least 80% or higher on each assessment to achieve proficiency.

Once the assessment packs and the social development checklist were completed, they were given to several experts in the field, including administrators and district office personnel, in order for them to validate the assessment packs and determine that they were indeed measuring what they were intended to measure. The assessments were also given to a different group of individuals, including kindergarten teachers, administrators,

and district personnel not involved with the study, in order for them to review the assessment items and rate their strengths and weaknesses. Those ratings were then used to determine inter-rater reliability for the assessment packs. Both the validity and the reliability of the literacy assessment pack, the math assessment pack, and the social development checklist were proven strong, allowing the researcher to determine that they were in fact valid and reliable instruments to use for the purpose of this study.

The final instrument that was used in this study was a Kindergarten Teacher Survey (Appendix G) that was given to all kindergarten teachers at the primary school in order to document teacher perceptions about the effect of prekindergarten experiences on kindergarten student achievement. The survey consisted of three open-ended questions that allowed teachers to express their thoughts and opinions about prekindergarten and student achievement in their kindergarten classrooms, based on their own personal teaching experiences in the classroom.

Procedures

For the purpose of this study, there were three defined subgroups of students whose school readiness and academic/social performance in kindergarten were followed: 1) students who attended the prekindergarten program in this school district; 2) students who attended an outside prekindergarten program in the surrounding community; and 3) students who had no record of attending a prekindergarten program prior to starting school. For the study, all kindergarten students were screened during the 3 months prior to starting kindergarten using the fourth edition of Pearson's Developmental Indicators for the Assessment of Learning (DIAL-4) screening assessment. The DIAL-4 provided every child with a school readiness screening score based on their overall screening results, and those scores were used as baseline data in this study. For the purpose of this

study, the district cutoff level was 7%; therefore, students who scored below their expected age under the 7% expected range were flagged as having one or more areas in which a potential delay may affect their ability to perform on grade level throughout the kindergarten year.

As kindergarten students began attending school, they participated in classroom learning activities and lessons that taught the Common Core State Standards for Kindergarten in the areas of English Language Arts (Appendix B) and Math (Appendix C). The Common Core State Standards for English Language Arts address four domains of literacy learning: Reading, Writing, Speaking and Listening, and Language; and the Common Core State Standards for Math address five domains of mathematical learning: Counting and Cardinality, Operations and Algebraic Thinking, Number and Operations in Base Ten, Measurement and Data, and Geometry (National Governors Association Center for Best Practices, 2010). These objectives are paced by the state of North Carolina and are to be taught in a particular order and form; therefore, each student had the same opportunity to learn the material equally, as long as they attended school regularly. For the purpose of this study, students received instruction on these objectives for 7 consecutive months and data was collected at 3-month, 5-month, and 7-month benchmark checkpoints.

After 3 months of instruction, all students were assessed on the math, literacy, and social development objectives that had been previously taught using the district-created quarterly benchmark assessment forms found in Appendices D-F. As described in detail in the previous section, the quarterly assessments were created by the researcher in conjunction with district office personnel, and were directly aligned with the Common Core State Standards to ensure that they measured the same objectives and standards that

were previously taught. Scoring guides with verbal prompts were provided to teachers to ensure that each student was assessed in the same manner. The results from the assessments were recorded by individual teachers to show which of the taught skills had been mastered so far in the kindergarten year, and how those scores compared to the original screening scores that the students earned prior to starting school. Students must have scored at least 80% or higher on these assessments to achieve proficiency. Following the assessments, classroom instruction continued.

After 5 months of instruction, all students were assessed again using the benchmark assessment forms. Items that were not mastered at the 3-month benchmark checkpoint were reassessed at that time as well. Students received a cumulative score, which consisted of a combined total of mastered objectives from the 3-month and 5-month benchmark checkpoints. Following the assessments, classroom instruction continued.

After 7 months of instruction, all students were assessed a final time using the benchmark assessment forms. Items that were not mastered at the 3-month and 5-month benchmark checkpoints were reassessed at that time as well. Students received a cumulative score, which consisted of a combined total of mastered objectives from the 3-month, 5-month, and 7-month benchmark checkpoints. This was the last data collected for use in this study.

Throughout the study, as individual teachers collected the checkpoint data on each of their students, those data were compiled by a district office staff member and given to the researcher in order to keep the participants and their scores completely anonymous. Student names were not released and scores were not aligned with a student name but rather with a participant number. Student gender data was also collected in this manner,

with gender being assigned to participant numbers rather than to participant names.

In addition to collecting student achievement data, student attendance data was collected. The attendance benchmark set forth by Adequate Yearly Progress (AYP) standards for North Carolina states that students need to be present at least 95% of the school year to achieve academic growth (NCDPI, 2011a). This same benchmark standard was used in this study to determine whether or not attendance could be a factor in the student achievement scores collected or not. For the purpose of this study, students needed to be present for at least 128 days of the 135 total days of the study to be considered compliant with AYP attendance expectations.

Once all of the data was collected, the data from the readiness screener, the first benchmark checkpoint assessment, the second benchmark checkpoint assessment, and the third benchmark checkpoint assessment were compared among each of the three defined subgroups to determine if there was a difference in student scores. Descriptive statistics were computed using each of the data sets, as well as the additional gender and attendance data collected, and multiple analyses of variance (ANOVA) and analyses of covariance (ANCOVA) were used to compare students' score averages at multiple time periods throughout the school year. The data was then further evaluated to determine how students who entered kindergarten without preschool experience performed as compared to their peers who had attended preschool, as well as to determine which of the three defined subgroups of preschool intervention made the biggest difference in readiness scores and academic performance throughout the school year, if any at all.

The teacher survey was given to teachers in February, which allowed them plenty of time to get to know their students as learners before completing the survey. Once completed, the surveys were analyzed by the researcher in order to determine particular

beliefs, themes, and common responses that were present in the teachers' responses.

These themes were then compared to the student data in order to determine the relationships between teachers' perceptions and expectations in the classroom and actual student performance.

Limitations and Delimitations

There were several limitations to this study. First, by only using a sample of 205 kindergarten students, the sample size may be too small to suggest that the results of this study would remain consistent in further studies. Second, because this study was done in a school district with predominately low-income families and students, the results only pertain to that district and cannot be generalized to represent other districts or other socioeconomic scenarios. Third, since this study relied somewhat on parent information to determine which students fell into which subgroups, it has to be assumed that not all information received was completely accurate. Lastly, the question of teacher quality will always play a role in what students have actually gained from their experiences. Different programs, different classrooms, and different teachers inevitably yield different results, which should be taken into account when analyzing the results of this particular study.

Summary

In recent years, getting ready for kindergarten has drastically changed as learning standards and student expectations have continued to rise higher (Justice et al., 2009). Therefore, it is imperative that research continue to be collected and analyzed to determine exactly what can be done to prepare preschool-age students the most for the high expectations they will face when they start school, as well as to gain a better understanding of the differences that children enter school with and why those differences exist. The methodology in this study sought to answer those questions.

Chapter 4: Results

Introduction

The purpose of this study was to examine the impact of preschool education on students' kindergarten readiness and subsequent kindergarten performance in a low socioeconomic primary school. Research on preschool programs has shown that children receive many lasting educational benefits from attending preschool, and that preschool can in fact enhance children's success in school and even result in positive long-term academic and social benefits (Desimone et al., 2004). Similarly, Pianta et al. (2007) made it known that the opportunities provided to low-income students through preschool and prekindergarten programs can have a direct impact on their educational and developmental growth. The following data were collected and analyzed to determine if preschool helps prevent gaps in learning for low-income children, if gaps do in fact exist in kindergarten classrooms, and if so, in what particular areas. The findings will be organized by research questions.

Findings

Research Question 1. What are the differences in mean scores on the Developmental Indicators for the Assessment of Learning (DIAL-4) school readiness screening between kindergarten students who have prekindergarten experience and those who do not? To address this question, the following data were compiled and analyzed.

Table 6 compares the kindergarten readiness, as determined by DIAL-4 scores, of students who attended prekindergarten prior to starting school and those who did not attend prekindergarten.

Table 6

DIAL-4 Kindergarten Readiness Count by Pre-K Participation

	Developmentally Ready		Delayed		Total
	Count	Row N %	Count	Row N %	Count
Pre-K	64	62.1%	39	37.9%	103
No Pre-K	33	48.5%	35	51.5%	68

Of 171 total kindergarten students, 103 attended prekindergarten prior to starting school, and 62.1% of those students were considered ready for kindergarten based on DIAL-4 scores. Of the 68 students who did not attend prekindergarten, 48.5% were considered ready for kindergarten based on DIAL-4 scores.

Figure 1 shows the comparison of DIAL-4 readiness score means for students who attended prekindergarten and students who did not attend prekindergarten.

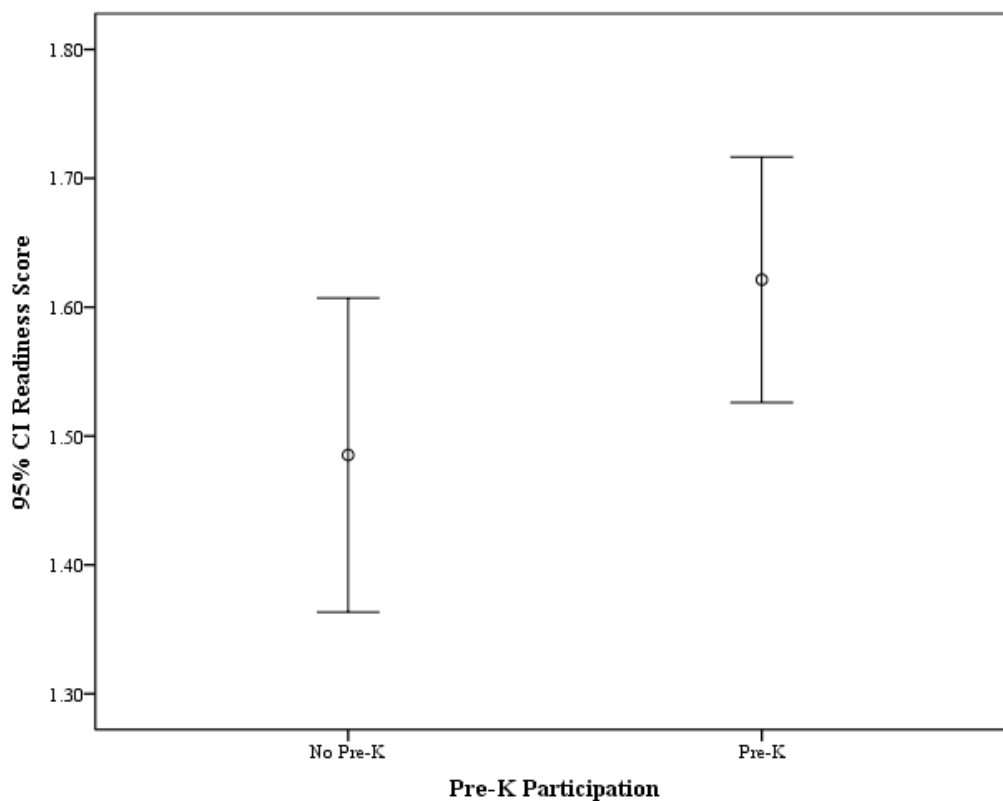


Figure 1. DIAL-4 Readiness Score Mean by Pre-K Participation

Students who attended a prekindergarten program prior to starting school achieved higher school readiness scores on the DIAL-4 screening assessment than their peers who did not attend prekindergarten.

Table 7 compares the kindergarten readiness, as determined by DIAL-4 scores, of male and female students by prekindergarten participation.

Table 7

DIAL-4 Kindergarten Readiness Count by Pre-K Participation by Gender

		Developmentally Ready		Delayed		Total
		N	%	N	%	N
Pre K	Male	22	47.8%	24	52.7%	46
	Female	42	75.0%	14	25.0%	56
No Pre K	Male	12	40.0%	18	60.0%	30
	Female	19	52.8%	17	47.2%	36

Based on DIAL-4 scores, less than 50% of male students were identified as being ready at the start of kindergarten, regardless of whether they attended prekindergarten or not. Of female students who attended prekindergarten, 75% were considered developmentally ready to start school based on DIAL-4 scores.

Figure 2 shows readiness scores clustered by gender.

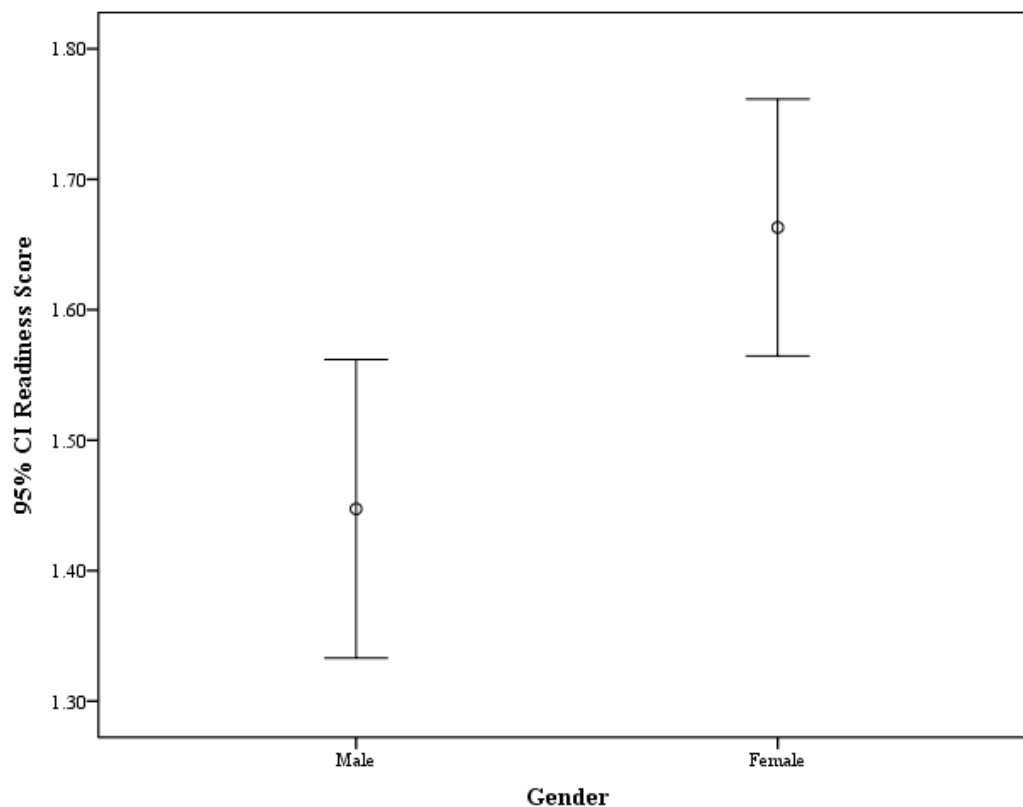


Figure 2. DIAL-4 Readiness Score Mean by Gender

The data indicate that female students achieved significantly higher school readiness scores than their male peers. Table 8 shows ANOVA results.

Table 8

ANOVA for DIAL-4 Mean Scores by Gender

Gender					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.952	1	1.952	8.168	.005
Within Groups	39.667	166	.239		
Total	41.619	167			

The results of the ANOVA indicate a significant difference in readiness scores at $\alpha = .05$ among male and female students: $F_{(1, 166)} = 8.168, p = 0.005$.

Figure 3 compares readiness scores among male and female students to prekindergarten participation.

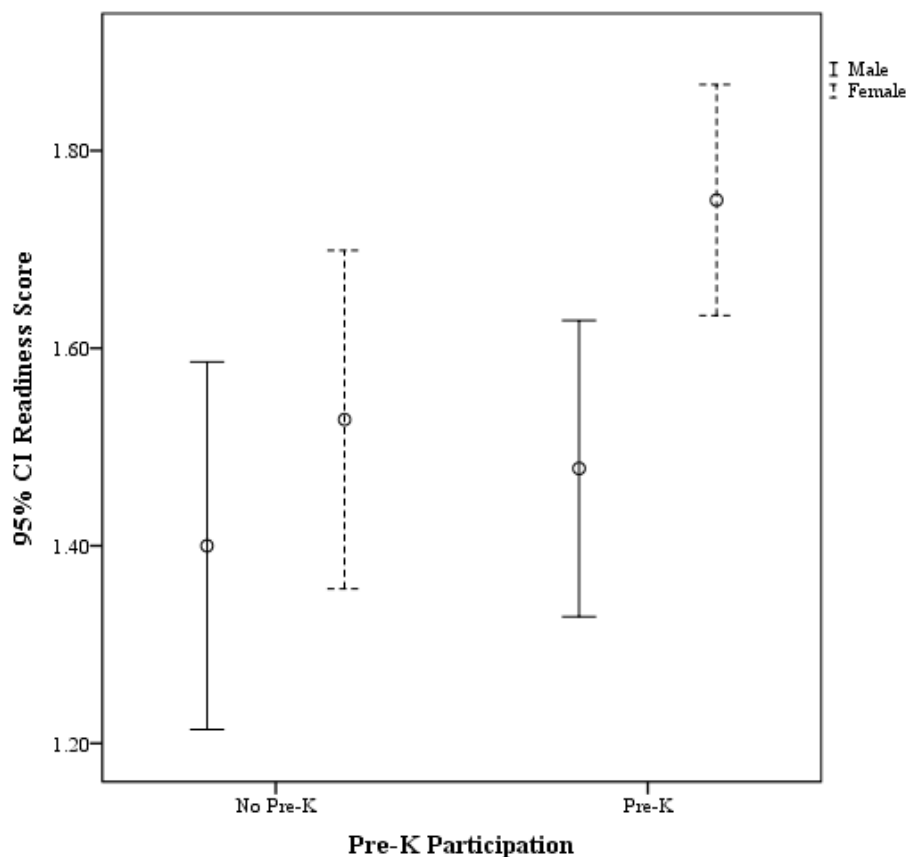


Figure 3. DIAL-4 Readiness Score Means Clustered by Gender and Pre-K Participation

The data indicate that female students achieved higher school readiness scores than male students regardless of whether they attended prekindergarten or not. The data also indicate a significant difference between males and females who attended prekindergarten, with females achieving significantly higher school readiness scores than their male peers. Table 9 shows ANOVA results.

Table 9

ANOVA for Prekindergarten Students' DIAL-4 Scores by Gender

Readiness Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.865	1	1.865	8.485	.004
Within Groups	21.978	100	.220		
Total	23.843	101			

The results of the ANOVA indicate a significant difference in readiness scores at $\alpha = .05$ among male and female students who attended prekindergarten prior to starting school:

$$F_{(1, 100)} = 8.485, p = 0.004.$$

The DIAL-4 data were further analyzed to determine differences in mean readiness scores between students who participated in prekindergarten prior to starting school and those who did not. Table 10 shows the mean scores for the two groups.

Table 10

DIAL-4 Readiness Score Means by Pre-K Participation

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
No Pre-K	68	65.87	17.387	2.108	61.66	70.08	26	98
Pre-K	103	72.85	14.810	1.459	69.96	75.75	23	104
Total	171	70.08	16.202	1.239	67.63	72.52	23	104

The mean score for students who did not attend prekindergarten was 65.87 as compared

to a mean score of 72.85 for the students attended a prekindergarten program.

Table 11 shows results of a one-way ANOVA computed to determine the level of significance between DIAL-4 scores and prekindergarten participation.

Table 11

ANOVA for DIAL-4 Scores by Pre-K Participation

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1999.387	1	1999.387	7.927	.005
Within Groups	42624.624	169	252.217		
Total	44624.012	170			

The results of the ANOVA indicate a significant difference in readiness scores at $\alpha = .05$ among groups of students who attended a prekindergarten program prior to starting kindergarten and those who did not attend prekindergarten: $F_{(1, 169)} = 7.927, p = 0.005$.

Research Question 2. What are the differences in mean scores on the DIAL-4 school readiness screening among students who attended the prekindergarten program at the primary school, students who attended a different prekindergarten program in the surrounding community, and students who have no record of attending a prekindergarten program? To address this question, the following data were compiled and analyzed.

Table 12 compares the Dial-4 readiness scores of students who attended the district prekindergarten program, students who attended a prekindergarten program in the surrounding community, and students who did not attend prekindergarten.

Table 12

DIAL-4 Kindergarten Readiness Count by Pre-K Experience

	Developmentally Ready		Delayed		Total
	N	%	N	%	Count
District Pre-K	31	56.4%	24	43.6%	55
Other Pre-K	33	68.8%	15	31.3%	48
No Pre-K	33	49.3%	34	50.7%	67

Approximately 56% of the students who attended the district prekindergarten program and 68% of the students who attended a prekindergarten program in the surrounding community were found to be developmentally ready for kindergarten. Of the students who did not attend prekindergarten, 49.3% of the students were ready for kindergarten.

Figure 4 compares readiness scores for students who attended prekindergarten in the district, in the surrounding community, or not at all.

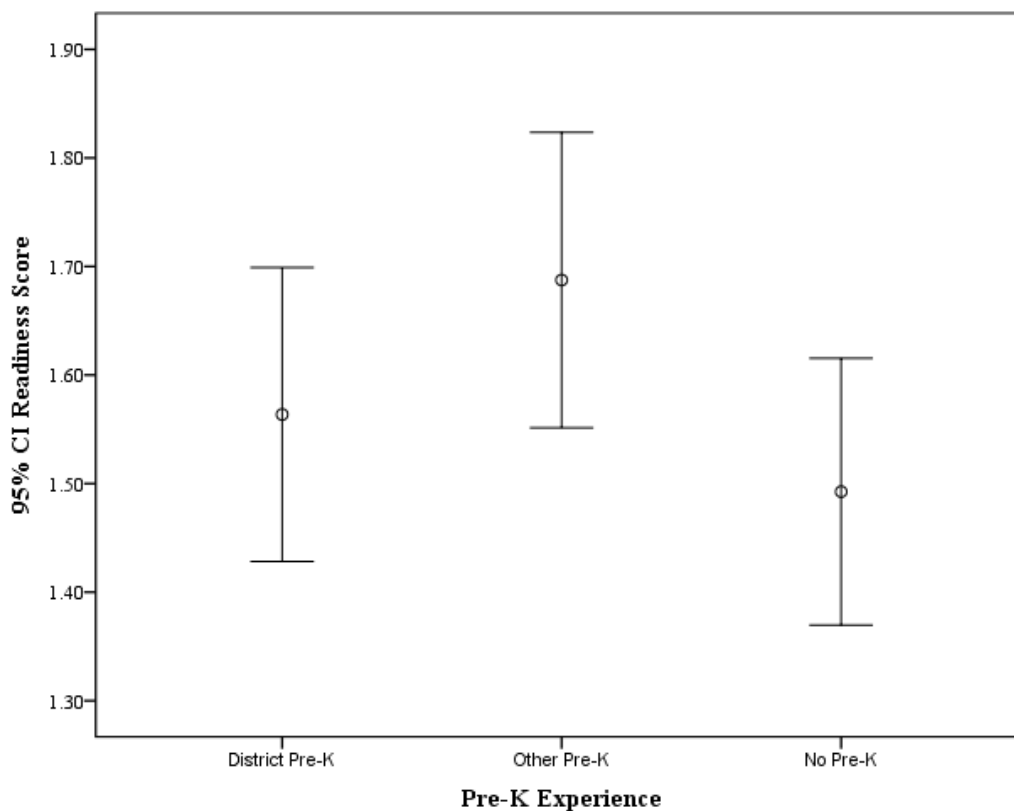


Figure 4. DIAL-4 Readiness Score Mean by Pre-K Experience

The data indicate that students who attended a prekindergarten program in the surrounding community achieved the highest school readiness scores on the DIAL-4 screening assessment, while students who did not attend prekindergarten prior to starting school achieved the lowest readiness scores.

Table 13 breaks down DIAL-4 readiness scores by prekindergarten experience for male and female students.

