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The Influence of Early Childhood Program Participation on Academic Achievement at the Elementary Level

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THE INFLUENCE OF EARLY CHILDHOOD PROGRAM PARTICIPATION
ON ACADEMIC ACHIEVEMENT AT THE ELEMENTARY LEVEL

By

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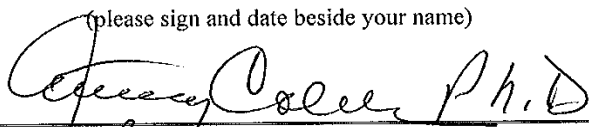
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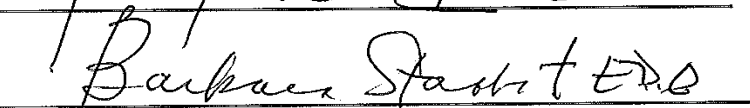
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Dr. Anthony Colella
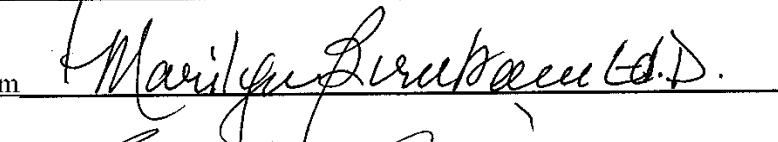
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and date this document only when revisions have been completed. Please return this
form to the Office of Graduate Studies, where it will be placed in the candidate's file and
submit a copy with your final dissertation to be bound as page number two.

Abstract

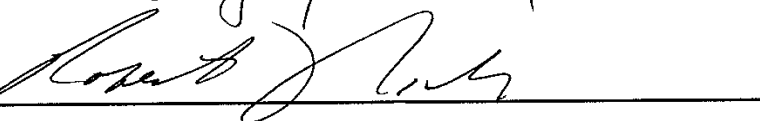The purpose of this study was to examine the influence of early childhood program participation on academic achievement by grade 3. This case study utilized a quantitative approach to data collection. For purposes of this research, one P-12 school district in central New Jersey was studied to look at the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3. A quantitative approach to this research was used to remove opinions and perceptions from the data collection. Quantitative data was collected through demographic information and NJ ASK 3 results for students who participated in the early childhood program within the school district and continued through the same public school system through grade 3.

The research question for this study was, How does participation in the early childhood program in one P-12 school district in central New Jersey influence academic outcomes as measured by the NJ ASK 3 for those students? In order to address the research question, the data analysis began with an in-depth look at the influence of early childhood program participation as measured by the NJ ASK 3 when controlling for individual variables. For each of the individual variables, regressions were run for language arts literacy and mathematics. The purpose was to see how the primary variable, early childhood program participation, interacted with the other variables. Based upon these results, the researcher ran additional regressions with early childhood program participation and all other significant variables to ascertain the influence of early childhood program participation on the overall model. Findings revealed that although early childhood program participation was significant when controlling for individual variables, it was not significant in the overall model.

Recommendations for policy, practice, and future research were evident based upon this study. In terms of policy, decision makers may wish to review mandates surrounding early childhood programs. Practice recommendations include the creation of alternatives to early childhood programs in schools and districts. Future research may center on qualitative studies which provide information about administrator and teacher perceptions on early childhood program participation and academic achievement by grade 3.

Acknowledgments

I would like to express my sincere gratitude to Dr. Anthony Colella. Dr. Colella, you were one of my first professors in this program, my program advisor, and my dissertation mentor. From the beginning you saw something in me that often I could not see myself. Thank you for believing in me and continually pushing me to do my best work. I have completed this dissertation because of your guidance and your soft-spoken faith in me.

To my outside committee members, Dr. Marilyn Birnbaum and Dr. Robert Rich. You have both been a part of my career path from my first step into teaching. Through all of the coursework in various programs, internships, moving into administration, and now this process, you have supported me in every possible way. Thank you for serving on my dissertation committee. More importantly, thank you for being part of the journey that got me to where I am today.

I would be remiss not to recognize those individuals from Seton Hall University who helped me obtain this monumental goal. I would like to thank Dr. Strobert for agreeing to serve on my dissertation committee. Her quick and thorough feedback helped make my work stronger while moving the process along. Thank you to Dr. Babo who quickly became my statistical guru. His guidance and support through my statistical analysis solidified my work.

Attending Seton Hall as a student in the traditional program provided a different experience than that of students in the cohorts. My classmates and I learned to support each other throughout the process, forming our own cohort. I would like to thank Karen Holgerson and Cathy Timpone for their continued support during our time together in the program.

Looking beyond the University, there are others who deserve recognition as they were instrumental in my completion of this dissertation.

To Russell Lazovick. My life definitely changed the day we began working together. You have a different way of approaching things, different than any other instructional leader I know. You bring a new viewpoint to my thought process, allowing me to see things from various perspectives, and often in ways I never have before. You have unquestionably shaped me into the administrator I am today. Thank you for your support throughout this process. It could not have been done without your guidance and continued questions about my work. You helped me talk through my research, provided feedback as needed, and believed in me even on the days when I did not believe in myself. I will be forever grateful for the opportunities you have afforded me, your guidance, and especially for your faith in me over the last few years.

To my father, Joseph Villani, Sr. Dad, you worked hard throughout your life to make sure we had every opportunity, especially those that you were not fortunate enough to experience yourself. I truly appreciate all that you provided me throughout my life. I would not have been able to accomplish this goal without the hard work you put in and the foundation you built for us. You provided me with every opportunity. I took those opportunities and ran with them. My dissertation is your dissertation as well.

To my brother, Joseph Villani, Jr. Joey, I feel so fortunate everyday to have such a close relationship with you. You have been a source of strength for me throughout this process and throughout my life. As I went through my dissertation work, I appreciate all the times you stopped in just to check on me. It was comforting to know you were there for me. Thank you for always supporting and looking out for me.

Dedication

This dissertation is dedicated to my mother, Carol L. Villani. Mom, although the difficulty of this task is nothing compared to what you experienced in your life, I know you would have said just the opposite. You were a constant support and light throughout my life. You were there from my birth, cheering me on in each and every thing I did. You valued education, taught me how it important it was, and pushed me to do and be my best, but you always reminded me to have fun along the way. You taught me strength and perseverance, two characteristics that have served me well throughout this process and my life. Even as I became an adult, you remained my constant cheerleader, always believing in me and knowing I could accomplish anything I set my mind to. We had that in common.

While I am saddened that you could not physically be with me to see me defend my dissertation and celebrate this milestone, I know you are watching me with pride and joy. Mom, this work is dedicated to you because I know in my heart that this is one accomplishment that would not have been possible without you.

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Chapter I

INTRODUCTION

Problem Statement

As society changes and evolves and school districts work to stay abreast of federal and state mandates, increased demands are being placed on students at younger ages, beginning as early as preschool. These demands are not limited to academics but also include