Table 13

DIAL-4 Kindergarten Readiness Count by Pre-K Experience by Gender

		Developmentally Ready		Delayed		Total
		N	%	N	%	N
District Pre-K	Male	7	33.3%	14	66.7%	21
	Female	24	70.6%	10	29.4%	34
Other Pre-K	Male	15	60.0%	10	40.0%	25
	Female	18	81.8%	4	18.2%	22
No Pre-K	Male	12	40%	18	60%	30
	Female	19	54.3%	16	45.7%	35

Male students who attended a prekindergarten program somewhere other than at the district had a higher mean readiness score on the DIAL-4 than other males. More than 50% of female students with no prekindergarten experience were identified as being ready for kindergarten, while over 70% of females who attended the district prekindergarten program and over 80% of females who attended other prekindergarten programs were identified as being ready for kindergarten.

Figure 5 compares readiness scores for male and female students clustered by prekindergarten experience.

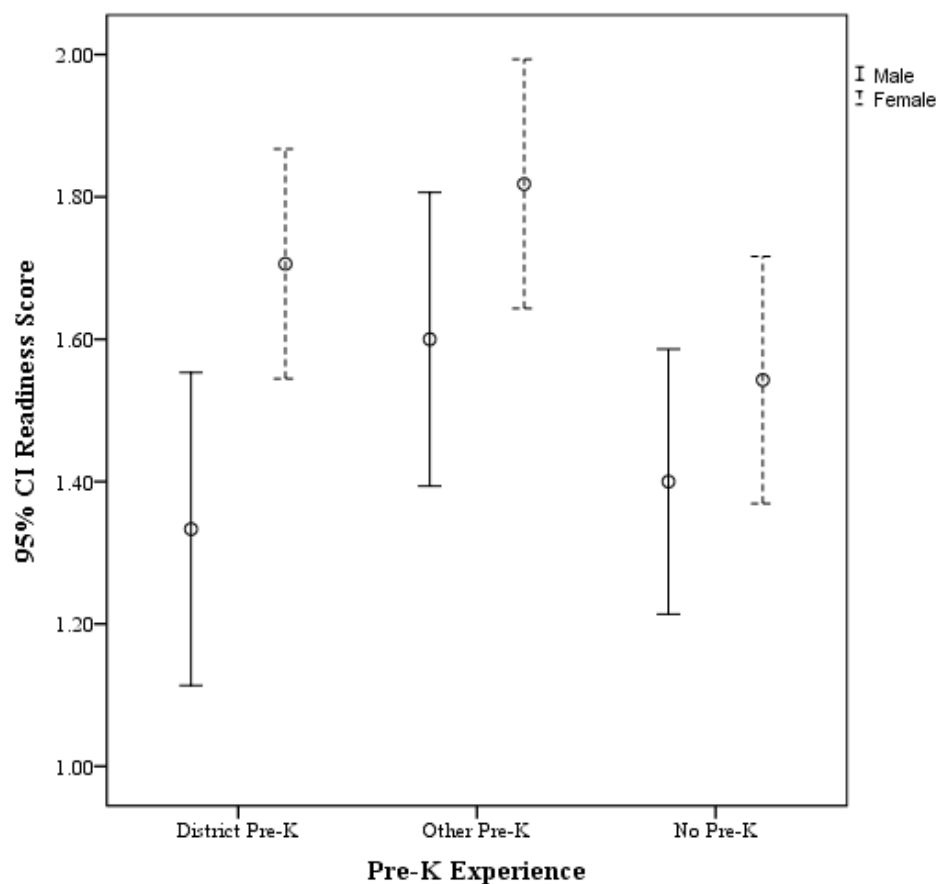


Figure 5. DIAL-4 Readiness Score Means Clustered by Gender and Pre-K Experience

The data indicate that females achieved higher DIAL-4 school readiness scores than male students regardless of whether they attended the district prekindergarten program, a different prekindergarten program in the surrounding community, or did not attend a prekindergarten program. The data also indicate a significant difference between males and females who attended the district prekindergarten program, with females scoring significantly higher than their male peers. Table 14 shows ANOVA results.

Table 14

ANOVA for District Prekindergarten Students' DIAL-4 Scores by Gender

Readiness Score					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.802	1	1.802	8.144	.006
Within Groups	11.725	53	.221		
Total	13.527	54			

The results of the ANOVA indicate a significant difference in readiness scores at $\alpha = .05$ among male and female students who attended the district prekindergarten prior to starting school: $F_{(1, 53)} = 8.144, p = 0.006$.

The DIAL-4 data were further analyzed to determine differences in mean readiness scores between students who attended the district prekindergarten program, students who attended a different prekindergarten program in the surrounding community, and students who did not attend prekindergarten prior to starting school. Table 15 shows the mean scores for the three groups.

Table 15

DIAL-4 Readiness Score Means by Pre-K Experience

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
District Pre-K	55	71.05	15.516	2.092	66.86	75.25	23	98
Other Pre-K	48	74.92	13.828	1.996	70.90	78.93	35	104
No Pre-K	67	65.84	17.516	2.140	61.56	70.11	26	98
Total	170	70.09	16.249	1.246	67.63	72.55	23	104

The mean score for students who attended the district prekindergarten was 71.05, as compared to a mean score of 74.92 for the students who attended a different prekindergarten program in the surrounding community. The mean score for students who did not attend prekindergarten was slightly lower at 65.84.

Table 16 shows the results of a one-way ANOVA computed to determine the level of significance between DIAL-4 scores and prekindergarten experience.

Table 16

ANOVA for DIAL-4 Scores by Pre-K Experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2381.979	2	1190.990	4.709	.010
Within Groups	42237.697	167	252.920		
Total	44619.676	169			

The results of the ANOVA indicate a significant difference in readiness scores at $\alpha = .05$ among groups of students who attended the prekindergarten program at the primary school, those who attended a different prekindergarten program in the surrounding community, and those who did not attend prekindergarten: $F_{(2, 167)} = 4.709, p = 0.010$.

A Post Hoc Bonferroni multiple comparison test was included in the analysis at the $\alpha = .05$ level to compare the means and identify where the differences were among the groups, as shown in Table 17.

Table 17

Post Hoc Bonferroni for DIAL-4 Scores by Prekindergarten Experience

(I) Pre-K Experience	(J) Pre-K Experience	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
District Pre-K	Other Pre-K	-3.862	3.141	.662	-11.46	3.73
	No Pre-K	5.219	2.894	.219	-1.78	12.22
Other Pre-K	District Pre-K	3.862	3.141	.662	-3.73	11.46
	No Pre-K	9.081*	3.007	.009	1.81	16.35
No Prekindergarten	District Pre-K	-5.219	2.894	.219	-12.22	1.78
	Other Pre-K	-9.081*	3.007	.009	-16.35	-1.81

Note: *The mean difference is significant at the 0.05 level.

The results of the Post Hoc Bonferroni test indicate a significant difference at the $\alpha = .05$ level among students who attended a prekindergarten program in the surrounding community and those who did not attend prekindergarten program.

Research Question 3. How does the initial screening data compare to student data collected 3, 5, and 7 months into kindergarten as measured by district benchmark assessments in the areas of literacy, math, and social development? To address this

question, the following data were compiled and analyzed.

Literacy. Table 18 compares the total number of students proficient in literacy at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 18

Literacy Proficiency by Readiness by Pre-K Experience

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Literacy Benchmark	Proficient	10	83.3%	2	16.7%	12
		Not Proficient	21	48.8%	22	51.2%	43
		Total	31	56.4%	24	43.6%	55
	5-Month Literacy Benchmark	Proficient	17	85.0%	3	15.0%	20
		Not Proficient	14	40.0%	21	60.0%	35
		Total	31	56.4%	24	43.6%	55
	7-Month Literacy Benchmark	Proficient	22	62.9%	13	37.1%	35
		Not Proficient	9	45.0%	11	55.0%	20
		Total	31	56.4%	24	43.6%	55
Other Pre-K	3-Month Literacy Benchmark	Proficient	11	73.3%	4	26.7%	15
		Not Proficient	22	66.7%	11	33.3%	33
		Total	33	68.8%	15	31.2%	48
	5-Month Literacy Benchmark	Proficient	19	95.0%	1	5.0%	20
		Not Proficient	14	50.0%	14	50.0%	28
		Total	33	68.8%	15	31.2%	48
	7-Month Literacy Benchmark	Proficient	23	71.9%	9	28.1%	32
		Not Proficient	10	62.5%	6	37.5%	16
		Total	33	68.8%	15	31.2%	48
No Pre-K	3-Month Literacy Benchmark	Proficient	7	77.8%	2	22.2%	9
		Not Proficient	26	44.8%	32	55.2%	58
		Total	33	49.3%	34	50.7%	67
	5-Month Literacy Benchmark	Proficient	12	80.0%	3	20.0%	15
		Not Proficient	21	40.4%	31	59.6%	52
		Total	33	49.3%	34	50.7%	67
	7-Month Literacy Benchmark	Proficient	23	60.5%	15	39.5%	38
		Not Proficient	10	34.5%	19	65.5%	29
		Total	33	49.3%	34	50.7%	67

At the 3-month benchmark, nearly half of the students who attended the district prekindergarten program were not proficient in literacy skills, regardless of whether they

were previously identified as being ready for kindergarten or not. All students from the district prekindergarten increased their proficiency totals at each benchmark and by the end of the 7-month benchmark, there were more students proficient than not.

Students who attended a prekindergarten program somewhere other than the district had the highest number of students proficient at each benchmark checkpoint, regardless of whether they entered school ready or delayed. Students who did not attend a prekindergarten program prior to starting school had the lowest number of students proficient at each benchmark checkpoint, except for at the final 7-month benchmark where they had more students proficient in literacy skills than either of the groups that attended prekindergarten.

Table 19 shows results of an ANCOVA run to determine level of significance between readiness and literacy proficiency.

Table 19

ANCOVA for Literacy Means by Readiness

Dependent Variable: 7 Month Benchmark Literacy Average						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Readiness	.027	1	.027	.368	.545	.002
Error	12.201	168	.073			
Total	108.069	171				
Corrected Total	13.252	170				

Note: a. R Squared = .079 (Adjusted R Squared = .068).

The results of the ANCOVA indicate that, after 7 months of instruction, there is not a statistical significance in literacy proficiency scores at $\alpha = .05$ between students who

were originally identified as being developmentally ready for kindergarten and those who were identified as being delayed: $F_{(1, 168)} = .368, p = 0.545$. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Figure 6 shows literacy means clustered on readiness at the 3-month, 5-month, and 7-month benchmark checkpoints.

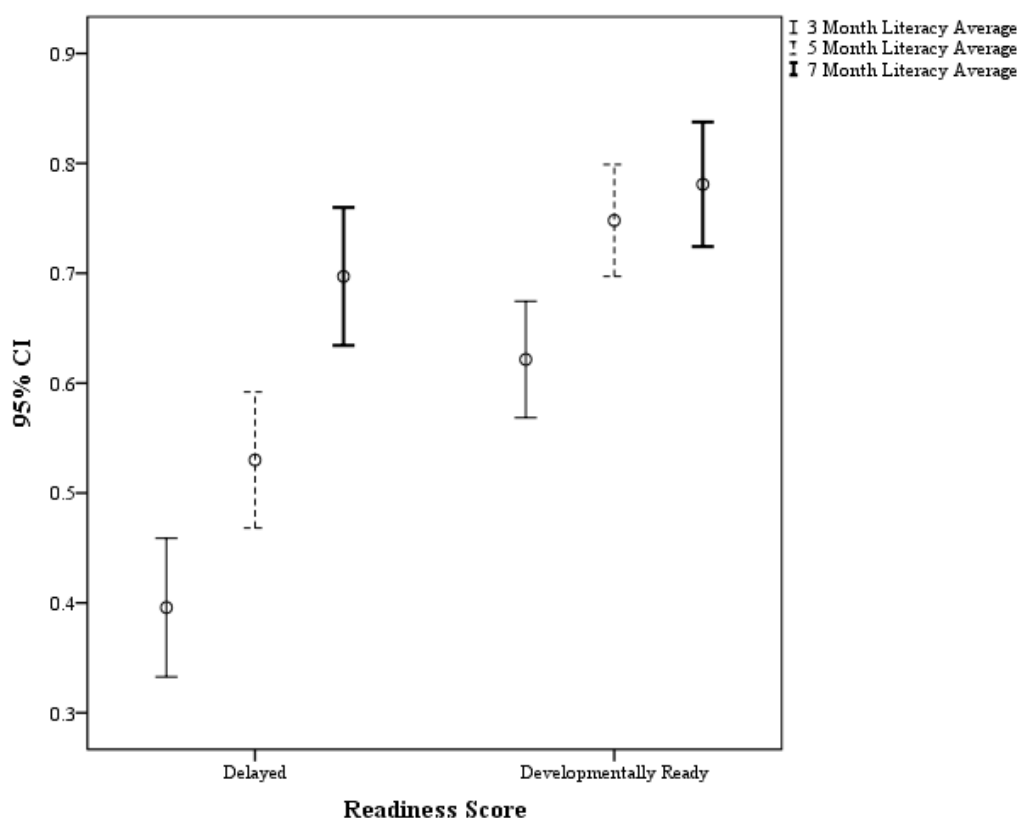


Figure 6. Literacy Means Clustered on Readiness

The data for each benchmark checkpoint indicate that there is a significant difference in literacy proficiency at both the 3-month and 5-month benchmark checkpoints between students that were delayed and students that were developmentally ready at the start of school; however, there was not a significant difference between

groups at the final 7-month benchmark checkpoint.

Table 20 shows results of an ANCOVA computed to determine the level of significance between prekindergarten experience and literacy proficiency.

Table 20

ANCOVA for Literacy Means by Pre-K Experience

Dependent Variable: 7-Month Benchmark Literacy Average						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-K	.046	2	.023	.278	.757	.003
Error	16.491	201	.082			
Total	127.618	205				
Corrected Total	17.251	204				

Note: a. R Squared = .044 (Adjusted R Squared = .030).

The results of the ANCOVA indicate that, after 7 months of instruction, there is not a statistical significance in literacy proficiency scores at $\alpha = .05$ between students who attended the prekindergarten program at the primary school, those who attended a different prekindergarten program in the surrounding community, and those who did not attend prekindergarten: $F_{(2, 201)} = .278, p = 0.757$. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Figure 7 shows literacy means clustered on prekindergarten experience at the 3-month, 5-month, and 7-month benchmark checkpoints.

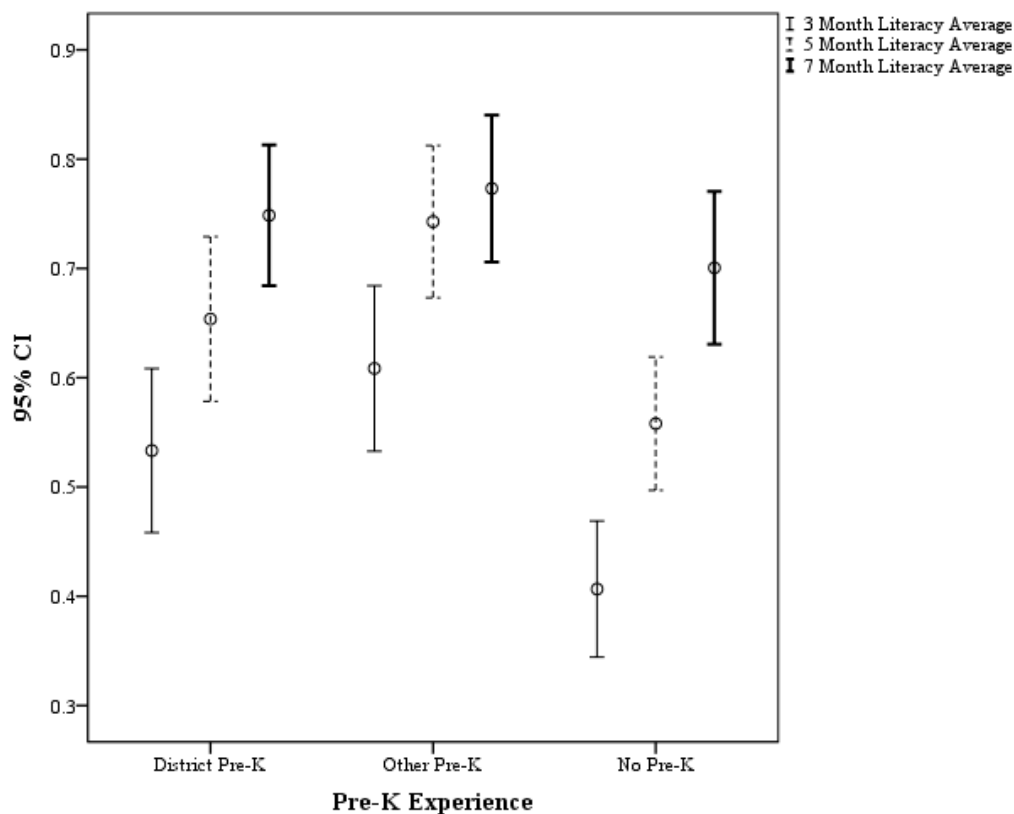


Figure 7. Literacy Means Clustered on Pre-K Experience

The data for each benchmark checkpoint indicate that students who attended a prekindergarten program in the surrounding community had a significantly higher percentage of literacy proficiency at both the 3-month and 5-month benchmarks than students who did not attend prekindergarten; however, there was not a significant difference in literacy proficiency between students who attended the district prekindergarten program and students who did not attend prekindergarten. The data also indicate that there was not a significant difference in literacy proficiency at the final 7-month benchmark checkpoint between students who attended the district prekindergarten, attended a prekindergarten in the surrounding community, or did not attend prekindergarten.

Table 21 compares the number of male students proficient in literacy at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 21

Literacy Proficiency by Readiness by Pre-K Experience for Male Students

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Literacy Benchmark	Proficient	10	83.3%	2	16.7%	12
		Not Proficient	21	48.8%	22	51.2%	43
		Total	31	56.4%	24	43.6%	55
	5-Month Literacy Benchmark	Proficient	17	85.0%	3	15.0%	20
		Not Proficient	14	40.0%	21	60.0%	35
		Total	31	56.4%	24	43.6%	55
	7-Month Literacy Benchmark	Proficient	22	62.9%	13	37.1%	35
		Not Proficient	9	45.0%	11	55.0%	20
		Total	31	56.4%	24	43.6%	55
Other Pre-K	3-Month Literacy Benchmark	Proficient	11	73.3%	4	26.7%	15
		Not Proficient	22	66.7%	11	33.3%	33
		Total	33	68.8%	15	31.2%	48
	5-Month Literacy Benchmark	Proficient	19	95.0%	1	5.0%	20
		Not Proficient	14	50.0%	14	50.0%	28
		Total	33	68.8%	15	31.2%	48
	7-Month Literacy Benchmark	Proficient	23	71.9%	9	28.1%	32
		Not Proficient	10	62.5%	6	37.5%	16
		Total	33	68.8%	15	31.2%	48
No Pre-K	3-Month Literacy Benchmark	Proficient	7	77.8%	2	22.2%	9
		Not Proficient	26	44.8%	32	55.2%	58
		Total	33	49.3%	34	50.7%	67
	5-Month Literacy Benchmark	Proficient	12	80.0%	3	20.0%	15
		Not Proficient	21	40.4%	31	59.6%	52
		Total	33	49.3%	34	50.7%	67
	7-Month Literacy Benchmark	Proficient	23	60.5%	15	39.5%	38
		Not Proficient	10	34.5%	19	65.5%	29
		Total	33	49.3%	34	50.7%	67

Of male students who were originally identified as being developmentally ready for kindergarten, over 80% who attended the district prekindergarten were proficient in literacy at both the 3- and 5-month benchmark checkpoints, and over 70% who attended a different prekindergarten program were proficient in literacy at all three benchmark checkpoints. Similarly, approximately 15-20% of male students who were originally identified as being delayed at the start of school and who attended either the district prekindergarten program or did not attend prekindergarten at all, were proficient in literacy at both the 3- and 5-month benchmark checkpoints. The total number of male students proficient in literacy skills increased at each checkpoint for all three groups whether they were originally identified as being developmentally ready or delayed at the start of school.

Table 22 compares the number of female students proficient in literacy at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 22

Literacy Proficiency by Readiness by Pre-K Experience for Female Students

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Literacy Benchmark	Proficient	10	83.3%	2	16.7%	12
		Not Proficient	21	48.8%	22	51.2%	43
		Total	31	56.4%	24	43.6%	55
	5-Month Literacy Benchmark	Proficient	17	85.0%	3	15.0%	20
		Not Proficient	14	40.0%	21	60.0%	35
		Total	31	56.4%	24	43.6%	55
	7-Month Literacy Benchmark	Proficient	22	62.9%	13	37.1%	35
		Not Proficient	9	45.0%	11	55.0%	20
		Total	31	56.4%	24	43.6%	55
Other Pre-K	3-Month Literacy Benchmark	Proficient	11	73.3%	4	26.7%	15
		Not Proficient	22	66.7%	11	33.3%	33
		Total	33	68.8%	15	31.2%	48
	5-Month Literacy Benchmark	Proficient	19	95.0%	1	5.0%	20
		Not Proficient	14	50.0%	14	50.0%	28
		Total	33	68.8%	15	31.2%	48
	7-Month Literacy Benchmark	Proficient	23	71.9%	9	28.1%	32
		Not Proficient	10	62.5%	6	37.5%	16
		Total	33	68.8%	15	31.2%	48
No Pre-K	3-Month Literacy Benchmark	Proficient	12	80.0%	3	20.0%	15
		Not Proficient	21	40.4%	31	59.6%	52
		Total	33	49.3%	34	50.7%	67
	5-Month Literacy Benchmark	Proficient	23	60.5%	15	39.5%	38
		Not Proficient	10	34.5%	19	65.5%	29
		Total	33	49.3%	34	50.7%	67
	7-Month Literacy Benchmark	Proficient	7	77.8%	2	22.2%	9
		Not Proficient	26	44.8%	32	55.2%	58
		Total	33	49.3%	34	50.7%	67

Approximately 70-80% of female students who were originally identified as being developmentally ready for kindergarten scored proficient in literacy at the 3-month benchmark checkpoint, regardless of whether they attended prekindergarten or not. Of

female students who were originally identified as being delayed and who attended either a prekindergarten program in the surrounding community or entered with no prekindergarten experience, approximately 20-30% were proficient in literacy at the 3- and 7-month benchmark checkpoints.

Table 23 compares the total number of students proficient in literacy at the 3-month, 5-month, and 7-month benchmark checkpoints to student attendance rates according to AYP attendance expectation compliance.

Table 23

Literacy Proficiency by Attendance

		AYP Compliant		Not Compliant		Total
		N	%	N	%	N
3-Month Literacy Benchmark	Proficient	28	66.7%	14	33.3%	42
	Not Proficient	125	70.2%	53	29.8%	178
	Total	153	69.5%	67	30.5%	220
5-Month Literacy Benchmark	Proficient	45	69.2%	20	30.8%	65
	Not Proficient	109	69.4%	48	30.6%	157
	Total	154	69.4%	68	30.6%	222
7-Month Literacy Benchmark	Proficient	93	70.5%	39	29.5%	132
	Not Proficient	66	68.8%	30	31.2%	96
	Total	159	69.7%	69	30.3%	228

Approximately 30% of students who were not compliant with AYP attendance requirements were not proficient in literacy skills at any of the benchmark checkpoints.

Math. Table 24 compares the total number of students proficient in math at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 24

Math Proficiency by Readiness by Pre-K Experience

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Math Benchmark	Proficient	13	76.5%	4	23.5%	17
		Not Proficient	18	47.4%	20	52.6%	38
		Total	31	56.4%	24	43.6%	55
	5-Month Math Benchmark	Proficient	16	80.0%	4	20.0%	20
		Not Proficient	15	42.9%	20	57.1%	35
		Total	31	56.4%	24	43.6%	55
	7-Month Math Benchmark	Proficient	22	64.7%	12	35.3%	34
		Not Proficient	9	42.9%	12	57.1%	21
		Total	31	56.4%	24	43.6%	55
Other Pre-K	3-Month Math Benchmark	Proficient	20	83.3%	4	16.7%	24
		Not Proficient	13	54.2%	11	45.8%	24
		Total	33	68.8%	15	31.2%	48
	5-Month Math Benchmark	Proficient	13	86.7%	2	13.3%	15
		Not Proficient	20	60.6%	13	39.4%	33
		Total	33	68.8%	15	31.2%	48
	7-Month Math Benchmark	Proficient	28	73.7%	10	26.3%	38
		Not Proficient	5	50.0%	5	50.0%	10
		Total	33	68.8%	15	31.2%	48
No Pre-K	3-Month Math Benchmark	Proficient	18	78.3%	5	21.7%	23
		Not Proficient	15	34.1%	29	65.9%	44
		Total	33	49.3%	34	50.7%	67
	5-Month Math Benchmark	Proficient	14	60.9%	9	39.1%	23
		Not Proficient	19	43.2%	25	56.8%	44
		Total	33	49.3%	34	50.7%	67
	7-Month Math Benchmark	Proficient	23	54.8%	19	45.2%	42
		Not Proficient	10	40.0%	15	60.0%	25
		Total	33	49.3%	34	50.7%	67

More than 60% of students who attended either the district prekindergarten program or a program in the surrounding community, and were originally identified as being developmentally ready for kindergarten, were proficient in math at all three benchmark

checkpoints. Less than 25% of students who were originally identified as being delayed were proficient in math skills at the 3-month checkpoint, regardless of whether they attended a prekindergarten program or not.

Students who attended the district prekindergarten program increased their total number of proficient students in math skills at each benchmark checkpoint. Students who attended a prekindergarten program in the surrounding community or did not attend prekindergarten at all showed a decrease in proficiency scores at the 5-month benchmark checkpoint, however, they showed an increase in total number of students proficient at the final 7-month benchmark checkpoint.

Table 25 shows results of an ANCOVA comparing math proficiency to DIAL-4 readiness scores.

Table 25

ANCOVA for Math Means by Readiness

Dependent Variable: 7 Month Benchmark Math Average						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Readiness	.032	1	.032	.426	.515	.003
Error	12.588	168	.075			
Total	113.639	171				
Corrected Total	14.047	170				

Note: a. R Squared = .104 (Adjusted R Squared = .093).

The results of the ANCOVA indicate that after 7 months of instruction there is not a statistical significance in math proficiency scores at $\alpha = .05$ between students who were originally identified as being developmentally ready for kindergarten and those who were

identified as being delayed: $F_{(1, 168)} = .426, p = 0.515$. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Figure 8 shows math mean scores clustered on readiness at the 3-month, 5-month, and 7-month benchmark checkpoints.

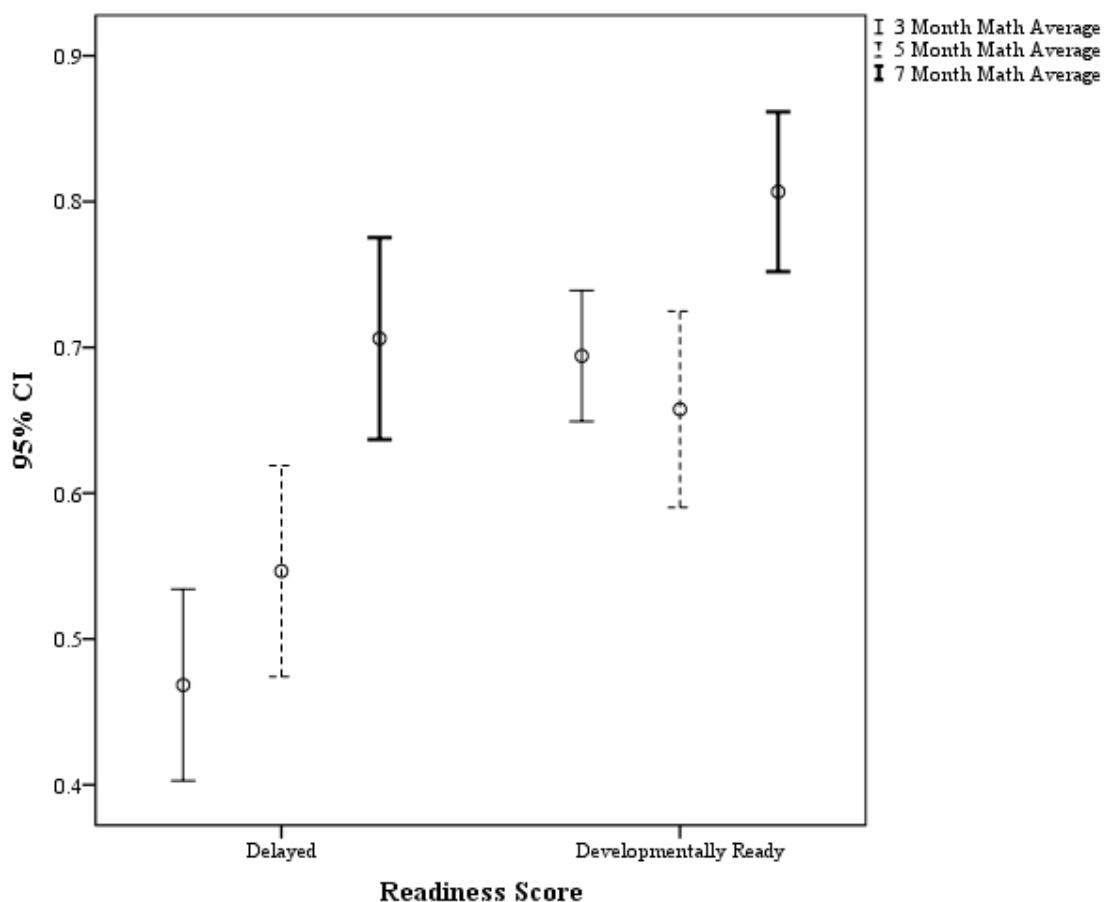


Figure 8. Math Means Clustered on Readiness

The data for each benchmark checkpoint indicate that there is a significant difference in math proficiency at the initial 3-month benchmark checkpoint between students who were delayed and students who were developmentally ready at the start of school; however, there was not a significant difference at either the 5-month benchmark

or the 7-month benchmark checkpoints.

Table 26 shows results of an ANCOVA run to determine level of significance between prekindergarten experience and math proficiency.

Table 26

ANCOVA for Math Means by Prekindergarten Experience

Dependent Variable: 7 Month Benchmark Math Average						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-K	.274	2	.137	1.575	.210	.015
Error	17.493	201	.087			
Total	133.319	205				
Corrected Total	19.378	204				

Note: a. R Squared = .097 (Adjusted R Squared = .084).

The results of the ANCOVA indicate that after 7 months of instruction there is not a statistical significance in math proficiency scores at $\alpha = .05$ between students who attended the prekindergarten program at the primary school, those who attended a different prekindergarten program in the surrounding community, and those who did not attend prekindergarten: $F_{(2, 201)} = 1.575, p = 0.210$. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Figure 9 shows math means clustered on prekindergarten experience at the 3-month, 5-month, and 7-month benchmark checkpoints.

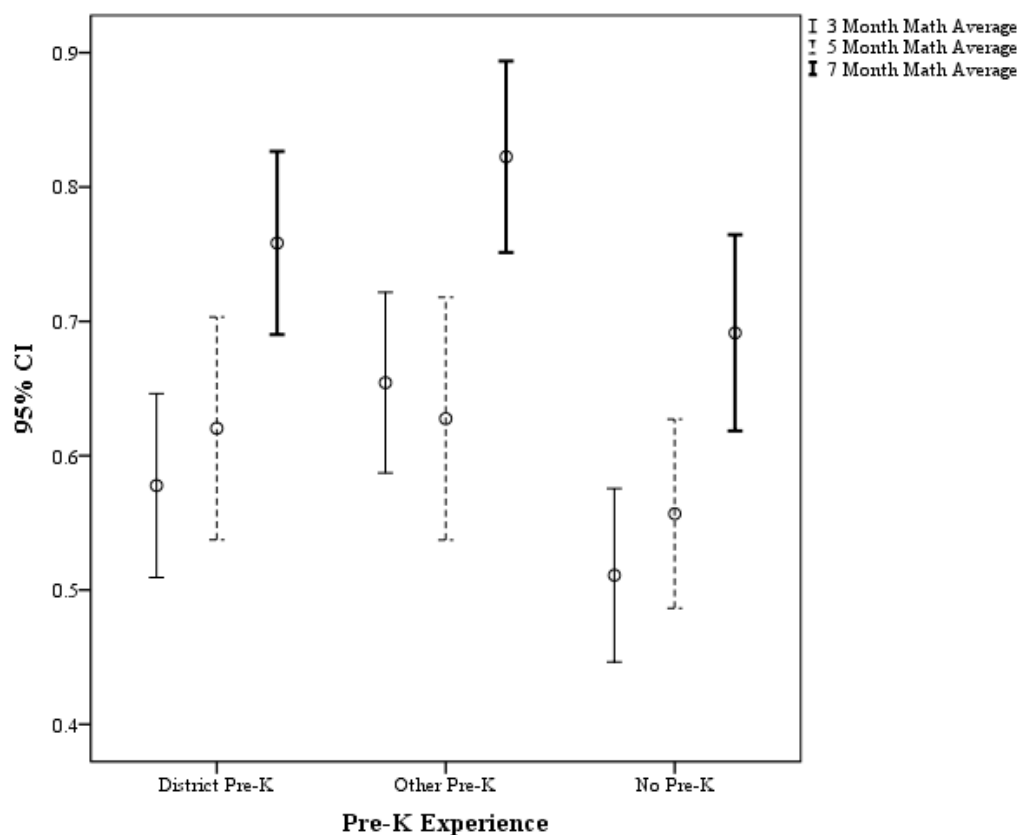


Figure 9. Math Means Clustered on Pre-K Experience

The data for each benchmark checkpoint indicate that students who attended a prekindergarten program in the surrounding community had significantly higher math proficiency at the 3-month benchmark than students who did not attend a prekindergarten program; however, there was not a significant difference between students who attended the district prekindergarten program and students who did not attend prekindergarten. The data also indicate that there was not a significant difference in math proficiency at the 5- or 7-month benchmark checkpoints between students who attended the district prekindergarten, attended a prekindergarten in the surrounding community, or did not attend prekindergarten.

Table 27 compares the number of male students proficient in math at the 3-month,

5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 27

Math Proficiency by Readiness by Pre-K Experience for Male Students

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Math Benchmark	Proficient	3	60.0%	2	40.0%	5
		Not Proficient	4	25.0%	12	75.0%	16
		Total	7	33.3%	14	66.7%	21
	5-Month Math Benchmark	Proficient	4	57.1%	3	42.9%	7
		Not Proficient	3	21.4%	11	78.6%	14
		Total	7	33.3%	14	66.7%	21
	7-Month Math Benchmark	Proficient	4	36.4%	7	63.6%	11
		Not Proficient	3	30.0%	7	70.0%	10
		Total	7	33.3%	14	66.7%	21
Other Pre-K	3-Month Math Benchmark	Proficient	9	75.0%	3	25.0%	12
		Not Proficient	6	46.2%	7	53.8%	13
		Total	15	60.0%	10	40.0%	25
	5-Month Math Benchmark	Proficient	5	71.4%	2	28.6%	7
		Not Proficient	10	55.6%	8	44.4%	18
		Total	15	60.0%	10	40.0%	25
	7-Month Math Benchmark	Proficient	13	61.9%	8	38.1%	21
		Not Proficient	2	50.0%	2	50.0%	4
		Total	15	60.0%	10	40.0%	25
No Pre-K	3-Month Math Benchmark	Proficient	7	63.6%	4	36.4%	11
		Not Proficient	5	26.3%	14	73.7%	19
		Total	12	40.0%	18	60.0%	30
	5-Month Math Benchmark	Proficient	7	58.3%	5	41.7%	12
		Not Proficient	5	27.8%	13	72.2%	18
		Total	12	40.0%	18	60.0%	30
	7-Month Math Benchmark	Proficient	9	45.0%	11	55.0%	20
		Not Proficient	3	30.0%	7	70.0%	10
		Total	12	40.0%	18	60.0%	30

After 7 months of instruction, approximately 64% of the male students who attended the

district prekindergarten program and were originally identified as being delayed scored proficient in math skills, as compared to 36% of their male peers who scored proficient in math skills and were originally identified as being developmentally ready for kindergarten. More than 60% of male students who were originally identified as being ready for school scored proficient in math at the 3-month benchmark checkpoint, regardless of whether or not they attended prekindergarten prior to starting school.

Table 28 compares the number of female students proficient in math at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 28

Math Proficiency by Readiness by Pre-K Experience for Female Students

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Math Benchmark	Proficient	10	83.3%	2	16.7%	12
		Not Proficient	14	63.6%	8	36.4%	22
		Total	24	70.6%	10	29.4%	34
	5-Month Math Benchmark	Proficient	12	92.3%	1	7.7%	13
		Not Proficient	12	57.1%	9	42.9%	21
		Total	24	70.6%	10	29.4%	34
	7-Month Math Benchmark	Proficient	18	78.3%	5	21.7%	23
		Not Proficient	6	54.5%	5	45.5%	11
		Total	24	70.6%	10	29.4%	34
Other Pre-K	3-Month Math Benchmark	Proficient	8	100.0%	0	0.0%	8
		Not Proficient	10	71.4%	4	28.6%	14
		Total	18	81.8%	4	18.2%	22
	5-Month Math Benchmark	Proficient	11	91.7%	1	8.3%	12
		Not Proficient	7	70.0%	3	30.0%	10
		Total	18	81.8%	4	18.2%	22
	7-Month Math Benchmark	Proficient	15	88.2%	2	11.8%	17
		Not Proficient	3	60.0%	2	40.0%	5
		Total	18	81.8%	4	18.2%	22
No Pre-K	3-Month Math Benchmark	Proficient	10	90.9%	1	9.1%	11
		Not Proficient	9	37.5%	15	62.5%	24
		Total	19	54.3%	16	45.7%	35
	5-Month Math Benchmark	Proficient	7	63.6%	4	36.4%	11
		Not Proficient	12	50.0%	12	50.0%	24
		Total	19	54.3%	16	45.7%	35
	7-Month Math Benchmark	Proficient	14	63.6%	8	36.4%	22
		Not Proficient	5	38.5%	8	61.5%	13
		Total	19	54.3%	16	45.7%	35

Approximately 80-90% of females who were originally identified as being ready for school were proficient in math skills at each of the benchmark checkpoints, regardless of whether they had attended prekindergarten or not. At the final 7-month benchmark

checkpoint, there were more female students that were proficient in math skills than were not from each of the three prekindergarten groups.

Table 29 compares the total number of students proficient in math at the 3-month, 5-month, and 7-month benchmark checkpoints to student attendance rates according to AYP attendance expectation compliance.

Table 29

Math Proficiency by Attendance

		AYP Compliant		Not Compliant		Total
		N	%	N	%	N
3-Month Math Benchmark	Proficient	52	71.2%	21	28.8%	73
	Not Proficient	102	68.5%	47	31.5%	149
	Total	154	69.4%	68	30.6%	222
5-Month Math Benchmark	Proficient	44	67.7%	21	32.3%	65
	Not Proficient	110	70.1%	47	29.9%	157
	Total	154	69.4%	68	30.6%	222
7-Month Math Benchmark	Proficient	100	69.0%	45	31.0%	145
	Not Proficient	59	71.1%	24	28.9%	83
	Total	159	69.7%	69	30.3%	228

Approximately 30% of students who were not compliant with AYP attendance requirements were not proficient in math skills at any of the benchmark checkpoints.

Social development. Table 30 compares the total number of students proficient in social development at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 30

Social Proficiency by Readiness by Pre-K Experience

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Social Benchmark	Proficient	28	63.6%	16	36.4%	44
		Not Proficient	3	27.3%	8	72.7%	11
		Total	31	56.4%	24	43.6%	55
	5-Month Social Benchmark	Proficient	27	64.3%	15	35.7%	42
		Not Proficient	4	30.8%	9	69.2%	13
		Total	31	56.4%	24	43.6%	55
	7-Month Social Benchmark	Proficient	28	56.0%	22	44.0%	50
		Not Proficient	3	60.0%	2	40.0%	5
		Total	31	56.4%	24	43.6%	55
Other Pre-K	3-Month Social Benchmark	Proficient	29	72.5%	11	27.5%	40
		Not Proficient	4	50.0%	4	50.0%	8
		Total	33	68.8%	15	31.2%	48
	5-Month Social Benchmark	Proficient	26	72.2%	10	27.8%	36
		Not Proficient	7	58.3%	5	41.7%	12
		Total	33	68.8%	15	31.2%	48
	7-Month Social Benchmark	Proficient	29	74.4%	10	25.6%	39
		Not Proficient	4	44.4%	5	55.6%	9
		Total	33	68.8%	15	31.2%	48
No Pre-K	3-Month Social Benchmark	Proficient	27	51.9%	25	48.1%	52
		Not Proficient	6	40.0%	9	60.0%	15
		Total	33	49.3%	34	50.7%	67
	5-Month Social Benchmark	Proficient	30	49.2%	31	50.8%	61
		Not Proficient	3	50.0%	3	50.0%	6
		Total	33	49.3%	34	50.7%	67
	7-Month Social Benchmark	Proficient	27	50.9%	26	49.1%	53
		Not Proficient	6	42.9%	8	57.1%	14
		Total	33	49.3%	34	50.7%	67

Approximately 40% of students who attended the district prekindergarten program and 26% of students who attended prekindergarten programs in the surrounding

community, who were originally identified as being delayed at the start of school, scored proficient in social development at all three benchmark checkpoints. Students who had no prekindergarten experience at all and were identified as being delayed at the start of school showed the highest proficiency percentage, with approximately 50% of those students scoring proficient in social development. Overall, there were many more students proficient in social development than not at each benchmark checkpoint, regardless of whether they attended prekindergarten or not.

Table 31 shows results of an ANCOVA run to determine level of significance between readiness and social development proficiency.

Table 31

ANCOVA for Social Development Means by Readiness

Dependent Variable: 7 Month Benchmark Social Development Average						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Readiness	1.915E-005	1	1.915E-005	.001	.977	.000
Error	3.494	157	.022			
Total	142.449	160				
Corrected Total	4.490	159				

Note: a. R Squared = .222 (Adjusted R Squared = .212).

The results of the ANCOVA indicate that, after 7 months of instruction, there is not a statistical significance in social development proficiency scores at $\alpha = .05$ between students who were originally identified as being developmentally ready for kindergarten and those who were identified as being delayed: $F_{(1, 157)} = .001$, $p = 0.977$. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-

month data checkpoint.

Figure 10 shows social development means clustered on readiness at the 3-month, 5-month, and 7-month benchmark checkpoints.

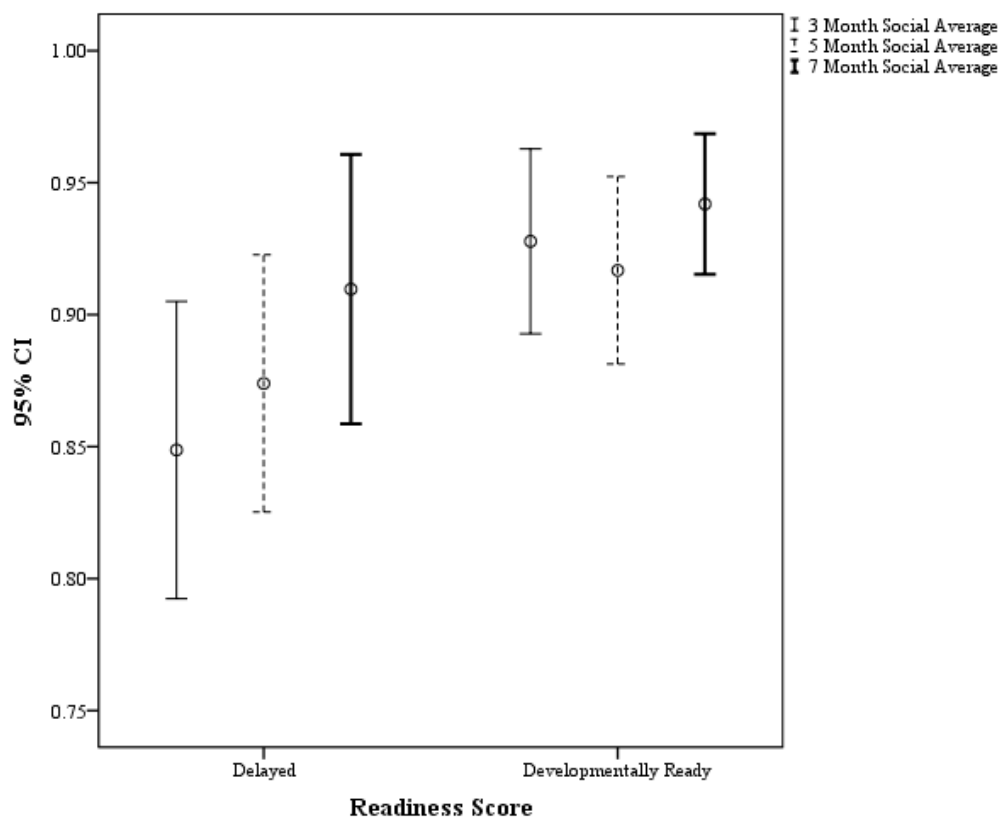


Figure 10. Social Development Means Clustered on Readiness

The data for each benchmark checkpoint indicate that there is not a significant difference in social proficiency at any of the three benchmark checkpoints between students that were delayed and students that were developmentally ready at the start of kindergarten.

Table 32 shows results of an ANCOVA run to determine level of significance between prekindergarten experience and social development proficiency.

Table 32

ANCOVA for Social Development Means by Pre-K Experience

Dependent Variable: 7 Month Benchmark Social Development Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-K	.158	2	.079	3.956	.021	.042
Error	3.637	182	.020			
Total	167.694	186				
Corrected Total	4.652	185				

Note: a. R Squared = .218 (Adjusted R Squared = .205).

The results of the ANCOVA indicate that after 7 months of instruction there is a statistical significance in social development scores at $\alpha = .05$ between students who attended the prekindergarten program at the primary school, those who attended a different prekindergarten program in the surrounding community, and those who did not attend prekindergarten: $F_{(2, 182)} = 3.956, p = 0.021$. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Figure 11 shows social means clustered on prekindergarten experience at the 3-month, 5-month, and 7-month benchmark checkpoints.

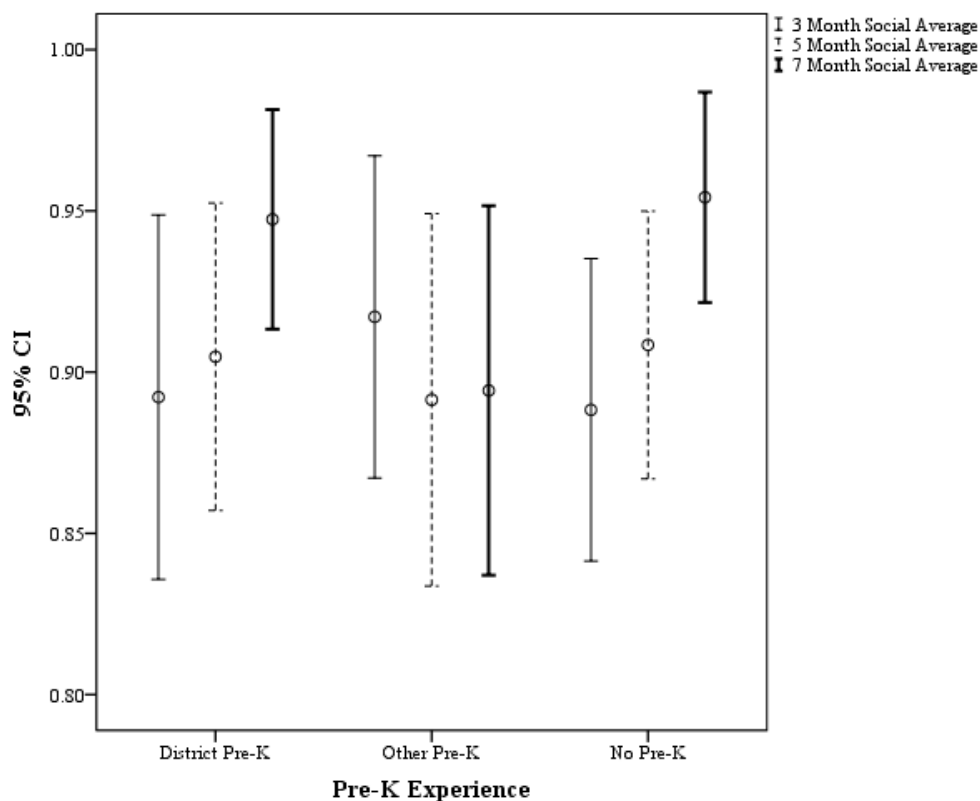


Figure 11. Social Development Means Clustered on Pre-K Experience

The data for each benchmark checkpoint indicate that there is not a significant difference in social proficiency at any of the three benchmark checkpoints between students that attended the district prekindergarten program, students who attended a prekindergarten program in the surrounding community, and students who did not attend prekindergarten; however, this data excludes the fact that the three groups are not normally distributed therefore it is not a true representation of the data. A Levene's Test of Equality of Error Variances has been included in Table 33 to show the significance of variance between the three groups.

Table 33

Levene's Test of Equality of Error Variances

Dependent Variable: 7-Month Benchmark Social Average			
F	df1	df2	Sig.
4.733	2	183	.010

The Levene's Test of Equality shows that there is a significant difference in the distribution of the three groups; therefore, the groups are not normally distributed: $F_{(2, 183)} = 4.733, p = 0.010$. These results support the results from Table 32 that show a significant difference in social development scores between students who attended the district prekindergarten program, students who attended a different prekindergarten program, or students who did not attend prekindergarten.

Table 34 compares the number of male students proficient in social development at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 34

Social Proficiency by Readiness by Pre-K Experience for Male Students

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Social Benchmark	Proficient	6	37.5%	10	62.5%	16
		Not Proficient	1	20.0%	4	80.0%	5
		Total	7	33.3%	14	66.7%	21
	5-Month Social Benchmark	Proficient	5	35.7%	9	64.3%	14
		Not Proficient	2	28.6%	5	71.4%	7
		Total	7	33.3%	14	66.7%	21
	7-Month Social Benchmark	Proficient	4	25.0%	12	75.0%	16
		Not Proficient	3	60.0%	2	40.0%	5
		Total	7	33.3%	14	66.7%	21
Other Pre-K	3-Month Social Benchmark	Proficient	11	61.1%	7	38.9%	18
		Not Proficient	4	57.1%	3	42.9%	7
		Total	15	60.0%	10	40.0%	25
	5-Month Social Benchmark	Proficient	9	56.2%	7	43.8%	16
		Not Proficient	6	66.7%	3	33.3%	9
		Total	15	60.0%	10	40.0%	25
	7-Month Social Benchmark	Proficient	12	66.7%	6	33.3%	18
		Not Proficient	3	42.9%	4	57.1%	7
		Total	15	60.0%	10	40.0%	25
No Pre-K	3-Month Social Benchmark	Proficient	11	50.0%	11	50.0%	22
		Not Proficient	1	12.5%	7	87.5%	8
		Total	12	40.0%	18	60.0%	30
	5-Month Social Benchmark	Proficient	10	43.5%	13	56.5%	23
		Not Proficient	2	28.6%	5	71.4%	7
		Total	12	40.0%	18	60.0%	30
	7-Month Social Benchmark	Proficient	10	40.0%	15	60.0%	25
		Not Proficient	2	40.0%	3	60.0%	5
		Total	12	40.0%	18	60.0%	30

Approximately 60-70% of male students who either attended the district prekindergarten program or had no prekindergarten experience, and who were originally identified as

being delayed, scored proficient in social development at each of the three benchmark checkpoints. Overall, regardless of whether male students attended prekindergarten or not, the social development proficiency percentages dropped at the 5-month benchmark for both the developmentally ready group and the delayed group.

Table 35 compares the number of female students proficient in social development at the 3-month, 5-month, and 7-month benchmark checkpoints to DIAL-4 school readiness scores and prekindergarten experience.

Table 35

Social Proficiency by Readiness by Pre-K Experience for Female Students

			Developmentally Ready		Delayed		Total
			N	%	N	%	N
District Pre-K	3-Month Social Benchmark	Proficient	22	78.6%	6	21.4%	28
		Not Proficient	2	33.3%	4	66.7%	6
		Total	24	70.6%	10	29.4%	34
	5-Month Social Benchmark	Proficient	22	78.6%	6	21.4%	28
		Not Proficient	2	33.3%	4	66.7%	6
		Total	24	70.6%	10	29.4%	34
	7-Month Social Benchmark	Proficient	24	70.6%	10	29.4%	34
		Not Proficient	0	0.0%	0	0.0%	0
		Total	24	70.6%	10	29.4%	34
Other Pre-K	3-Month Social Benchmark	Proficient	18	85.7%	3	14.3%	21
		Not Proficient	0	0.0%	1	100.0%	1
		Total	18	81.8%	4	18.2%	22
	5-Month Social Benchmark	Proficient	17	89.5%	2	10.5%	19
		Not Proficient	1	33.3%	2	66.7%	3
		Total	18	81.8%	4	18.2%	22
	7-Month Social Benchmark	Proficient	17	85.0%	3	15.0%	20
		Not Proficient	1	50.0%	1	50.0%	2
		Total	18	81.8%	4	18.2%	22
No Pre-K	3-Month Social Benchmark	Proficient	14	48.3%	15	51.7%	29
		Not Proficient	5	83.3%	1	16.7%	6
		Total	19	54.3%	16	45.7%	35
	5-Month Social Benchmark	Proficient	15	55.6%	12	44.4%	27
		Not Proficient	4	50.0%	4	50.0%	8
		Total	19	54.3%	16	45.7%	35
	7-Month Social Benchmark	Proficient	18	52.9%	16	47.1%	34
		Not Proficient	1	100.0%	0	0.0%	1
		Total	19	54.3%	16	45.7%	35

Approximately 75-85% of female students who attended either the district prekindergarten program or a different prekindergarten program in the surrounding

community, and who were originally identified as being developmentally ready for kindergarten, scored proficient in social development at all three benchmark checkpoints. All students who attended the district prekindergarten program were proficient in social development at the final 7-month benchmark checkpoint, regardless of whether they had been identified as developmentally ready or delayed at the start of school.

Table 36 compares the total number of students proficient in social development at the 3-month, 5-month, and 7-month benchmark checkpoints to student attendance rates according to AYP attendance expectation compliance.

Table 36

Social Proficiency by Attendance

		AYP Compliant		Attendance Concern		Total
		N	%	N	%	N
3-Month Social Benchmark	Proficient	127	69.8%	55	30.2%	182
	Not Proficient	27	67.5%	13	32.5%	40
	Total	154	69.4%	68	30.6%	222
5-Month Social Benchmark	Proficient	121	68.4%	56	31.6%	177
	Not Proficient	33	73.3%	12	26.7%	45
	Total	154	69.4%	68	30.6%	222
7-Month Social Benchmark	Proficient	143	70.1%	61	29.9%	204
	Not Proficient	16	66.7%	8	33.3%	24
	Total	159	69.7%	69	30.3%	228

Approximately 30% of students who were not compliant with AYP attendance requirements were not proficient in social skills at any of the benchmark checkpoints.

Research Question 4. How do kindergarten teachers perceive the effect of prekindergarten experiences on student achievement during the kindergarten year? To address this question, the following data was compiled and analyzed.

Literacy. Question 1 of a teacher survey asked kindergarten teachers to explain how they perceive the effect of prekindergarten experiences on student achievement in the area of literacy in the kindergarten classroom. Common responses to this question are summarized below.

Seven out of 10 teachers surveyed agreed that if children attend prekindergarten programs that heavily focus on literacy instruction, that program will have a very positive impact on literacy development and achievement. These teachers felt that if students were exposed to literacy rich experiences, such as being read to, talked to, asked questions, and taken on trips around the community, they will enter kindergarten with a larger vocabulary, better communication skills, and more prior knowledge to make connections in their literacy learning.

While these teachers agreed that prekindergarten experiences can have a positive impact on literacy achievement during the kindergarten year, Table 37 shows the results of an ANCOVA computed to determine whether or not there was a statistical significance between their students' prekindergarten participation and literacy achievement. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Table 37

ANCOVA for Literacy Means by Pre-K Participation

Dependent Variable: 7 Month Benchmark Literacy Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-K	.303	1	.303	3.127	.078	.014
Error	21.048	217	.097			
Total	130.701	220				
Corrected Total	23.018	219				

Note: a. R Squared = .086 (Adjusted R Squared = .077).

The results of the ANCOVA indicate that after 7 months of instruction there is not a statistical significance in literacy proficiency scores at $\alpha = .05$ between students who attended a prekindergarten program and students who did not attend prekindergarten: $F_{(1, 217)} = 3.127, p = 0.078$.

Figure 12 shows literacy means clustered on prekindergarten participation at the 3-month, 5-month, and 7-month benchmark checkpoints.

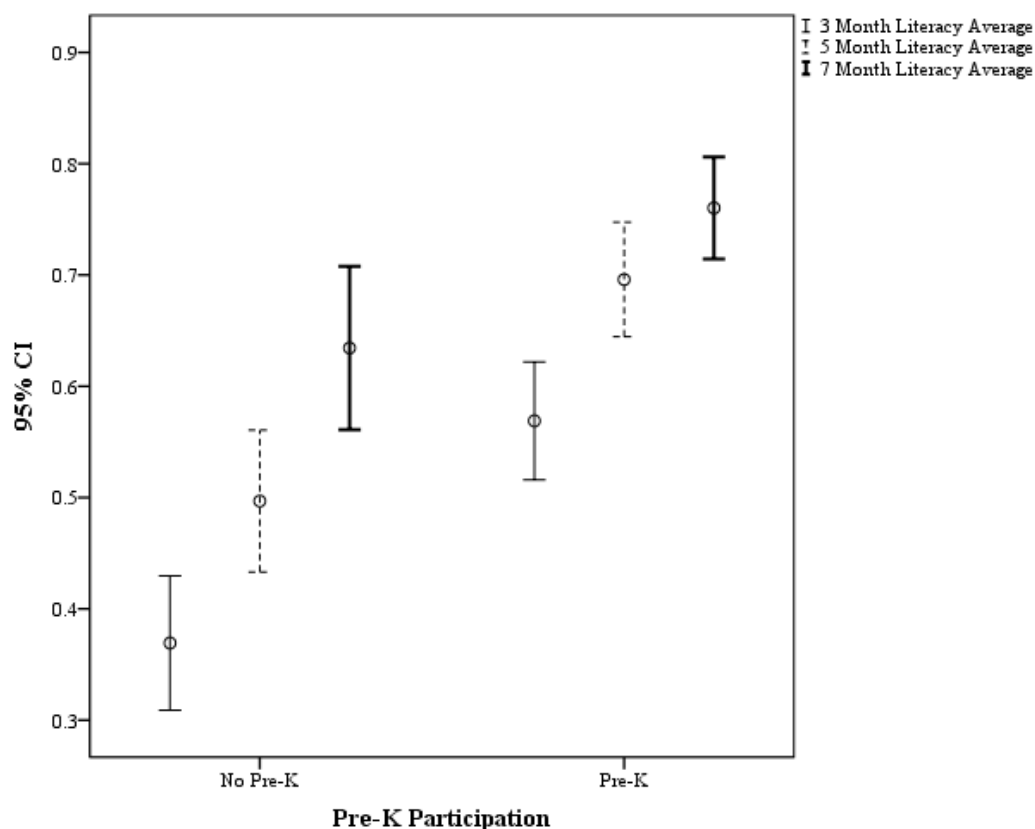


Figure 12. Literacy Means Clustered on Pre-K Participation

The data indicate that there is a significant difference in literacy proficiency between students who attended prekindergarten and those who did not at both the 3-month and 5-month benchmark checkpoints; however, there is not a significant difference between groups at the final 7-month benchmark checkpoint.

Math. Question 2 of a teacher survey asked kindergarten teachers to explain how they perceive the effect of prekindergarten experiences on student achievement in the area of math in the kindergarten classroom. Common responses to this question are summarized below.

Seven out of 10 teachers surveyed agreed that if children are exposed to high quality math instruction in prekindergarten programs, it will enable them to enter

kindergarten with an advantage above their peers who have not attended prekindergarten. These teachers felt that if students are exposed to counting, numbers, shapes, manipulatives, and various ways to play and learn with math during their preschool years, they will have a strong base knowledge in math skills and will be ready to learn new math in kindergarten.

While these teachers agreed that prekindergarten experiences can have a positive impact on math achievement during the kindergarten year, Table 38 shows the results of an ANCOVA computed to determine whether or not there was a statistical significance between their students' prekindergarten participation and math achievement. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Table 38

ANCOVA for Math Means by Pre-K Participation

Dependent Variable: 7 Month Benchmark Math Average						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-K	.464	1	.464	4.723	.031	.021
Error	21.494	219	.098			
Total	138.403	222				
Corrected Total	25.239	221				

Note: a. R Squared = .148 (Adjusted R Squared = .141).

The results of the ANCOVA indicate that after 7 months of instruction there is a statistical significance in math proficiency scores at $\alpha = .05$ between students who attended a prekindergarten program and students who did not attend prekindergarten: $F_{(1,$

$_{219}) = 4.723, p = 0.031$.

Figure 13 shows math means clustered on prekindergarten participation at the 3-month, 5-month, and 7-month benchmark checkpoints.

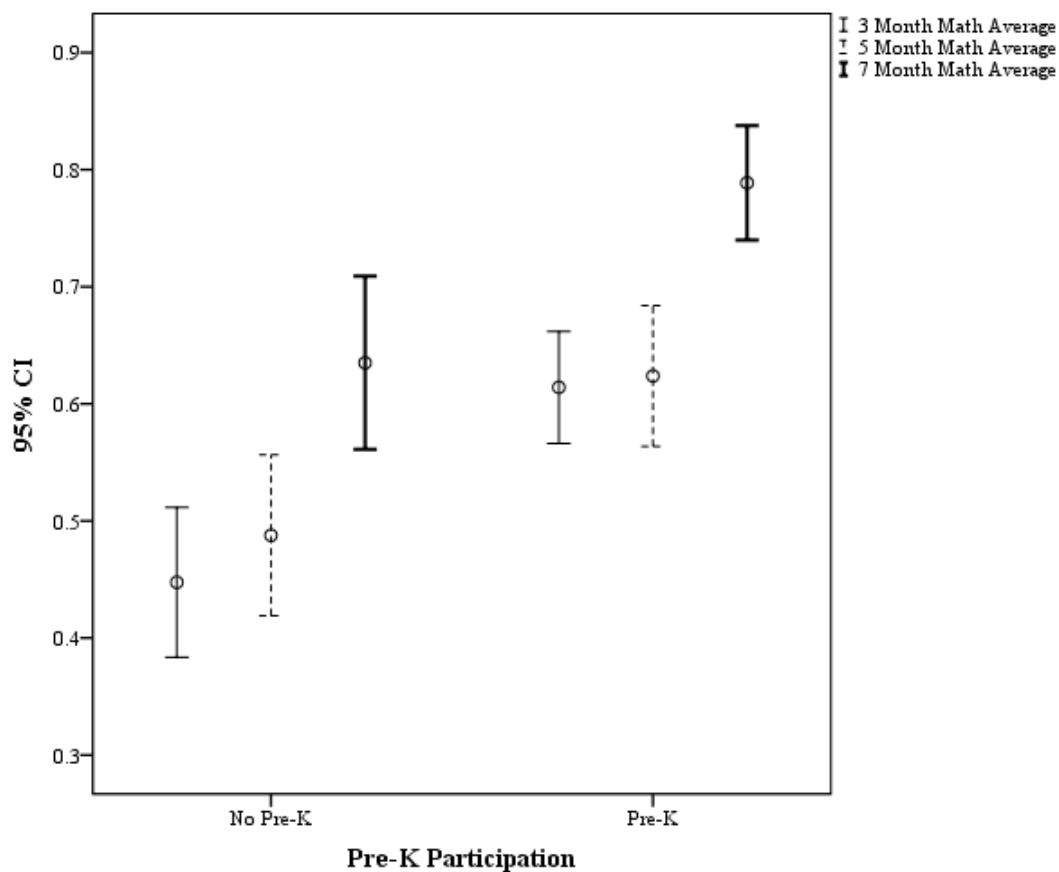


Figure 13. Math Means Clustered on Pre-K Participation

The data indicate that there is a significant difference in math proficiency scores at all three benchmark checkpoints of the school year, with students attending prekindergarten achieving significantly higher proficiency scores in math than their peers who did not attend prekindergarten.

Social development. Question 3 of a teacher survey asked kindergarten teachers to explain how they perceive the effect of prekindergarten experiences on student achievement in the area of social development in the kindergarten classroom. Common responses to this question are summarized below.

Seven out of 10 teachers surveyed agreed that any type of preschool experience will help children be more prepared to interact socially with their peers and their teachers. These teachers felt like children with prekindergarten experiences are able to get along better with others, work well in cooperative groups, follow routines and procedures in the classroom, and share, take turns, and follow directions more readily than their peers who have had no prekindergarten experience.

It was also noted that although prekindergarten can greatly aide in socially preparing students for school, three teachers felt that simply exposing children to various social opportunities throughout their preschool years can be just as beneficial as attending a structured prekindergarten program. These teachers felt that there are many children who enter school without prekindergarten experience that have still had many opportunities to develop their social skills due to active and enriching family experiences at home and around the community.

While these teachers agreed that prekindergarten experiences can have a positive impact on social development during the kindergarten year, Table 39 shows the results of an ANCOVA computed to determine whether or not there was a statistical significance between their students' prekindergarten participation and social development achievement. The results of the ANCOVA were computed by removing the variance in scores from the initial 3-month data checkpoint.

Table 39

ANCOVA for Social Development Means by Pre-K Participation

Dependent Variable: 7 Month Benchmark Social Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-K	.069	1	.069	3.401	.067	.018
Error	3.749	186	.020			
Total	170.429	189				
Corrected Total	4.667	188				

Note: a. R Squared = .197 (Adjusted R Squared = .188).

The results of the ANCOVA indicate that, after 7 months of instruction, there is not a statistical significance in social development proficiency scores at $\alpha = .05$ between students who attended a prekindergarten program and students who did not attend prekindergarten: $F_{(1, 186)} = 3.401, p = 0.067$.

Figure 14 shows social development means clustered on prekindergarten participation at the 3-month, 5-month, and 7-month benchmark checkpoints.

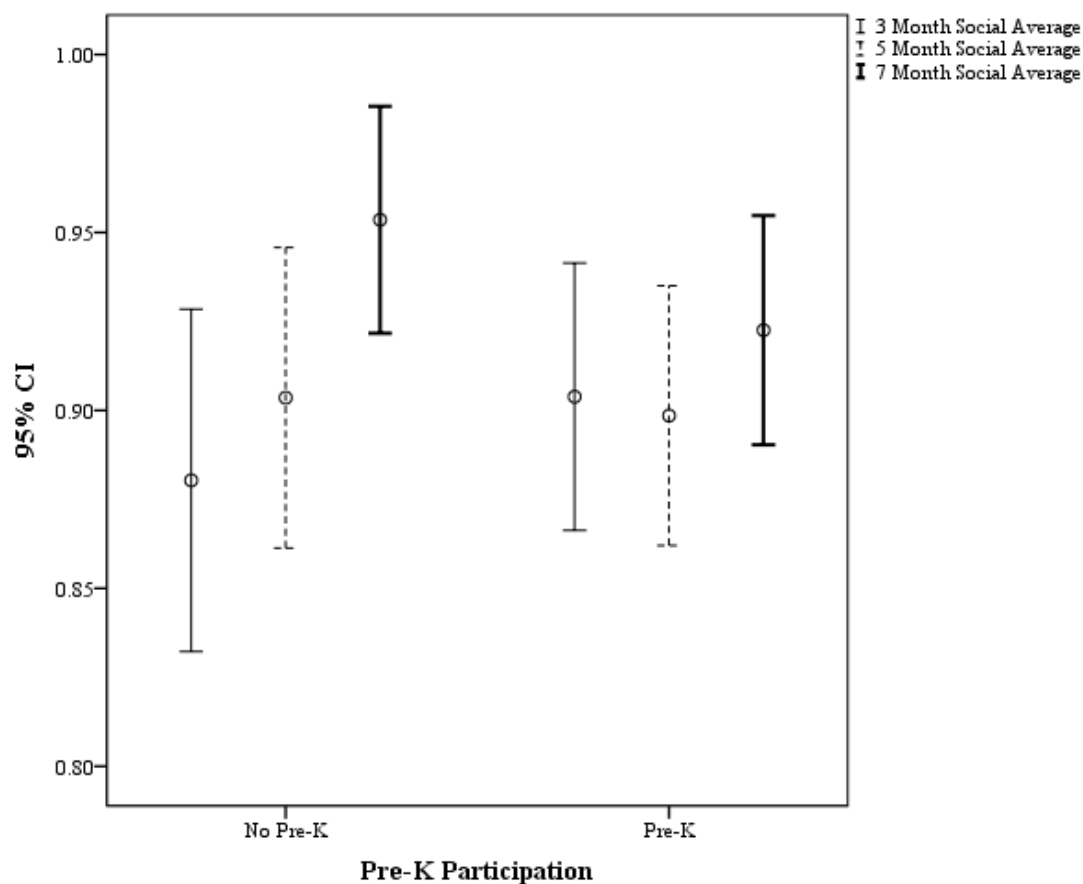


Figure 14. Social Development Means Clustered on Pre-K Participation

The data indicate that although there is not a significant difference at any of the benchmark checkpoints between students who attended prekindergarten and students who did not, students who did not attend prekindergarten had higher social development proficiency scores than their peers who attended prekindergarten at both the 3-month and 5-month benchmark checkpoints.

Additional Comments. Question 4 of a teacher survey asked kindergarten teachers to provide any additional comments they had concerning the effect of prekindergarten experiences on student achievement in the kindergarten classroom. Common responses to this question are summarized below.

Multiple teachers commented that they believed prekindergarten experiences provided a great advantage to children who are able to have those opportunities. They felt as if the number of children who are not afforded the opportunity to attend prekindergarten prior to starting school is unfortunate and has a negative effect on student achievement. These teachers perceive that all students should be given the chance to experience prekindergarten, regardless of their race or socioeconomic status, because of the positive difference it can make on both their academic and social performance in school.

Summary

When looking at kindergarten readiness, results suggest that children who attended a prekindergarten program prior to starting school scored significantly higher on the DIAL-4 readiness screening assessment than their peers who did not attend prekindergarten. In further analyzing the data, students who attended a prekindergarten program in the surrounding community scored significantly higher in the DIAL-4 readiness screening assessment than students who either attended the district prekindergarten program or did not attend prekindergarten.

When looking at subsequent kindergarten performance, results from this study show that after 7 months of classroom instruction students who were originally identified as being ready for school on the DIAL-4 readiness screening instrument did not score significantly higher in literacy, math, or social development than their peers who were identified as being delayed at the start of school. Additionally, students who attended a prekindergarten program prior to starting school did score significantly higher in math proficiency than their peers who did not attend prekindergarten, but there were no significant differences between the two groups for either literacy or social development.

Chapter 5: Discussion

Introduction

Research on preschool programs has shown that children receive many lasting educational benefits from attending preschool, and that preschool can in fact enhance children's success in school and even result in positive long-term academic and social benefits (Desimone et al., 2004); however, research also shows that there is a significant inequality between the social classes, races, and ethnic groups of the students who attend preschool versus the students who do not (Farkas & Hibel, 2008). This variance in attendance of preschool attendance means that for some children, opportunities to learn and develop prior to starting school are many, but for other children, the opportunities are much less and in some cases are completely nonexistent (Bowman et al., 2001). The purpose of this study was to examine the impact of preschool education on students' kindergarten readiness and subsequent kindergarten performance in a low socioeconomic primary school. The implications of findings will be organized by research question.

Implications of Findings

Research Question 1. What are the differences in mean scores on the Developmental Indicators for the Assessment of Learning (DIAL-4) school readiness screening between kindergarten students who have prekindergarten experience and those who do not?

This study sought to compare kindergarten readiness mean scores to prekindergarten experience to see if attending prekindergarten prior to starting school impacted student readiness scores as measured by the DIAL-4 school readiness screening instrument. In the past, school readiness scores of kindergarten students have been analyzed in order to determine whether or not school readiness is influenced by

participation in preschool programs prior to starting school, with results yielding that the students who attended some type of preschool program demonstrated statistically higher overall school readiness (Taylor et al., 2000). Results from the current study support this research. In this study, students who attended prekindergarten prior to starting school did achieve significantly higher school readiness scores on the DIAL-4 readiness assessment than their peers who did not attend prekindergarten, therefore implying that attending prekindergarten prior to starting school does have a positive effect on kindergarten readiness.

As shown in Table 11, results of an ANOVA for DIAL-4 scores by prekindergarten participation indicate a significant difference between the two groups at the $\alpha = .05$ level. Students who had prekindergarten experience scored significantly higher on the DIAL-4 school readiness screener than their peers who did not attend prekindergarten: $F_{(1, 169)} = 7.927, p = 0.005$. These results imply that students who attended a prekindergarten program are, statistically, more developmentally ready to start school than their peers who did not attend a prekindergarten program. While Costenbader et al. (2002) pointed out the fact that kindergarten screeners and readiness assessments can yield a large amount of beneficial information to teachers and parents about their child's readiness for school, no test can specifically answer whether or not a child is ready for school, nor can it predict exactly how a child will function and behave once placed in the regular school setting.

Further evaluation of this data indicates that female students achieved significantly higher kindergarten readiness scores than their male peers, which supports the notion reported by Rubin (1972) that "girls tend to enter school with greater readiness for school learning activities than boys of the same age" (p. 265). Figure 2 shows that

female students outperformed male students on the DIAL-4 school readiness screening assessment regardless of whether they attended prekindergarten or not, and results of an ANOVA in Table 8 show a significant difference between male and female DIAL-4 readiness scores at $\alpha = .05$ level: $F_{(1, 166)} = 8.168, p = 0.005$. Similarly, there was a significant difference between male and female students who attended prekindergarten prior to starting school, as shown in Figure 3. Results of an ANOVA in Table 9 indicate that females who attended prekindergarten achieved significantly higher school readiness scores at $\alpha = .05$ level than their male peers who also attended prekindergarten: $F_{(1, 100)} = 8.485, p = 0.004$.

Results from this study indicated that more than half of the students who entered kindergarten with no prekindergarten experience scored a low percentage of readiness on the DIAL-4 screening and were therefore predicted to have a potential delay in at least one of the following areas during their first year of school: motor development, concept knowledge development, and language development. McGill-Franzen (2006) makes it known that delays in children's development, learning, and general thought processes are certain to be expected because there are more than four million children attending kindergarten today and each of those children brings with them varying preconceptions and degrees of knowledge about the concepts that are taught and assessed in school. Therefore, even though there were students who attended a prekindergarten program who also scored a low percentage of readiness, nearly two-thirds of those students scored in the appropriate range to be considered developmentally ready for kindergarten in all three areas, and thus were identified as likely candidates to be the most ready for school and yield the highest proficiency scores throughout the school year.

Research Question 2. What are the differences in mean scores on the DIAL-4 school readiness screening among students who attended the prekindergarten program at the primary school, students who attended a different prekindergarten program in the surrounding community, and students who have no record of attending a prekindergarten program?

This study sought to compare kindergarten readiness scores to prekindergarten experiences prior to starting school, specifically looking at DIAL-4 school readiness screening scores for students who attended prekindergarten at the district program, students who attended prekindergarten somewhere in the surrounding community, and students who did not attend prekindergarten prior to starting school. Although there are many other factors that can affect a child's ability to be successful in school, the years before a child starts school are often seen as the most crucial time to intervene with young children and get an early start in preparing them for future school success (Pagani et al., 2006). However, the results of the current study support the fact that although prekindergarten experiences can make a positive impact on students' readiness for school, not all prekindergarten programs are capable of providing the same level of kindergarten preparation.

When comparing mean scores from the DIAL-4 school readiness screening between students who attended prekindergarten at the district program, students who attended prekindergarten somewhere in the surrounding community, and students who did not attend prekindergarten, the results show that, statistically, students who attended a prekindergarten program in the surrounding community were more developmentally ready to start school than both their peers who attended the district prekindergarten program and their peers who did not attend a prekindergarten program. Table 16 shows

results of an ANOVA that determined a significant difference in DIAL-4 readiness scores between the three groups of prekindergarten experience at $\alpha = .05$ level; therefore a Post Hoc Bonferonni was used to determine significance between the groups. Table 17 shows that students who attended a prekindergarten program in the surrounding community scored significantly higher on the DIAL-4 school readiness screener than their peers who either attended the district prekindergarten program or did not attend prekindergarten: $F_{(2, 167)} = 4.709, p = 0.010$.

These results suggest that the district prekindergarten program did not provide students with a significant advantage in kindergarten readiness over their peers who did not attend prekindergarten. Even though prekindergarten programs are designed to help build a strong foundation for school and hopefully increase student potential to be ready for school, these results imply that not all prekindergarten programs yield the same results. At the time of this study, the prekindergarten program in place at the district primary school was partially funded by the state of North Carolina as part of the *More at Four Prekindergarten Program for At-Risk Four-Year-Olds*. This program originated in 2001 as one of Governor Mike Easley's key educational campaigns and it was later backed by a court ruling stating that every school district should provide prekindergarten to all at-risk 4-year-olds in the state (Pre-K Now, 2011). According to the North Carolina Department of Public Instruction (NCDPI, 2011b), the *More at Four* program in North Carolina has ranked among the top prekindergarten programs in the nation for the past 6 consecutive years, and has helped to close the achievement gap by providing a critical learning year for our most at-risk preschoolers and kindergarten students.

Despite this recognition, students who attended the district prekindergarten program in the current study did not enter kindergarten more ready to learn than their

peers who had no prekindergarten experience, which brings into question both the reliability and capability of the district prekindergarten program to adequately prepare students for kindergarten. Research shows that finding the right balance between care and education is crucial to providing a meaningful preschool experience to children and aiding in their readiness for school (Rose, 2010). This preparation includes designing activities that will help foster children's language acquisition, enrich their vocabulary, develop early literacy and math skills, and promote social and emotional skills, all while maintaining a playful sense of excitement and imagination (Rose, 2010). When that does not happen, students can receive vastly different experiences depending on which programs they attend, which can then affect their ability to be successful when starting school. Results from the current study support this notion.

When looking at gender, female students outperformed male students on the DIAL-4 school readiness screening assessment regardless of whether they attended the district prekindergarten, a prekindergarten in the surrounding community, or did not attend prekindergarten, as shown in Figure 5. Additionally, there was a significant difference at $\alpha = .05$ level between male and female students who attended the district prekindergarten program prior to starting school. ANOVA results in Table 14 show that female students who attended the district prekindergarten scored significantly higher on the DIAL-4 readiness screener than their male peers who also attended the district prekindergarten program: $F_{(1, 53)} = 8.144, p = 0.006$. Eliot (2010) explained that as boys and girls progress through childhood, girls tend to spend more time talking, drawing, and role playing in relational ways with dolls and animals; whereas boys spend more time moving, building, and playing with active toys like trucks, blocks, and balls. The results of this study imply that the district program may offer more early learning experiences

that better accommodate girl interests and needs rather than boys, therefore allowing girls who attend the district prekindergarten program to achieve significantly higher school readiness scores and be better prepared to start kindergarten.

Research Question 3. How does the initial screening data compare to student data collected 3, 5, and 7 months into kindergarten as measured by district benchmark assessments in the areas of literacy, math, and social development?

Readiness. In recent years, kindergarten teachers everywhere have been forced to move away from the play and learn teaching method of the past and into a more standards-based curriculum that some educators actually believe hurries a child into academic development before they are truly ready for it (Litty & Hatch, 2006). Despite the many questions and concerns surrounding this new idea of developmentally inappropriate kindergarten instruction, kindergarten students are still expected to come to school ready and willing to learn, and they are expected to attain academic proficiency regardless of whether or not they are ready to so. This study sought to compare student achievement scores in literacy, math, and social development for kindergarten students in a low socioeconomic primary school, looking specifically at whether or not students were identified as developmentally ready to begin kindergarten or were identified as being delayed at the start of school, as well as whether or not they attended a prekindergarten program prior to starting school.

When comparing the total number of students proficient in literacy at each of the benchmark checkpoints to DIAL-4 school readiness scores, Figure 6 shows that there was a significant difference in proficiency scores at both the 3- and 5-month benchmark checkpoints between students who were originally identified as ready for school and students who were originally identified as delayed; however, there was not a significant

difference between the two groups at the final 7-month benchmark checkpoint. Table 19 shows results of an ANCOVA computed to determine significance in final literacy achievement and DIAL-4 readiness scores at $\alpha = .05$ level after removing the variance in scores from the initial 3-month data checkpoint. Students who were originally identified as being ready for school did not score significantly higher in final literacy proficiency than their peers who were originally identified as being delayed: $F_{(1, 168)} = .368, p = 0.545$.

These results imply that the DIAL-4 school readiness screener accurately predicted where students would enter school academically in the content area of literacy; however, students who entered school delayed were able to catch up to their peers and perform at the same literacy proficiency levels as students who had entered kindergarten ready to learn. These results imply that teachers played an important role in student literacy achievement as students were able to close the readiness gap due to appropriate literacy instruction being effectively taught in the classroom setting.

When comparing the total number of students proficient in math at each of the benchmark checkpoints to DIAL-4 school readiness scores, Figure 8 shows that there was a significant difference in proficiency scores at the 3-month benchmark checkpoint between students who were originally identified as ready for school and students who were originally identified as delayed; however, there was not a significant difference between the two groups at the 5-month or final 7-month benchmark checkpoints. Table 25 shows results of an ANCOVA computed to determine significance in final math achievement and DIAL-4 readiness scores at $\alpha = .05$ level after removing the variance in scores from the initial 3-month data checkpoint. Students who were originally identified as being ready for school did not score significantly higher in final math proficiency than

their peers who were originally identified as being delayed: $F_{(1, 168)} = .426, p = 0.515$.

These results imply that the DIAL-4 school readiness screener accurately predicted where students would enter school academically in the content area of math; however, students who entered school delayed were able to catch up to their peers and perform at the same math proficiency levels as students who had entered kindergarten ready to learn. These results imply that teachers played an important role in student math achievement as students were able to close the readiness gap due to appropriate math instruction being effectively taught in the classroom setting.

When comparing the total number of students proficient in social development at each of the benchmark checkpoints to DIAL-4 school readiness scores, Figure 10 shows that there was not a significant difference in proficiency scores at any of the three benchmark checkpoints between students who were originally identified as ready for school and students who were originally identified as delayed. Table 31 shows results of an ANCOVA computed to determine significance in final social development achievement and DIAL-4 readiness scores at $\alpha = .05$ level, after removing the variance in scores from the initial 3-month data checkpoint. Students who were originally identified as being ready for school did not score significantly higher in final social development proficiency than their peers who were originally identified as being delayed: $F_{(1, 157)} = .001, p = 0.977$.

These results imply that the DIAL-4 school readiness screener did not accurately predict where students would enter school in the content area of social development because students who were identified as being ready for school did not hold a significant advantage in social development over their peers who were identified as being delayed at the start of school. These results also imply that using a readiness screening score to

determine kindergarten readiness may pertain only to academic content areas and not to social development.

Overall, these results imply that scoring well on the DIAL-4 readiness screener and essentially being *ready* for kindergarten does prove to be an advantage at the start of the kindergarten year, but that advantage does not hold true throughout the remainder of the school year. When exposed to appropriate and consistent teacher instruction, students who entered kindergarten delayed were able to make sufficient progress throughout the school year to catch up to their peers who started kindergarten ready to learn. These data do not support research done by Augustyniak et al. (2004) that states, “although it is important for researchers to continue to refine practical applications of an ecological approach to readiness, to date, empirical methods have proven to be effective predictors of later school success” (p. 509). Results from this study indicate that the DIAL-4 scores were not effective predictors of subsequent academic success during the kindergarten year because students who were originally delayed made enough progress to be at the same proficiency levels as their *ready* peers in literacy, math, and social development.

Additionally, these results imply that the DIAL-4 screening instrument is not an accurate measure of social development readiness for kindergarten. According to Costenbader et al. (2000), there are different types of readiness assessments that can be administered to determine kindergarten readiness. Screening instruments often measure students’ gross and fine-motor coordination skills, memory skills, receptive and expressive language skills, and social-emotional development skills, while skill-oriented readiness assessments often measure the degree to which specific skills that are thought to be related to beginning kindergarten instruction have already been learned (Costenbader et al., 2000). The DIAL-4 readiness assessment is categorized as a skill-

oriented readiness assessment, which explains why it may have had more accurate predictions for literacy and math achievement and not for social development.

These results are particularly interesting to note because researchers Zeng and Zeng (2005) polled over 3,000 kindergarten teachers from around the United States to determine what they felt were the best indicators for overall school readiness, and they agreed on the following skills, all of which ended up more socially-driven expectations rather than academic: following directions, sitting still, paying attention, and not being disruptive in the classroom. This means that teachers' ideas of what qualifies students as *ready* for kindergarten can vary greatly, therefore making DIAL-4 scores not as all-inclusive as were originally thought.

Prekindergarten experience. When comparing the total number of students proficient in literacy at each of the benchmark checkpoints to prekindergarten experiences prior to starting school, Figure 7 shows that there was a significant difference in proficiency scores at both the 3- and 5-month benchmark checkpoints with students who attended a prekindergarten program in the surrounding community scoring significantly higher than students who did not attend prekindergarten; however, there was not a significant difference between any of the groups at the final 7-month benchmark checkpoint. Table 20 shows results of an ANCOVA computed to determine significance in final literacy achievement and prekindergarten experience at $\alpha = .05$ level after removing the variance in scores from the initial 3-month data checkpoint. There were no significant differences in literacy proficiency between students who attended the district prekindergarten, a prekindergarten in the surrounding community, or no prekindergarten at all: $F_{(2, 201)} = .278, p = 0.757$.

These results imply that attending a prekindergarten program in the surrounding

community gave students a significant advantage in literacy achievement at the beginning and the middle of the school year over students who entered school with no prekindergarten experience. Additionally, these results imply that attending the district prekindergarten did not provide an advantage in literacy achievement at any point in the school year over students who entered with no prekindergarten experience. Because there was no difference in literacy proficiency scores between any of the groups by the final benchmark checkpoint, these results also imply that teachers played an important role in student literacy achievement as students who were initially behind were able to close the gap due to appropriate literacy instruction being effectively taught in the classroom setting.

When comparing the total number of students proficient in math at each of the benchmark checkpoints to prekindergarten experiences prior to starting school, Figure 9 shows that there was a significant difference in proficiency scores at the 3-month benchmark checkpoint with students who attended a prekindergarten program in the surrounding community scoring significantly higher than students who did not attend prekindergarten; however, there was not a significant difference between any of the groups at the 5-month or final 7-month benchmark checkpoints. Table 24 shows results of an ANCOVA computed to determine significance in final math achievement and prekindergarten experience at the $\alpha = .05$ level after removing the variance in scores from the initial 3-month data checkpoint. There were no significant differences in math proficiency between students who attended the district prekindergarten, a prekindergarten in the surrounding community, or no prekindergarten at all: $F_{(2, 201)} = 1.575, p = 0.210$.

These results imply that attending a prekindergarten program in the surrounding community gave students a significant advantage in math achievement at the beginning

of the school year over students who entered school with no prekindergarten experience. Additionally, these results imply that attending the district prekindergarten did not provide an advantage in math achievement at any point in the school year over students who entered with no prekindergarten experience. Because there was not a difference in math proficiency scores between any of the groups by the final benchmark checkpoint, these results also imply that students who were initially behind were able to close the gap due to appropriate math instruction being effectively taught in the classroom setting.

When comparing the total number of students proficient in social development at each of the benchmark checkpoints to prekindergarten experiences prior to starting school, Figure 11 shows that there was not a significant difference in proficiency scores at any of the benchmark checkpoints among students who attended the district prekindergarten program, students who attended a prekindergarten program in the surrounding community, and students who did not attend prekindergarten; however, Figure 11 excludes the fact that the three groups are not normally distributed therefore it is not a true representation of the data. Table 30 shows results of an ANCOVA computed to determine significance in final social development achievement and prekindergarten experience at the $\alpha = .05$ level after removing the variance in scores from the initial 3-month data checkpoint. The results show a significant difference among the groups: $F_{(2, 182)} = 3.956, p = 0.021$. These results imply that attending a prekindergarten program, prior to starting school, gave students a significant advantage in social development achievement at the final 7-month benchmark checkpoint over their peers who did not attend prekindergarten, thus making social development the only content area with a significant difference present between the three groups at the final benchmark checkpoint.

Overall, these results imply that attending prekindergarten prior to starting school does not necessarily give students a significant academic advantage over their peers who did not attend kindergarten. While students who attended either the district prekindergarten program or a program in the surrounding community did score higher than students who did not attend prekindergarten, the mean differences were not significant enough to suggest that children who do not attend prekindergarten are at a severe disadvantage when they begin school. Yet, a majority of research available on prekindergarten and its effect on kindergarten student readiness and success suggests otherwise (Bowman et al., 2001), especially for students from low socioeconomic families (Gormley & Phillips, 2005). According to Bowman et al. (2001), quality preschool programs can help to not only meet children's basic needs and support their emotional guidance, but also motivate, instruct, and support their early learning and development. And for students from low socioeconomic families, preschool programs foster positive gains in language, cognitive skills, and motor skills (Gormley & Phillips, 2005).

Taking this information into account, it is important to note here that the results of this study do not imply that prekindergarten experiences cannot greatly benefit the children who attend them. Studies consistently show that even though few middle class children and almost no upper class children show any benefit from attending preschool, children from lower class families do seem to benefit from attending preschool programs (Fuller, 2007). Pairing this notion with the fact that over 90% of the kindergarten students used in this study came from low socioeconomic families and homes as determined by free and reduced school lunch status, it is very surprising to learn that prekindergarten experiences did not give these students a significant advantage over their peers with no

prekindergarten experience. Conversely, that does not mean that the students who attended prekindergarten prior to starting school did not gain important early learning skills and a strong foundation for future learning, because they very well may have.

Gender and attendance rates. When comparing literacy, math, and social development proficiency scores between genders, male students made the most progress at each benchmark checkpoint, but female students maintained higher proficiency scores and did not need to progress as much as male students did in order to achieve proficiency. Overall, more female than male students who were originally identified as being developmentally ready for school achieved proficiency in literacy and math, and these results align well with research from Eliot (2010) showing that over the last 40 years, girls have consistently outperformed boys in early childhood classrooms, specifically in the areas of reading and writing, because of the experiences they have had prior to starting school. Gurian and Stevens (2004) explained that gender gaps that exist in kindergarten classrooms are due to the fact that girls and boys have had such different opportunities to learn either at home or in prekindergarten classes prior to starting school.

Knowing these differences will be present, as they are in this study, King and Gurian (2006) suggested that teachers take extra time to address the gender gap in the kindergarten classroom by offering more purposeful reading and writing opportunities for boys and more hands-on learning opportunities for girls, addressing their weaknesses early on. It is not good practice to accept gender gaps that are present in early childhood classrooms today, nor to expect them; however, if they are present, as they are in this study, steps should be taken to reduce the gap and increase achievement for all students, regardless of their gender (King & Gurian, 2006).

When comparing attendance rates to student proficiency scores in literacy, math,

and social development, approximately 30% of students who were not compliant with AYP attendance expectations were also not proficient in any content area. These results imply that students who were excessively absent from school were unable to reach proficiency in literacy, math, or social development. This aligns directly to research by Chang and Romero (2008) that stated, “students have to be present and engaged in order to learn” (p. 1). This is precisely the issue in this study, because chronic absences mean that children are missing vital academic and social skills that are necessary for future learning, therefore every day missed is content missed that may or may not be regained (Chang & Romero, 2008).

Similar research done by Ready (2010) suggested that chronic absences for students with low socioeconomic status are even more detrimental to subsequent academic achievement than for children with higher socioeconomic status. Ready’s (2010) study found that the effects of good attendance on cognitive development were stronger for lower socioeconomic students, and that students with lower socioeconomic status actually made faster and higher gains than their peers when they maintained good attendance rates. With over 90% of the kindergarten students used in this study coming from low socioeconomic families and homes as determined by free and reduced school lunch status, these findings are key to the results of this study. They imply that low student proficiency scores may not have been a factor of student readiness or of prekindergarten experience, but simply a result of poor school attendance. If students had been present more often, they would have received more consistent teacher instruction and student proficiency scores in all three content areas may have increased simply with better school attendance.

Additional information from a study commissioned for Attendance Works (2011)

states that chronic absences in kindergarten may, in fact, erase many of the benefits of entering kindergarten with strong readiness skills. The study suggests that good attendance in the early grades is necessary to sustaining what has previously been learned, as well as adding new information to students' base knowledge, and that not doing so can negatively affect subsequent learning and academic achievement in all content areas. This may be the case for the nearly 30% of students who did not achieve proficiency in any content area at any benchmark checkpoint throughout the school year.

Research Question 4. How do kindergarten teachers perceive the effect of prekindergarten experiences on student achievement during the kindergarten year?

Rouse et al. (2005) made it known that what happens or does not happen to children early in life can have a profound impact on their later school achievement, specifically stating that “children who enter school not yet ready to learn, whether because of academic or emotional deficits, continue to have difficulties later in life” (p. 6). Similarly, a study completed by Pianta et al. (2007) reported that kindergarten teachers felt that for every two children that were ready for kindergarten, three children were not ready, specifically noting difficulties with academic skills, working with others, and following directions. Despite these readiness concerns, a study conducted by Zeng and Zeng (2005) reported that only 34.8% of kindergarten teachers felt that it was beneficial for preschool-aged children to receive literacy and math instruction before starting school. Results from the teacher survey in this study do not support these beliefs, as teachers felt that children should absolutely be introduced to literacy and math instruction prior to starting school.

Rose (2010) brought into question exactly what children should learn in preschools today, writing that “excellent preschool teaching requires the ability to

integrate pre-academic skills and social skills into children's imaginative play and chosen activities through extensive interaction and conversation as well as to construct a stimulating classroom environment" (pp. 203-204). The kindergarten teachers in this study agreed. Overall, teachers from this study felt that if children attend a high-quality prekindergarten program that focuses heavily on purposeful literacy instruction, math instruction, and social development skills, they would see many positive benefits in student achievement once those children enter kindergarten.

Litty and Hatch (2006) made it known that, compared to years past, today's kindergartens are "more rigorous, teaching methods are more direct, and expectations for academic achievement are much higher" (p. 204). In fact, it is common procedure in kindergarten classrooms of today to routinely assess kindergarten students on their proficiency of certain taught objectives and learning standards throughout the school year, pushing them to prove their learning in areas that were previously thought of as too difficult for a kindergartener to master (Lord, 2005). Based on this knowledge, it is obvious to see why kindergarten teachers want students to be prepared to learn and why kindergarten students need to have a solid base knowledge of early literacy behaviors, early math skills, and basic social development when they enter the classroom.

Aligning with these beliefs, McGill-Franzen (2006) makes it known that in the kindergarten classrooms of today, teachers seek to develop many different aspects of literacy within their students, including a strong concept of print awareness, a deep knowledge of alphabet letters and sounds, a strong speaking and listening vocabulary, a deep sense of phonemic awareness skills, and a solid base knowledge of all that it takes to become an emergent and fluent reader and writer. Results from the teacher survey in this study align well with this research, as teachers stressed the importance of exposing

and engaging students in similar literacy-rich experiences in order to better prepare them for the literacy expectations within the kindergarten classroom. They felt that students needed to be read to, talked to, questioned, and taken on trips around the community so as to develop larger vocabularies, strengthen communication skills, and build more prior knowledge about different topics that would later assist in making deeper personal connections within literacy learning. The kindergarten teachers felt that if students had these types of literacy opportunities prior to starting school, they would be able to achieve higher academic achievement in kindergarten.

Nutbrown (2006) described current kindergarten math expectations in the same way, stating that kindergarten students are required to use higher order thinking skills in order to develop the math skills necessary to be considered proficient in kindergarten, which include counting, sorting objects by particular traits, matching sets and numbers, seeking and creating patterns, making connections between sets and numbers, recognizing relationships between numbers, identifying and working with shapes, understanding space and measurement, and understanding simple addition and subtraction concepts. Results from the teacher survey also aligned well with this research, as teachers stressed the importance of exposing students to various counting activities, written numbers, shapes, manipulatives, and other diverse ways to play and learn through math prior to starting school. The kindergarten teachers felt that if students had these types of math opportunities prior to starting school, they would be able to achieve higher academic achievement in kindergarten.

When looking at current social expectations for kindergarten students, Allen and Marotz (2010) explained that kindergarten students of today are expected to be able to manage their emotions by taking turns, sharing, making friends, talking about how they

feel, controlling their impulses, self-regulating their behaviors, following simple, multi-step directions, and striving to please others. As was with literacy and math, results from the teacher survey aligned well with this research, as teachers stressed the importance of encouraging students to get along with others, work in cooperative groups, follow routines and procedures, share, take turns, and follow directions.

It is important to note that although kindergarten teachers agreed that these social development skills are necessary to help prepare children for kindergarten, they also agreed that these skills, as compared to literacy and math, do not necessarily have to be taught in a prekindergarten setting. Based on the survey results, some teachers felt that there are children who enter school without prekindergarten experience who have still had many opportunities to develop their social skills due to enriching family experiences at home and around the community. These children, regardless of whether they attended prekindergarten or not, will be able to bring a lot of knowledge into their kindergarten classrooms because of the strong influence their families and their interactions with other people and environments before coming to school has had on their lives (Maxwell & Clifford, 2004).

With this understanding, however, Farkas and Hibel (2008) also pointed out that there are large amounts of children who do not attend prekindergarten and do not have any other opportunities to learn and develop at home, as is the case with most children who grow up in low socioeconomic families or poverty-stricken homes. These researchers concluded that, overall, the effects of having a low-income drastically change the family factors involved in child rearing, such as having low vocabulary usage in the home, experiencing family distress and disorder in the home, and displaying harsh and ineffective parenting in the home (Farkas & Hibel, 2008). Because these factors are

vastly different than the cognitive skill instruction that happens within warm and responsive parenting styles of higher-income families, children from low-income families are often not as developmentally ready for kindergarten as their peers, which can then negatively affect their performance throughout the kindergarten year (Farkas & Hibel, 2008).

Survey results from this study indicated that teachers agreed with these beliefs about socioeconomic status. Working at a school where more than 90% of students have a free or reduced lunch status, teachers commented that they felt that prekindergarten experiences were very beneficial to children who were afforded that opportunity. Unfortunately, they felt as if there are too many children in the world today, and especially in their school community, who are not given an opportunity to experience prekindergarten and would therefore never reap the potential benefits simply because they cannot afford it. Research collected by Sadowski (2006) supports this notion as it shows that on average, less than half of children from families with incomes below \$50,000 attend preschool while nearly 80% of children from families with incomes over \$100,000 attend.

In general, because children between the ages of two and five are much more capable learners than was previously thought, and “their acquisition of linguistic, mathematical, and other skills relevant to school readiness is influenced (and can be improved) by their educational and development experiences during those years” (Bowman et al., 2001, p. 28), research strongly supports the fact that all children need to be given an opportunity to attend preschool and foster that development to its fullest potential. And although the teachers surveyed in this study would agree with this statement and do believe that prekindergarten makes an impact on subsequent literacy,

math, and social development achievement in kindergarten, additional data from this study proves otherwise in two of the three content areas.

In Table 37, results of an ANCOVA computed to determine significance in final literacy achievement showed that after removing the variance in scores from the initial 3-month data checkpoint there was no statistical difference in literacy proficiency at $\alpha = .05$ between students who attended prekindergarten prior to starting school and those who did not: $F_{(1, 217)} = 3.127, p = 0.078$. Although Figure 12 shows that students who attended a prekindergarten program scored significantly higher in literacy proficiency than their peers who did not attend prekindergarten at both the 3- and 5-month benchmark checkpoints, there was not a difference between groups by the 7-month benchmark checkpoint. These results imply that, even though students without any prekindergarten experience started the year off significantly behind their peers in literacy proficiency, they were able to catch up by the end of the year due to appropriate literacy instruction being effectively taught in the classroom setting.

Similar results were found in Table 39 where results of an ANCOVA computed to determine significance in final social development achievement showed that, after removing the variance in scores from the initial 3-month data checkpoint, there was no statistical difference in social development proficiency at $\alpha = .05$ between students who attended prekindergarten prior to starting school and those who did not: $F_{(1, 186)} = 3.401, p = 0.067$. In fact, Figure 14 shows that there was not a significant difference in social development proficiency between students who had attended prekindergarten prior to starting school and those who had not at any of the three benchmark checkpoints. These results imply that, socially, students with prekindergarten experience did not hold any significant advantage at any point in the school year over their peers who did not attend

prekindergarten.

Results from an ANCOVA computed to determine significance in final math achievement yielded different results, as shown in Table 38. These ANCOVA results showed that, after removing the variance in scores from the initial 3-month data checkpoint, there was a statistical difference in math proficiency at $\alpha = .05$ between students who attended prekindergarten prior to starting school and those who did not. Students who attended prekindergarten scored significantly higher in final math proficiency than their peers who did not attend prekindergarten: $F_{(1, 219)} = 4.723, p = 0.031$. In fact, Figure 13 shows that students who attended prekindergarten scored significantly higher than their peers who did not attend prekindergarten at all three of the benchmark checkpoints throughout the school year. These results imply that early intervention in the area of math by way of a prekindergarten program may have had a significant impact on children's subsequent math learning in kindergarten.

Final Conclusions

Taking all of the results from this study into account, it can be implied that the individual classroom teachers were the one factor that remained consistent for these students who entered kindergarten with such varying degrees of school readiness and prekindergarten experiences, and that the teacher in fact had the most positive impact on student proficiency scores for literacy, math, and social development than any other variable. Research compiled by the National Center for Education Statistics (NCES, 1993) reported that 96% of public school kindergarten teachers felt that the three most important qualities for kindergarten readiness are for a child to be physically healthy, rested and well-nourished; be able to communicate needs, wants, and thoughts verbally; and be enthusiastic and curious in approaching new activities (NCES, 1993). These

qualities do not require students to have already mastered specific literacy, math, or social skills because, according to the NCES, kindergarten teachers should not expect their students to enter school already knowing what it is their job to teach them.

Most kindergarten teachers in the NCES (1993) study agreed that school readiness is something that cannot be pushed because it comes as children grow and mature, and those same teachers also believed that children come to school to get the things that they need, not what they already have. This notion is a strong one that could potentially affect kindergarten teachers everywhere as demands for more prekindergarten opportunities continue to rise even though, in the eyes of a teacher and in the results of this study, prekindergarten experiences may not be the most important variable for success in kindergarten (NCES, 1993). The results of this study certainly support this research, as most children who entered without prekindergarten experience and with delayed school readiness scores were still able to reach the proficiency levels of their peers. The teachers in this study should feel proud of that accomplishment.

Limitations

There were several limitations to this study. First, when looking at school readiness scores and subsequent academic achievement, data used in this study did not take into account students who were previously identified as having a learning disability, being developmentally delayed, or already receiving additional exceptional children (EC) services within the school. Depending on the severity of additional needs and delays for previously identified students, there may have been certain student data that should not have been included in the data analysis when trying to determine how prekindergarten experience and initial school readiness screening scores compared to subsequent academic achievement in a regular classroom setting.

Secondly, when discussing prekindergarten experiences, this study does not look specifically at the prekindergarten programs that children attended in the surrounding community. The many prekindergarten experiences that are available to students in the surrounding community can vary greatly in what types of programs they offer, how many students they serve, whether they follow a curriculum or not, and whether they consider themselves an actual *preschool* or just a *daycare*. If these programs had been divided more carefully into specific groups based on their individual qualities and services rather than being placed all together into one broad category of *prekindergarten in the surrounding community*, the results would have represented more specific prekindergarten groups and may have greatly differed.

One final limitation comes from the new Common Core State Standards that the kindergarten teachers used in their classrooms this year. With this being the first full school year where the new national standards were implemented, the Common Core State Standards required kindergarten teachers to completely revamp their teaching strategies, daily lessons, and learning activities to accommodate the new standards. This proved to be a challenge for teachers as they were very accustomed to teaching the previous North Carolina Standard Course of Study, so teaching efforts may not have been as strong or as clear for students. This may have negatively influenced the literacy, math, and social development student proficiency scores that were gathered for the purpose of this study.

Recommendations

The data presented in this study show a difference in proficiency scores between students who attended the district prekindergarten program and students who attended a different prekindergarten program in the surrounding community. While all students who attended some type of prekindergarten program had higher proficiency scores than

students who did not attend prekindergarten prior to starting school, the students attending the district prekindergarten program had lower proficiency scores in literacy, math, and social development when compared to their peers who attended a different prekindergarten program in the community.

Knowing this, further study is recommended to include income class and specific demographics of the students who attend both the district prekindergarten and the other prekindergarten programs within the surrounding community to determine whether or not demographics and income class are possible contributing factors to this type of study. Further study on exactly what types of prekindergarten programs are attended in the surrounding community and how their course of study is either similar or different from the district prekindergarten program is also recommended. If the program of study in the district prekindergarten is vastly different than that of the programs within the surrounding community, that would be an important variable to include in future studies.

Additionally, further study is recommended to evaluate the students involved in this study again in several years to compare whether or not the data results remain consistent as the students progress through elementary, middle, and even high school. School readiness scores and prekindergarten experience did not significantly influence student achievement in kindergarten, but those results could greatly vary in future studies of the same children using the same variables that were included in this study.

One final recommendation, based on the DIAL-4 results that were collected and analyzed in this study, would be for the school district involved in this study to look at selecting a different kindergarten readiness screening instrument to use on their upcoming kindergarten students in order to determine overall kindergarten readiness. In this study, the DIAL-4 screener did not accurately predict whether the students were

developmentally ready for kindergarten or whether they would enter school with potential delays because the DIAL-4 mean scores did not align with actual student proficiency scores in literacy, math, or social development. There are a variety of other kindergarten screening instruments available to determine upcoming kindergarten students' developmental readiness for school, and the district may want to look into a more reliable measure for their future students.

Summary

When looking at kindergarten readiness, results suggest that children who attended a prekindergarten program prior to starting school scored significantly higher on the DIAL-4 readiness screening assessment than their peers who did not attend prekindergarten. In further analyzing the data, students who attended a prekindergarten program in the surrounding community scored significantly higher in the DIAL-4 readiness screening assessment than students who either attended the district prekindergarten program or did not attend prekindergarten. Richard Coley, author of a recently published report from the Educational Testing Service (ETS) entitled *An Uneven Start: Indicators for Inequality in School Readiness*, specifically noted that “rationale for interest in school readiness lies in the evidence from various studies that greater school readiness is associated with subsequent school success” (Fuller, 2007, pp. 34-35). Yet results from this study show that after 7 months of classroom instruction students who were originally identified as being ready for school on the DIAL-4 readiness screening instrument did not score significantly higher in literacy, math, or social development than their peers who were identified as being delayed at the start of school.

While research by Bowman et al. (2001) suggested that the potential advantages young children will have when early education is taken seriously during a child's

preschool years far outweigh the disadvantages of early intervention, the results of this study support that notion only in the content area of math. When looking at subsequent kindergarten performance, students who attended a prekindergarten program prior to starting school did score significantly higher in math proficiency than their peers who did not attend prekindergarten, but there were no significant differences between the two groups for either literacy or social development.

References

- Agostin, T. M., & Bain, S. K. (1997). Predicting early school success with developmental and social skills screeners. *Psychology in the Schools*, 34(3), 219-228.
- Allen, K. E., & Marotz, L. R. (2010). *Developmental profiles: Pre-birth through twelve*. Belmont, CA: Wadsworth.
- Attendance Works. (2011). *Attendance in early elementary grades: Association with student characteristics, school readiness, and third grade outcomes*. Retrieved from the Applied Survey Research website:
<http://www.attendanceworks.org/wordpress/wp-content/uploads/2010/04/ASR-Mini-Report-Attendance-Readiness-and-Third-Grade-Outcomes-7-8-11.pdf>
- Augustyniak, K. M., Cook-Cottone, C. P., & Calabrese, N. (2004). The predictive validity of the Phelps Kindergarten Readiness Scale. *Psychology in the Schools*, 41(5), 509-516.
- Barnett, W. S., Epstein, D. J., Carolan, M. E., Fitzgerald, J., Ackerman, D. J., & Friedman, A. H. (2010). *The state of preschool 2010*. Retrieved from
<http://nieer.org/yearbook/>
- Bennett-Armistead, V. S., Duke, N. K., & Moses, A. M. (2005). *Literacy and the youngest learner: Best practices for educators of children from birth to 5*. New York, NY: Scholastic, Inc.
- Besharov, D. J., & Call, D. M. (2008). The new kindergarten: The case for universal pre-kindergarten isn't as strong as it seems. *The Wilson Quarterly*, 28-35.
- Boulard, G. (2010). The common good? *State Legislatures*, 36(8), 12-16.
- Bowman, B. T., Donovan, M. S., & Burns, M. S. (Eds.). (2001). *Eager to learn: Educating our preschoolers*. Washington, DC: National Academy Press.
- Boyd, H. (2006). Gender differences: Kindergarten. *Education.com*. Retrieved from
http://www.education.com/magazine/article/Gender_Kindergarten/
- Bruce, N., & Cairone, K. B. (2011). *Socially strong, emotionally secure: 50 activities to promote resilience in young children*. Silver Spring, MD: Gryphon House, Inc.
- Bryant, D., Clifford, R., Early, D., Howes, C., & Pianta, R. (2002). *What is prekindergarten? Preliminary findings from a six-state prekindergarten study*. Seminar conducted at the meeting of the National Association for the Education of Young Children, New York, NY.
- Cassidy, D. J., Mims, S., Rucker, L., & Boone, S. (2003). Emergent curriculum and kindergarten readiness. *Childhood Education*, 79, 194-199.

- Cavalluzzo, L., Clinton, Y., Holian, L., Marr, L., & Taylor L. (2009). West Virginia's progress towards universal prekindergarten (Issues and Answers Report No. 070). Retrieved from the Regional Educational Laboratory Appalachia website: <http://ies.ed.gov/ncee/edlabs>
- Chang, H., & Romero, M. (2008). *Present, engaged, and accounted for: The critical importance of addressing chronic absence in the early grades*. Retrieved from the National Center for Children in Poverty website: http://www.nccp.org/publications/pub_837.html
- Clifford, R. M., Barbarin, O., Chang, F., Early, D., Bryant, D., Howes, C., Burchinal, M., & Pianta, R. (2005). What is pre-kindergarten? Characteristics of public pre-kindergarten programs. *Applied Developmental Science, 9*(3), 126-143.
- Conley, D. T. (2011). Building on the common core. *Educational Leadership, 68*(6), 16-20.
- Copple, C., & Bredekamp, S. (Eds.). (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8*. Washington, DC: NAEYC.
- Costenbader, V., Rohrer, A. M., & DiFonzo, N. (2000). Kindergarten screening: A survey of current practice. *Psychology in the Schools, 37*(4), 323-332.
- Desimone, L., Payne, B., Fedoravicius, N., Henrich, C. C., & Finn-Stevenson, M. (2004). Comprehensive school reform: An implementation study of preschool programs in elementary schools. *The Elementary School Journal, 104*(5), 369-389.
- Dockett, S., & Perry, B. (2001). Starting school: Effective transitions. *Early Childhood Education Research and Practice, 3*(2). Retrieved from <http://ecrp.uiuc.edu/v3n2/dockett.html>
- Douglas, K., & Montiel, E. (2008). *Learning to read in American elementary school classrooms: Poverty and the acquisition of reading skills*. Retrieved from the International Reading Association website: www.reading.org/Libraries/SRII/ECLS-K_SES_Report.sflb.ashx
- Eliot, L. (2010). The myth of pink and blue brains. *Educational Leadership, 68*(3), 32-36.
- Elkind, D. (1987). *Miseducation: Preschoolers at risk*. New York, NY: Alfred A. Knopf, Inc.
- Elkind, D. (2001). *The hurried child: Growing up too fast too soon*. (3d ed.). Cambridge, MA: De Capo Press.

- Farkas, G., & Hibel, J. (2008). Being unready for school: Factors affecting risk and resilience. In A. Booth & A. Crouter (Eds.), *Disparities in school readiness* (pp.3-30). New York, NY: Taylor & Francis Group, LLC.
- Fuller, B. (2007). *Standardized childhood: The political and cultural struggle over early education*. Stanford, CA: Stanford University Press.
- Ginn, J. (2010). States find common (core) ground. *Capitol Ideas*, 53(5), 15-17.
- Goldstein, L. S. (2008). Teaching the standards is developmentally appropriate practice: Strategies for incorporating the sociopolitical dimension of DAP in early childhood teaching. *Early Childhood Education*, 36, 253-260.
- Gormley, W., & Phillips D. (2005). The effects of universal pre-k in Oklahoma: Research highlights and policy implications. *Policy Studies Journal*, 33(1), 65-82.
- Gurian, M., & Stevens, K. (2004). With boys and girls in mind. *Educational Leadership*, 62(3), 21-26.
- Justice, L. M., Turnbull, K. L. P., Bowles, R. P., & Skibbe, L. E. (2009). School readiness among children with varying histories of language difficulties. *Developmental Psychology*, 45(2), 460-476.
- Kim, J., Murdock, T., & Choi, D. (2005). Investigation of parents' beliefs about readiness for kindergarten: An examination of National Household Education Survey. *Educational Research Quarterly*, 29(2), 3-17.
- King, K., & Gurian, M. (2006). Teaching to the minds of boys. *Educational Leadership*, 64(1), 56-61.
- Litty, C. G., & Hatch, J. A. (2006). Hurry up and wait: Rethinking special education identification in kindergarten. *Early Childhood Education Journal*, 33(4), 203-208.
- Lord, J. (2005). *Building a foundation for success by getting every child ready for school*. Atlanta, GA: Southern Regional Education Board.
- Mardell, C., & Goldenberg, D. S. (2011). *DIAL-4 Manual*. (4th ed.). Bloomington, MN: NCS Pearson, Inc.
- Mashburn, A. J., & Henry, G. T. (2004). Assessing school readiness: Validity and bias in preschool and kindergarten teachers' ratings. *Educational Measurement: Issues and Practices*, 16-30.
- Maxwell, K. L., & Clifford, R. M. (2004). School readiness assessment. *Young Children*, 59(1). Retrieved from <http://www.naeyc.org/files/yc/file/200401/Maxwell.pdf>

- McGill-Franzen, A. (2006). *Kindergarten literacy: Matching assessment and instruction in kindergarten*. New York, NY: Scholastic, Inc.
- Mehaffi, K. E., & McCall, R. B. (2002). *Kindergarten readiness: An overview of issues and assessment*. (Special Report). Retrieved from University of Pittsburgh Office of Child Development website: <http://www.ocd.pitt.edu/Files/PDF/sr2002-06.pdf>
- Miller, E., & Almon, J. (2009). *Crisis in the kindergarten: Why children need to play in school*. College Park, MD: Alliance for Childhood.
- National Association for Education of Young Children. (2009). *School readiness: A position statement of the National Association for Education of Young Children*. Retrieved from <http://www.naeyc.org/files/naeyc/file/positions/PSREADY98.PDF>
- National Education Goals Report. (1999). *Building a nation of learners*. Retrieved from <http://govinfo.library.unt.edu/negp/reports/99rpt.pdf>
- National Governors Association Center for Best Practices. (2010). *Common core state standards: Kindergarten*. Retrieved from <http://www.corestandards.org/the-standards>
- NC Ready Schools Initiative. (2011). *History and background*. Retrieved from <http://www.ncreadyschools.org/index.html>
- NC School Readiness Assessment. (2002). *NC's school readiness definition*. Retrieved from <http://www.fpg.unc.edu/~SchoolReadiness/>
- North Carolina Department of Public Instruction. (2011a). *Adequately yearly progress in North Carolina*. Retrieved from <http://www.dpi.state.nc.us/nclb/abcayp/overview/ayp>
- North Carolina Department of Public Instruction. (2011b). *More at four named one of the nation's top pre-k programs for sixth consecutive year*. Retrieved from <http://www.ncpublicschools.org/newsroom/news/2010-11/20110426-01>
- National Center for Education Statistics. (1993). *Public school kindergarten teachers' views on children's readiness for school*. Retrieved from National Center for Education Statistics website: <http://nces.ed.gov/surveys/frss/publications/93410/index.asp?sectionid=4>
- North Carolina State Board of Education. (2007). *The power of K: North Carolina position statement of on kindergartens of the 21st century*. Retrieved from http://prim.ncwiseowl.org/UserFiles/Servers/Server_4501234/File/position_statement_with_dateFINAL.pdf

- Nutbrown, C. (2006). *Threads of thinking: Young children learning and the role of early education*. (3d ed.). London, England: Sage Publications LTD.
- Pagani, L. S., Jalbert, J., & Girard, A. (2006). Does preschool enrichment of precursors to arithmetic influence intuitive knowledge of number in low income children? *Early Childhood Education Journal*, 34(2), 133-146).
- Phillips, V., & Wong, C. (2010). Tying together the common core of standards, instruction, and assessments. *Kappan*, 91(5), 37-42.
- Pianta, R. C., & Howes, C. (Eds.). (2009). *The promise of pre-k*. Baltimore, MD: Paul H. Brooks Publishing Co.
- Pianta, R. C., Cox, M. J., & Snow, K. L. (Eds.). (2007). *School readiness and the transition to kindergarten in the era of accountability*. Baltimore, MD: Paul H. Brooks Publishing Co.
- Pre-K Now. (2011). North Carolina State Profile retrieved from <http://www.preknow.org/resource/profiles/northcarolina.cfm>
- Rawson, M., & Rose, M. (2006). *Ready to learn: From birth to school readiness*. (2d ed.). Gloucestershire, UK: Hawthorne Press.
- Ready, D. D. (2010). Socioeconomic disadvantage, school attendance, and early cognitive development: The differential effects of school exposure. *Sociology of Education*, 83, 271-286.
- Riley, D., San Juan, R. R., Klinkner, J., & Ramminger, A. (2008). *Social and emotional development: Connecting science and practice in early childhood settings*. St. Paul, MN: Redleaf Press.
- Rimm-Kaufman, S. E., Pianta, R. C., & Cox, M. J. (2000). Teachers' judgments of problems in the transition to kindergarten. *Early Childhood Research Quarterly*, 15(2), 147-166.
- Rose, E. (2010). *The promise of preschool: From head start to universal pre-kindergarten*. New York, NY: Oxford University Press, Inc.
- Rouse, C., Brooks-Gunn, J., & McLanahan, S. (2005). School readiness: Closing racial and ethnic gaps. *The Future of Children*, 15(1), 1-195.
- Rubin, R. (1972). Sex differences in effects of kindergarten attendance on development of school readiness and language skills. *The Elementary School Journal*, 72(5), 265-274.
- Sadowski, M. (2006). The school readiness gap. *Harvard Education Letter*, 22(4). Retrieved from <http://www.hepg.org/hel/article/307>

- Schiller, P. (1999). *Start smart: Building brain power in the early years*. Silver Spring, MD: Gryphon House, Inc.
- Sprenger, M. (2008). *The developing brain: Birth to age eight*. Thousand Oaks, CA: Corwin Press.
- Taylor, K. K., Gibbs, A. S., & Slate, J. R. (2000). Preschool attendance and kindergarten readiness. *Early Childhood Education Journal*, 27(3), 191-195.
- Umek, L. M., Kranjc, S., Fekonja, U., & Bajc, K. (2008). The effect of preschool on children's school readiness. *Early Child Development and Care*, 178(6), 569-588.
- Wildenger, L. K., McIntyre, L. L., Fiese, B. F., & Eckert, T. L. (2008). Children's daily routines during kindergarten transition. *Early Childhood Education Journal*, 36(1), 69-74.
- Zeng, G., & Zeng, L. (2005). Developmentally and culturally inappropriate practice in US kindergarten programs: Prevalence, severity, and its relationship with teacher and administrator qualifications. *Education*, 125(4), 706-724.
- Zigler, E., & Styfco, S. J. (2004). *The head start debates*. Baltimore, MD: Paul H. Brookes Publishing Co.
- Zill, N., Collins, M., West, J., & Hausken, E. G. (1995). Approaching kindergarten: A look at preschoolers in the United States. *Young Children*, 51(1), 35-38.

Appendix A

Research Request and Consent

Research Request LetterJuly 5th, 2011

Hello [REDACTED],

My name is Kelsey Carroll and I have been working on completing my doctoral internship with [REDACTED] for the past nine months or so. I have thoroughly enjoyed working with her as she has been so helpful in giving me support and guidance in the areas of curriculum and instruction. Your school district really is fantastic, which I know you are aware of, and I just wanted to thank you personally for allowing me the opportunity to work in your district over the last school year.

With that said, I was hoping that you would allow me another opportunity to work in your district this coming school year. I am currently employed as a kindergarten teacher for [REDACTED], but I am also entering my third year of study for my Doctor of Education degree at Gardner-Webb University. In this program, I am required to complete a research dissertation as the final stage of my degree, which I have begun working on this summer. I would very much like to complete my dissertation work within your school district this school year, with your permission of course, because I feel that my study will go along great with work that is already being done in your district.

The purpose of my study is to research the impact of preschool education on student's kindergarten readiness skills, specifically looking at the impact it has on students from low-income families. After talking with [REDACTED], she informed me that this is a topic that is already being looked at within your district, and with both the recent and impending budget cuts on the horizon, I think that this research would be interesting for your pre-kindergarten program coordinators, kindergarten teachers, and administrators at [REDACTED] Primary School to have. For my study, I would analyze data that is already being collected by your kindergarten teachers and district lead teachers for the 2011-2012. I would need access to DIAL-4 kindergarten screening scores, as well as quarterly benchmark scores for all kindergarten students within your district, as I will be comparing these data to preschool attendance data. I would not use any student names, teacher names, or other information that you would like me to withhold from the written dissertation, and I assure you that you will be able to review and approve anything and everything that I complete if you would like to so.

Again, I would very much like to do this in your school district and I wanted to make sure that I have your approval before I start working heavily on my proposal. Please feel free to call me at [REDACTED] or email me at kcarroll@[REDACTED].k12.nc.us if you have any questions about this process or my intentions. I am excited to hear back from you soon and thank you so much for your time.

Sincerely,

Kelsey Carroll

Email Correspondence Requesting Superintendent Consent to Research

From: Kelsey Carroll [mailto:KCarroll@[REDACTED].k12.nc.us]
Sent: Tuesday, July 05, 2011 9:10 AM
To: [REDACTED]
Subject: From Kelsey Carroll

Hello [REDACTED]! I have attached here a letter concerning some research I would like to do in your school system. Please read over it and let me know your thoughts. I would be happy to come in and discuss this with you.
 Thank you and hope you had an enjoyable holiday weekend!

Sincerely,
Mrs. Kelsey Carroll
 Kindergarten Teacher, NBCT

[REDACTED]

Response Email Granting Superintendent Consent to Research

From: "[REDACTED]" <[REDACTED]@[REDACTED].k12.nc.us>
Date: July 5, 2011 1:32:09 PM EDT
To: Kelsey Carroll <KCarroll@[REDACTED].k12.nc.us>
Subject: RE: From Kelsey Carroll

Kelsey, I have no problem with you doing your research in our system. I would ask you to run it by the new principal at the primary school – [REDACTED]. If she has no problem with the research, then I would give it the green light.

Take Care,
 [REDACTED]

Email Correspondence Requesting Principal Consent to Research

From: Kelsey Carroll [mailto:KCarroll@[REDACTED].k12.nc.us]
Sent: Thursday, July 07, 2011 6:44 PM
To: [REDACTED]
Subject: Research Request from Kelsey Carroll

Hello [REDACTED]! My name is Kelsey Carroll and I have been interning with [REDACTED] for the past school year to earn hours for my doctoral internship. I am currently enrolled at Gardner-Webb University and am beginning work on my dissertation. I have visited [REDACTED] Primary School and am extremely interested in doing my dissertation research at your school.

I have been working with [REDACTED] on getting some preliminary things together, and I have gotten permission and approval from [REDACTED] already as well, he just asked that I speak with you about the study I would like to conduct and get your approval also.

I have attached the letter that I first sent to [REDACTED] explaining my study and what I would like to do, and I would be more than happy to come in and meet with you to discuss everything further if you like. Please just let me know if you have any questions or would like to speak with me in person about this. I really appreciate your time and consideration of this matter.

Thank you and I look forward to hearing from you soon!

Sincerely,

Mrs. Kelsey Carroll

Kindergarten Teacher, NBCT

kcarroll@davidson.k12.nc.us

Response Email Correspondence Granting Principal Consent to Research

From: "[REDACTED]" <[REDACTED]@[REDACTED].k12.nc.us>

Date: July 7, 2011 9:37:47 PM EDT

To: Kelsey Carroll <KCarroll@[REDACTED].k12.nc.us>

Subject: RE: Research Request from Kelsey Carroll

Kelsey,

Let's set up a time to meet and discuss the details. Call [REDACTED] so she can schedule an appointment. I am excited about you doing your research at our school and am happy to do all that we can to help you.

Thanks,

[REDACTED]

Appendix B

Kindergarten Common Core State Standards for English Language Arts

Common Core State Standards for English Language Arts

English Language Arts Standards >> Reading: Literature >> Kindergarten

Key Ideas and Details

1. With prompting and support, ask and answer questions about key details in a text.
2. With prompting and support, retell familiar stories, including key details.
3. With prompting and support, identify characters, settings, and major events in a story.

Craft and Structure

4. Ask and answer questions about unknown words in a text.
5. Recognize common types of texts (e.g., storybooks, poems).
6. With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.

Integration of Knowledge and Ideas

7. With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).
8. (Not applicable to literature)
9. With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.

Range of Reading and Level of Text Complexity

10. Actively engage in group reading activities with purpose and understanding.

English Language Arts Standards >> Reading: Informational Text >> Kindergarten

Key Ideas and Details

1. With prompting and support, ask and answer questions about key details in a text.
2. With prompting and support, identify the main topic and retell key details of a text.
3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.

Craft and Structure

4. With prompting and support, ask and answer questions about unknown words in a text.
5. Identify the front cover, back cover, and title page of a book.
6. Name the author and illustrator of a text and define the role of each in presenting the ideas or information in a text.

Integration of Knowledge and Ideas

7. With prompting and support, describe the relationship between illustrations and the text in which they appear (e.g., what person, place, thing, or idea in the text an illustration depicts).
8. With prompting and support, identify the reasons an author gives to support points in a text.
9. With prompting and support, identify basic similarities in and differences between two texts on the same topic (e.g., in illustrations, descriptions, or procedures).

Range of Reading and Level of Text Complexity

10. Actively engage in group reading activities with purpose and understanding.

English Language Arts Standards >> Reading: Foundational Skills >> Kindergarten

Print Concepts

1. Demonstrate understanding of the organization and basic features of print.
 - Follow words from left to right, top to bottom, and page by page.
 - Recognize that spoken words are represented in written language by specific sequences of letters.
 - Understand that words are separated by spaces in print.
 - Recognize and name all upper- and lowercase letters of the alphabet.

Phonological Awareness

2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
 - Recognize and produce rhyming words.
 - Count, pronounce, blend, and segment syllables in spoken words.
 - Blend and segment onsets and rimes of single-syllable spoken words.

- Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words.¹ (This does not include CVCs ending with /l/, /r/, or /x/.)
- Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.

Phonics and Word Recognition

3. Know and apply grade-level phonics and word analysis skills in decoding words.
 - Demonstrate basic knowledge of letter-sound correspondences by producing the primary or most frequent sound for each consonant.
 - Associate the long and short sounds with the common spellings (graphemes) for the five major vowels.
 - Read common high-frequency words by sight (e.g., *the, of, to, you, she, my, is, are, do, does*).
 - Distinguish between similarly spelled words by identifying the sounds of the letters that differ.

Fluency

4. Read emergent-reader texts with purpose and understanding.

¹ Words, syllables, or phonemes written in /slashes/ refer to their pronunciation or phonology. Thus, /CVC/ is a word with three phonemes regardless of the number of letters in the spelling of the word.

English Language Arts Standards >> Speaking & Listening >> Kindergarten

Comprehension and Collaboration

1. Participate in collaborative conversations with diverse partners about *kindergarten topics and texts* with peers and adults in small and larger groups.
 - Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).
 - Continue a conversation through multiple exchanges.
2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Presentation of Knowledge and Ideas

4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
5. Add drawings or other visual displays to descriptions as desired to provide additional detail.
6. Speak audibly and express thoughts, feelings, and ideas clearly.

English Language Arts Standards >> Language >> Kindergarten

Conventions of Standard English

1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
 - Print many upper- and lowercase letters.
 - Use frequently occurring nouns and verbs.
 - Form regular plural nouns orally by adding /s/ or /es/ (e.g., *dog, dogs; wish, wishes*).
 - Understand and use question words (interrogatives) (e.g., *who, what, where, when, why, how*).
 - Use the most frequently occurring prepositions (e.g., *to, from, in, out, on, off, for, of, by, with*).
 - Produce and expand complete sentences in shared language activities.
2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
 - Capitalize the first word in a sentence and the pronoun I.
 - Recognize and name end punctuation.
 - Write a letter or letters for most consonant and short-vowel sounds (phonemes).
 - Spell simple words phonetically, drawing on knowledge of sound-letter relationships.

Knowledge of Language

3. (Begins in grade 2)

Vocabulary Acquisition and Use

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
 - Identify new meanings for familiar words and apply them accurately (e.g., knowing *duck* is a bird and learning the verb *to duck*).
 - Use the most frequently occurring inflections and affixes (e.g., *-ed, -s, re-, un-, pre-, -ful, -less*) as a clue to the meaning of an unknown word.

5. With guidance and support from adults, explore word relationships and nuances in word meanings.
 - Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.
 - Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).
 - Identify real-life connections between words and their use (e.g., note places at school that are colorful).
 - Distinguish shades of meaning among verbs describing the same general action (e.g., *walk*, *march*, *strut*, *prance*) by acting out the meanings.
6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.

Appendix C

Kindergarten Common Core State Standards for Math

Kindergarten Common Core State Standards for Math

Mathematics >> Kindergarten >> Counting & Cardinality

Know number names and the count sequence.

1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Count to tell the number of objects.

4. Understand the relationship between numbers and quantities; connect counting to cardinality.
 - When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
 - Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
 - Understand that each successive number name refers to a quantity that is one larger.
5. Count to answer “how many?” questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Compare numbers.

6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.¹
7. Compare two numbers between 1 and 10 presented as written numerals.

¹ Include groups with up to ten objects.

Mathematics >> Kindergarten >> Operations & Algebraic Thinking

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

1. Represent addition and subtraction with objects, fingers, mental images, drawings¹, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).
4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
5. Fluently add and subtract within 5.

¹ Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Mathematics >> Kindergarten >> Number & Operations in Base Ten

Work with numbers 11-19 to gain foundations for place value.

1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Mathematics >> Kindergarten >> Measurement & Data

Describe and compare measurable attributes.

1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Classify objects and count the number of objects in each category.

3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.¹

¹ Limit category counts to be less than or equal to 10.

Mathematics >> Kindergarten >> Geometry

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
2. Correctly name shapes regardless of their orientations or overall size.
3. Identify shapes as two-dimensional (lying in a plane, “flat”) or three-dimensional (“solid”).

Analyze, compare, create, and compose shapes.

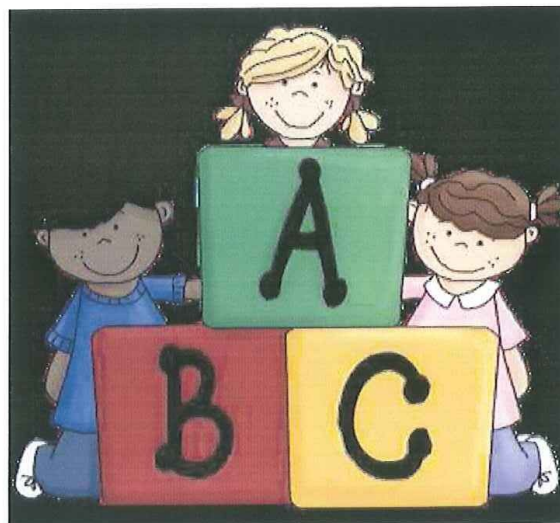
4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/“corners”) and other attributes (e.g., having sides of equal length).
5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6. Compose simple shapes to form larger shapes. *For example, “Can you join these two triangles with full sides touching to make a rectangle?”*

Appendix D

Kindergarten Literacy Assessment Pack

KINDERGARTEN

Literacy Assessment Pack



Student Name: _____

Kindergarten Letter Recognition Recording Sheet

Letter	B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	Letter	B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
A						a					
B						b					
C						c					
D						d					
E						e					
F						f					
G						g					
H						h					
I						i					
J						j					
K						k					
L						l					
M						m					
N						n					
O						o					
P						p					
Q						q					
R						r					
S						s					
T						t					
U						u					
V						v					
W						w					
X						x					
Y						y					
Z						z					

Student Scores:

1st Quarter: Correct Letters ____/52

2nd Quarter: Correct Letters ____/52

3rd Quarter: Correct Letters ____/52

4th Quarter: Correct Letters ____/52

Meets Expectations:

1st Quarter: Correct Letters 14/52

2nd Quarter: Correct Letters 28/52

3rd Quarter: Correct Letters 42/52

4th Quarter: Correct Letters 52/52

Kindergarten Sound Recording Sheet

Letter	B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Aa					
Bb					
Cc					
Dd					
Ee					
Ff					
Gg					
Hh					
Ii					
Jj					
Kk					
Ll					
Mm					
N					
Oo					
Pp					
Qq					
Rr					
Ss					
Tt					
Uu					
Vv					
Ww					
Xx					
Yy					
Zz					

Student Scores:

1st Quarter: Correct Letters _____/26

2nd Quarter: Correct Letters _____/26

3rd Quarter: Correct Letters _____/26

4th Quarter: Correct Letters _____/26

Meets Expectations:

1st Quarter: Correct Letters 7/26

2nd Quarter: Correct Letters 14/26

3rd Quarter: Correct Letters 21/26

4th Quarter: Correct Letters 26/26

Kindergarten Sight Words

Student Recognizes:	B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
no					
so					
go					
is					
on					
it					
can					
in					
do					
me					
up					
an					
you					
am					
the					
and					
we					
my					
he					
like					
to					
at					
see					
a					
I					

Student Scores:

1st Quarter: Correct Words ____/25

2nd Quarter: Correct Words ____/25

3rd Quarter: Correct Words ____/25

4th Quarter: Correct Words ____/25

Meets Expectations:

1st Quarter: Correct Words 5/25

2nd Quarter: Correct Words 12/25

3rd Quarter: Correct Words 20/25

4th Quarter: Correct Words 25/25

Print Language Concepts Assessment

Place a piece of paper with the student's first and last name on the table. Say the following:	Date	Date	Date	Date
1. Read your first and last name				
2. Point to your first name				
3. Point to your last name				
4. Point to first letter in your first name				
5. Point to last letter in your first name				
6. Tell me the name of each letter as I point. (Identified all letters in first name correctly)				
7. (Cover first name) Point to a capital /uppercase letter				
8. Tell me the name of each letter as I point. (Identified all letters in last name correctly)				
Total Score				

Level of control	No/Little	Some	Gaining	Control
Total Score	0-2	3-5	6-7	8

- Show student Dog on Grass (final page)

Say "This is a story about a dog. We will read it together" Point to each word in the first line as you read, "My dog is brown. Now you point as you read it"	Date	Date	Date	Date
1. Point to the second line, but not to each word. Say: This says "My dog is on the grass." Point to each word as you read it". One-to-one match with one-syllable words				
2. Point to the third line, but not to each word and say: This says "My dog is sitting" Point to each word as you read it" One-to-one match with one and two syllable words				
3. Cover the first two lines with a sheet of paper. Say: Now I am going to ask you to point to certain words and letters. Point to the word "is"				
4. What letter does <i>is</i> end with?				
5. What letter does <i>sitting</i> end with?				
6. What is the first letter in the word <i>dog</i> ?				
7. What sound does <i>dog</i> begin with?				
8. What sound does <i>dog</i> end with?				
Total Score				

Level of control	No/Little	Some	Gaining	Control
Total Score	0-2	3-5	6-7	8

Phonological Awareness Skills Test (PAST)

Concept of Spoken Word (1st Qtr)

Tell the students you are going to play a game with words and colored chips. Use the sentence, " *This is my dog*" as an example. As you say each word of the sentence, push a colored chip forward-one chip per word. Then ask the child to do it. Once the student understands the skill, read each sentence to the student and ask the child to repeat the sentence while pushing one chip for each word. Ask the student how many words are in the sentence. Put a check in the box to the right of the sentence if the child does it correctly.

		Date	Date	Date	Date
Can you swim?	(3)				
My cat is hungry	(4)				
She needs milk money.	(4)				
Here is my house.	(4)				
I like to read books.	(5)				
Yesterday it snowed.	(3)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Rhyme Recognition (1st Qtr)

Tell the child that two words that sound alike at the end, such as *mat* and *rat*, are rhyming words. Ask if *hit* and *kit* rhyme (yes). Then ask if *chair* and *boy* rhyme (no). If the child appears to grasp the skill, do the same for each of the following pairs of words. Put a check in the box to the right of the pair if the child answers correctly.

		Date	Date	Date	Date
cake/lake	(Yes)				
tree/bee	(Yes)				
grass/grow	(No)				
bear/pair	(Yes)				
funny/bunny	(Yes)				
down/dog	(No)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Rhyme Completion (2nd Qtr)

Tell the child that you are going to say a poem but need help finishing it. Read the following example and ask the child to help you complete the poem with a rhyming word. *I like to walk, I like to hike, I like to ride my big blue _____.* The child should say "bike." If the child seems to grasp the skill, do the same for the following items. Put a check in the box to the right if the child answers correctly.

		Date	Date	Date	Date
The big bald eagle likes to fly	(sky)				
So very high up in the _____.					
Our teacher said to sit up straight	(eight)				
Then asked us to count to _____.					
I saw some grapes, a whole big bunch.	(lunch)				
I think I'll eat them for my _____.					
The tree outside my room is tall.	(fall)				
I saw the leaves about to _____.					
My mother's ring is very old.	(gold)				
It's made of silver and of _____.					
My cold is bad and getting worse.	(nurse)				
My teacher said to see the _____.					

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Rhyme Production (2nd Qtr)

Tell the child that you are going to say a word. The student is to tell you a word that rhymes with it. The answer can be a real word or a nonsense word. Ask the child to tell you a word that rhymes with *sit*. Possible answers include *bit, fit, mit, pit, dit, jit*. Put a check in the box to the right if the child answers correctly. Write down the child's answers on the line provided.

		Date	Date	Date	Date
man	_____				
lake	_____				
top	_____				
me	_____				
dark	_____				
candy	_____				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Syllable Blending (2nd Qtr)

Tell the child you are going to say a word in funny way. The job of the student is to put the parts together and say the whole word. Give these examples, pausing between syllables: *out - side (outside)*, *ro - bot (robot)*. Have the child say the sample words normally. Then do the following words and put a check in the box to the right if the child says them correctly.

	Date	Date	Date	Date		Date	Date	Date	Date
zip - per					black-bird				
rain - bow					up - set				
pop-corn					can - dy				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Syllable Segmentation (3rd Qtr)

Tell the student that you are going to say a word and then break it into parts, or syllables. First say, "rainbow." Then clap out the two parts in rainbow while saying each part. Then push up a chip as you say each syllable. Read each of the following words, and ask the child to push up a chip while saying each syllable. It is not necessary to clap the syllables again unless the skill needs to be re-taught. Put a check in the box to the right if the child does it correctly.

	Date	Date	Date	Date		Date	Date	Date	Date
attic (2)					terrific (3)				
basket (2)					sometimes (2)				
bathroom (2)					helicopter (4)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Syllable Deletion (3rd Qtr)

Tell the student you are going to play a game with words where one part of the word is left out. For example, *sunshine* without *shine* is *sun*. Ask the child to say *airline* without *air*. The child should say, "line." Using the words below, tell the child the syllable to leave off. Use this sentence structure: "Say (down)town without down." Put a check in the box to the right if the student deletes the correct syllable.

(down)town town
(in)side side
for(get) for
bas(ket) bas
af(ter) af
(skate)board board

Date	Date	Date	Date

Total

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Isolation of Initial Sound (3rd Qtr)

Tell the child you are going to say a word and he is to tell you the first sound of that word. Ask the child what the first sound is in the word *top*. The child should say /t/. Do the same with the words below and put a check in the box to the right if the child says the first sound correctly.

	Date	Date	Date	Date
goat (/g/)				
nest (/n/)				
farm (/f/)				

	Date	Date	Date	Date
apple (/a/)				
dock (/d/)				
sheep (/sh/)				

Total

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Isolation of Final Sound (4th Qtr)

Tell the child you are going to say a word. The student is to tell you the last sound in the word. Ask the child what the last sound is in the word *pot*. The child should say /t/. Do the same with the words below and put a check in the box to the right if the child says the sound correctly.

	Date	Date	Date	Date
trick (/k/)				
man (/n/)				
still (/l/)				

	Date	Date	Date	Date
rug (/g/)				
flame (/m/)				
ship (/sh/)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Blending - Onset and Rime (4th Qtr)

Tell the student that you are going to say some words in a funny way. The job of the student is to put the parts together and say the whole word. Do these examples by segmenting each word into onset and rime. Then have the child say the whole word blended together: /m/ /op/ is *mop*; /n/ /est/ is *nest*. Put a check in the box to the right if the child says the whole word correctly.

	Date	Date	Date	Date
/s/ /un/ (sun)				
/p/ /ig/ (pig)				
/b/ /us/ (bus)				

	Date	Date	Date	Date
/f/ /ish/ (fish)				
/ch/ /op/ (chop)				
/sp/ /ill/ (spill)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Blending - All Phonemes (4th Qtr)

Tell the student that you are going to separate all the sounds in a word. The student is to say the whole word. Do these examples by segmenting each sound and having the student say the whole word; for example, /s/ /i/ /t/ is *sit*, and /s/ /t/ /o/ /p/ is *stop*. Read each word in segmented fashion. Put a check in the box to the right if the child says the whole word correctly.

	Date	Date	Date	Date		Date	Date	Date	Date
/m/ /e/ (me)					/m/ /u/ /s/ /t/ (must)				
/b/ /e/ /d/ (bed)					/sh/ /o/ /p/ (shop)				
/h/ /a/ /t/ (hat)					/p/ /l/ /a/ /n/ /t/ (plant)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Segmentation (4th Qtr)

Tell the student that you're going to play a game with all the sounds in the words below. As an example, show the students the three sounds in *dime*. Push up a chip for each sound you say - /d/ /i/ /m/. Ask the child to try it with the word *hat*. Read each of the following words and ask the student to push up a chip for each sound. Put a check in the box to the right if the child does it correctly.

	Date	Date	Date	Date		Date	Date	Date	Date
in (2)					ship (3)				
at (2)					sock (3)				
name (3)					chin (3)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Deletion of Initial Sound (4th Qtr)

Tell the child you will be playing a word game where the beginning sound of a word is left off. For example *bed* without the /b/ is *ed*. Ask the child to say *fan* without /f/. The answer is *an*. Read each word below and tell the child the beginning sound to leave off. Put a check in the box to the right if the child does it correctly.

	Date	Date	Date	Date		Date	Date	Date	Date
/s/un (un)					/n/eck (eck)				
/p/ig (ig)					/b/at (at)				
/m/op (op)					/t/ape (ape)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Deletion of Final Sound (4th Qtr)

Tell the child that in this word game, the final sound of a word is left off. For example, *goat* without /t/ is *go*. Ask the child to say *meat* without /t/. The answer is *me*. Read each word and tell the child the ending sound to leave off. Put a check in the box to the right if the child says the whole word correctly.

	Date	Date	Date	Date		Date	Date	Date	Date
ro/d/e (row)					sea/t/ (sea)				
trai/n/ (tray)					ba/k/e (bay)				
grou/p/ (grew)					in /ch/ (in)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Adding Phonemes (4th Qtr)

Tell the child that you are going to add a sound to the beginning of a word to make a new word. For example, when /f/ is added to *an* you get *fan*. Ask the child to say /at/. Ask what you get when you add /m/. The child should say, "mat". Ask the child to do the same with the rest of the words below. Put a check in the box to the right if the child says the whole word correctly.

	Date	Date	Date	Date		Date	Date	Date	Date
Say it. Now add /f/ (fit)					Say ink. Now add /s/ (sink)				
Say ice. Now add /n/ (nice)					Say in. Now add /ch/ (chin)				
Say end. Now add /b/ (bend)					Say top. Now add /s/ (stop)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Phoneme Substitution (4th Qtr)

Tell the child you will be playing a very different game with sounds of words. You are going to ask her to take off the first sound of a word and replace it with another sound. Example: Replace the first sound in pain with /m/. The new word is mail. Ask the child to replace the first sound in top with /h/. The word is hop. Ask the child to do the same with the rest of these words. If the child answers correctly, put a check in the box to the right.

	Date	Date	Date	Date
Replace the first sound in man with /k/ (can)				
Replace the first sound in pig with /d/ (dig)				
Replace the first sound in sack with /t/ (tack)				
Replace the first sound in well with /f/ (fell)				
Replace the first sound in bed with /r/ (red)				
Replace the first sound in shop with /ch/ (chop)				

Total _____

3/6 = Frustration level-Stop testing; reassess after instruction

5/6 = Mastery (Mastery over two consecutive assessments = No longer need to assess this skill)

Copy the following pages and laminate for durability. These will be used to assess letter identification, letter sound identification, word wall words, and print language concepts.

Recognizing Capital Letters

O	A	X	B
S	C	E	T
K	P	I	D
M	L	R	Z
N	F	W	H
U	G	Y	Q
J	V		

Recognizing Lowercase Letters

o	a	x	b
s	c	e	t
k	p	i	d
m	l	r	z
n	f	w	h
u	g	y	q
j	v		

Recognizing Word Wall Words

no so go is

on it can in

do me up an

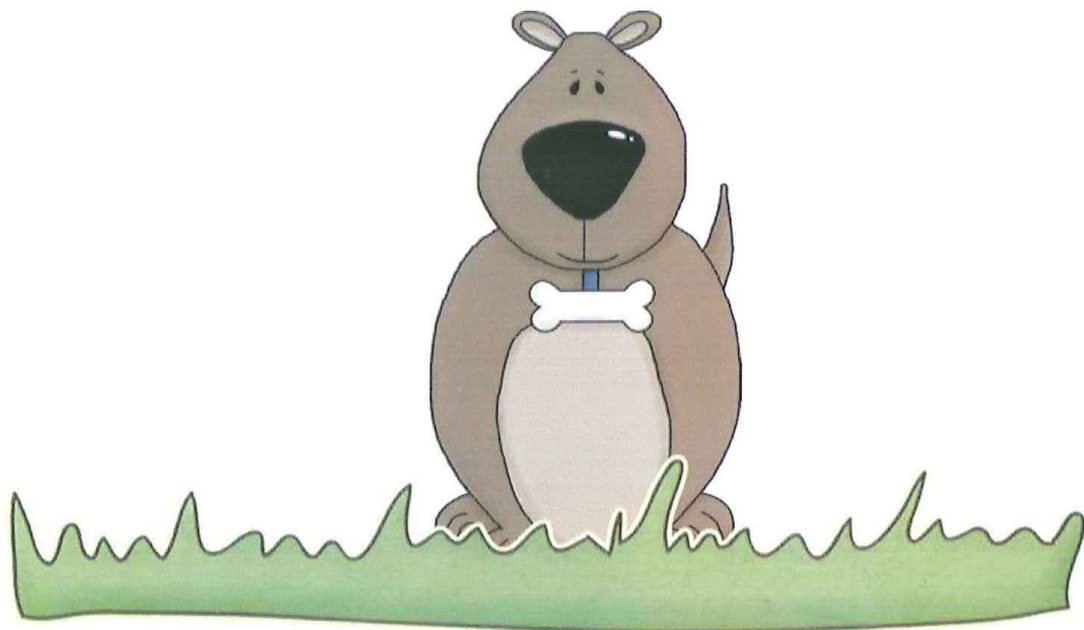
you am the and

we my he

like to at

see a I

Print Language Concepts



My dog is brown.

My dog is on the grass.

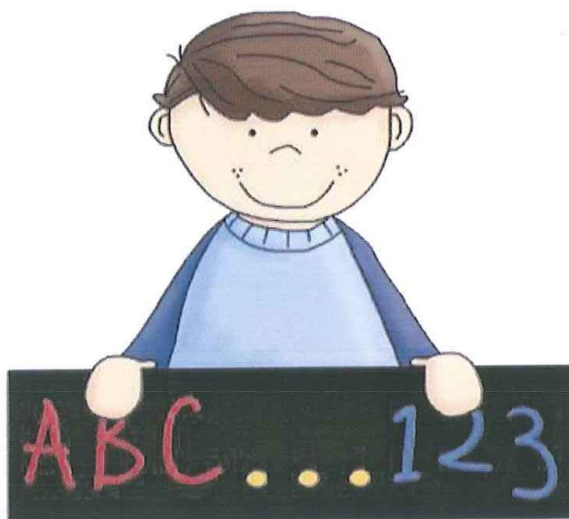
My dog is sitting.

Appendix E

Kindergarten Math Assessment Pack

Math

Kindergarten Assessment



Student Name: _____

Kindergarten Numeral Recognition Recording Sheet *Common Core = 0-20

Materials: Pages A & B

Number	B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr	Number	B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
0						16					
1						17					
2						18					
3						19					
4						20					
5						21					
6						22					
7						23					
8						24					
9						25					
10						26					
11						27					
12						28					
13						29					
14						30					
15											

Student Scores:

1st Quarter: Correct Numbers ____/31

2nd Quarter: Correct Numbers ____/31

3rd Quarter: Correct Numbers ____/31

4th Quarter: Correct Numbers ____/31

Meets Expectations:

1st Quarter: Correct Numbers 9/31

2nd Quarter: Correct Numbers 17/31

3rd Quarter: Correct Numbers 27/31

4th Quarter: Correct Numbers 31/31

Rote Counting

Counts by 1's to 100

B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
	M=counts to 25	M=counts to 50	M=counts to 75	M=counts to 100

Counts by 5's to 50 *Not mentioned in Common Core Standards

B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
			M=counts to 25	M=counts to 50

Counts by 10's to 100

B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
			M=counts to 50	M=counts to 100

Numeral Writing Recording Sheet *Common Core = 0-20

Materials: Writing Numerals Paper

Number	B	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

- Credit is granted for reversals as it is developmentally appropriate. Circle the numerals that were formed correctly, but reversed.

Student Scores:

1st Quarter: Correct Numbers ____/31

2nd Quarter: Correct Numbers ____/31

3rd Quarter: Correct Numbers ____/31

4th Quarter: Correct Numbers ____/31

Meets Expectations:

1st Quarter: Correct Numbers 9/31

2nd Quarter: Correct Numbers 17/31

3rd Quarter: Correct Numbers 27/31

4th Quarter: Correct Numbers 31/31

Counting Forward

Count forward beginning from a given number within the known sequence. Say, "I'm going to say a number and I want you to tell me the numbers that come after it. So if I said, '3' you would say, '4,5,6'"	Date	Date	Date	Date
1. "What numbers come after 5?" (6, 7, 8)				
2. "What numbers come after 7?" (8, 9, 10)				
3. "What numbers come after 4?" (5, 6, 7)				
4. "What numbers come after 10?" (11, 12, 13)				
5. "What numbers come after 15?" (16, 17, 18)				
6. "What numbers come after 17?" (18, 19, 20)				
6/6 Mastered, 5/6 Approaching, 4/6 Basic Reassess after instruction until the concept is mastered.				

Count to Tell the Number of Objects

Materials needed: Unifix cubes or other math manipulatives

Count objects in a set. Matching sets of objects using one-to-one correspondence.	Date	Date	Date	Date
1st Qtr 5/5= Mastered, 3/5=Approaching, 2/5=Basic				
1. Arrange 5 cubes in a row. "Count the cubes in this row."				
2. "Make another row of cubes that is the same as my row."				
2nd Qtr 10/10= Mastered, 8/10=Approaching, 7/10=Basic				
3. Arrange 10 cubes in a row. "Count the cubes in this row."				
4. "Make another row of cubes that is the same as my row."				
3rd Qtr 15/15= Mastered, 13/15=Approaching, 12/15=Basic				
5. Arrange 15 cubes in a row. "Count the cubes in this row."				
6. "Make another row of cubes that is the same as my row."				
4th Qtr 20/20= Mastered, 18/20=Approaching, 17/20=Basic				
7. Arrange 20 cubes in a row. "Count the cubes in this row."				
8. "Make another row of cubes that is the same as my row."				

Counting and Cardinality: Compare Number of Objects

Materials needed: Page C

Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group.	Date	Date	Date	Date
1. Point to the red box (pens) "Which group shows a number greater/more than the pens?" {Yellow Crayons}				
2. Point to the green box (pencils) "Which group shows a number less/fewer than the pencils?" {Paste/Glue}				
3. Point to the blue box (crayon boxes) "Which group shows a number equal/same as the crayon boxes?" {green crayons}				
4. Point to the yellow box (apples) "Which group shows a number less/fewer than the apples?" {red stars}				
5. Point to the orange box (scissors) "Which group shows a number greater/more than the scissors?" {blue crayons}				
5/5 Mastered, 4/5 Approaching, 3/5 Basic Reassess after instruction until the concept is mastered.				

Counting and Cardinality: Compare Numbers

Materials needed: Page D

Compare two numbers between 1 and 10 presented as written numerals.	Date	Date	Date	Date
1. Point to the orange boxes. "Which number is greater/more?" (7)				
2. Point to the blue boxes. "Which number is less?" (3)				
3. Point to the red boxes. "Which number is less?" (9)				
4. Point to the yellow boxes. "Which number is greater/more?" (8)				
5. Point to the green boxes. "Which number is greater/more?" (10)				
6. Point to the black boxes. "Which number is less?" (8)				
6/6 Mastered 5/6 Approaching, 4/6 Basic Reassess after instruction until the concept is mastered.				

Number and Operations in Base Ten

Materials: Unifix/Snap Cubes and Page G

Compose and decompose numbers from 11 to 19 into tens and some further ones. Count out 15 cubes. Arrange them on the sorting mat (filling the 10 frame first) Say, "How many groups of 10 can you make from 15?" (1) "How many ones does 15 have?" (5)	Date	Date	Date	Date
1. Count out 13 cubes Say, "How many groups of 10 can you make from 13?" (1) "How many ones does 13 have?" (3)				
2. Count out 16 cubes Say, "How many groups of 10 can you make from 16?" (1) "How many ones does 16 have?" (6)				
3. Count out 14 cubes Say, "How many groups of 10 can you make from 14?" (1) "How many ones does 14 have?" (4)				
4. Count out 17 cubes Say, "How many groups of 10 can you make from 17?" (1) "How many ones does 17 have?" (7)				
5. Count out 19 cubes Say, "How many groups of 10 can you make from 19?" (1) "How many ones does 19 have?" (9)				
5/5 Mastered 4/5 Approaching, 3/5 Basic Reassess after instruction until the concept is mastered.				

Measurement
Materials: Page F

Directly Compare two objects with a measureable attribute.	Date	Date	Date	Date
"Look at the crayons"				
1. Say, "Which one is shorter?" (orange)				
2. Say, "Which one is longer?" (blue)				
"Look at the glue"				
3. Say, "Which one is taller?" (one on the right)				
4. Say, "Which one is shorter?" (one on the left)				
"Look at the cats"				
5. Say, "Which one is shorter?" (one on the right)				
6. Say, "Which one is taller?" (one on the left)				
"Look at the cats on the balance scale"				
7. Say, "Which one weighs less?" (one on the left)				
8. Say, "Which one weighs more?" (one on the right)				
<p style="text-align: center;">8/8 Mastered 7/8 Approaching, 6/8 Basic Reassess after instruction until the concept is mastered</p>				

Geometry

Materials: Geometric Shapes (square, circle, triangle, rectangles, hexagon, cube, cone, cylinder, sphere). Or Page E

Correctly names geometric shapes	Date	Date	Date	Date
circle				
square				
triangle				
hexagon				
rectangle				
cylinder				
cube				
sphere				
cone				
<p>9/9 Mastered, 8/9 Approaching, 7/9 Basic</p> <p>Reassess after instruction until all shapes are mastered.</p>				

Operations and Algebraic Thinking: Addition and Subtraction

Materials: Teddy bear counters or other counters

Represent addition and subtraction with objects. Students use the teddy bear counters to act out the following story problems.	Date	Date	Date	Date
1. Say, "Three teddy bears were playing in the forest. Two more came to play. How many were there? (5)"				
2. Say, "Seven teddy bears were at the park. One went home. How many were left at the park? (6)"				
3. Say, "Five teddy bears were eating berries. One teddy bear joined them. How many ate berries (6)"				
4. Say, "Four teddy bears were sleeping. Two woke up. How many were still sleeping? (2)"				
5. Say, "Nine teddy bears were swimming in the pond. Two got out. How many were still in the pond?" (7)"				
6. Say, "Six teddy bears were at a party. Two more came. How many were at the party?" (8)"				
6/6 Mastered, 5/6 Approaching, 4/6 Basic Reassess after instruction until concepts are mastered.				

Operations and Algebraic Thinking: Making 10

Materials: Unifix/Snap Cubes or other counters

For any number 1-9, find the number that makes 10 when added to a given number.	Date	Date	Date	Date
1. Place 7 cubes in a row. Say "Can you add cubes to make this 10?"				
2. Place 5 cubes in a row. Say "Can you add cubes to make this 10?"				
3. Place 8 cubes in a row. Say "Can you add cubes to make this 10?"				
4. Place 3 cubes in a row. Say "Can you add cubes to make this 10?"				
5. Place 8 cubes in a row. Say "Can you add cubes to make this 10?"				
6. Place 2 cubes in a row. Say "Can you add cubes to make this 10?"				
6/6 Mastered, 5/6 Approaching, 4/6 Basic Reassess after instruction until concepts are mastered.				

Operations and Algebraic Thinking: Decomposing Numbers

Materials: Unifix/Snap Cubes (2 colors) or other two color counters

Decomposing numbers less than or equal to 10 into pairs in more than one way,	Date	Date	Date	Date
1. Say "Can you use just two colors to make 4?"				
2. Say, "Can you show me another way to make 4?"				
3. Say "Can you use just two colors to make 8?"				
4. Say, "Can you show me another way to make 8?"				
5. Say "Can you use just two colors to make 7?"				
6. Say, "Can you show me another way to make 7?"				
7. Say "Can you use just two colors to make 10?"				
8. Say, "Can you show me another way to make 10?"				
8/8 Mastered, 7/8 Approaching, 6/8 Basic				
Reassess after instruction until concepts are mastered.				

Recognizing Numbers

1st Quarter

6	2	5	7
1	4	0	8
3			

2nd Quarter

1	10	4	8
7	0	11	13
5	9	2	14
15	3	12	6
16			

Page B

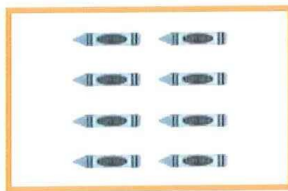
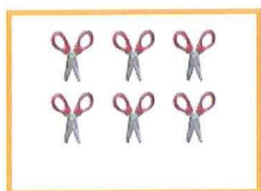
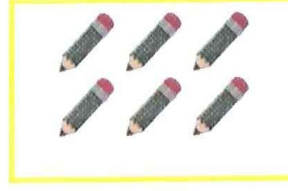
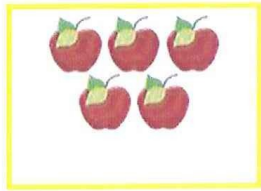
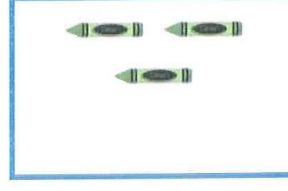
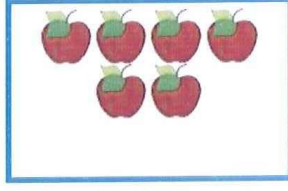
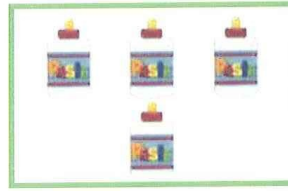
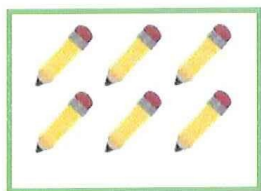
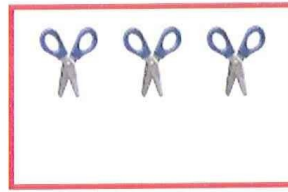
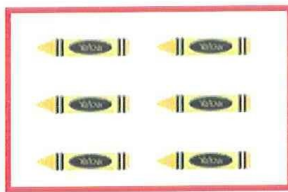
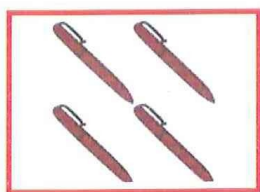
3rd Quarter

4	13	1	8
11	25	12	17
23	22	2	26
18	3	21	16
20	14	5	9
6	15	10	19
24	0	7	

4th Quarter

17	1	24	11
4	16	10	25
12	23	0	18
22	2	30	9
27	15	3	26
8	5	19	29
14	21	28	6
20	7	13	

Compare Number of Objects



Compare Numbers:

7

5

3

5

10

9

8

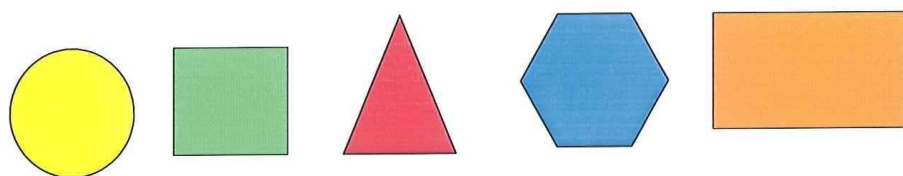
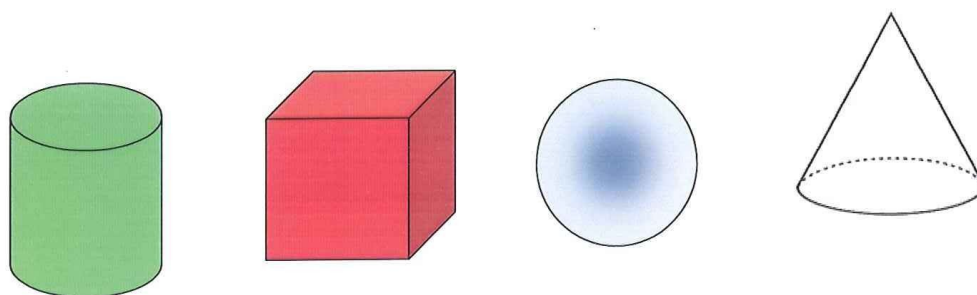
6

7

10

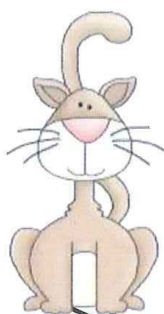
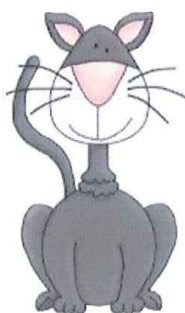
9

8

Identify 2-D Shapes**Identify 3-D Shapes**

Measurement

Page F



Number Operations in Base 10
Ten Frame Sorting Mat

Appendix F

Kindergarten Social Development Checklist

Kindergarten Social Development Checklist

Child's Name _____

Teacher _____

The following ratings should be used:

NA – Not Applicable: Skill or behavior has not been introduced.

N – Not Yet: Child cannot demonstrate skill or behavior at this time.

P – In Progress: Child demonstrates skill or behavior intermittently.

C – Consistent: Child can consistently demonstrate skill or behavior with proficiency.

Social Behaviors	B	1	2	3	4
1. Works and plays well with others in a variety of settings.					
2. Demonstrates an understanding of school and classroom rules.					
3. Listens to others while in large and small groups.					
4. Stays involved in a self-selected activity for an appropriate length of time (approx. 15-20 minutes).					
5. Follows simple verbal directions.					
6. Works well independently.					
7. Selects and completes a task while working at a learning center.					
8. Chooses a variety of materials and activities from learning centers.					
9. Attends to personal tasks (using the bathroom, washing hands correctly, etc.) independently.					
10. Shows good character (positive attitude, helping others, showing kindness, etc.).					

Comments:

Appendix G

Kindergarten Teacher Survey

Kindergarten Teacher Survey

Teacher Name: _____ **Years Experience in Kindergarten:** _____

Based on your experiences in the kindergarten classroom, please answer the following questions honestly and with detail, knowing that your responses will be completely anonymous and are for research purposes only.

Question 1:

How do you perceive the effect of prekindergarten experiences on student achievement in the area of **literacy** in the kindergarten classroom?

Question 2:

How do you perceive the effect of prekindergarten experiences on student achievement in the area of **math** in the kindergarten classroom?

Question 3:

How do you perceive the effect of prekindergarten experiences on student achievement in the area of **social development** in the kindergarten classroom?

Additional Comments:

Thank you so much for your participation!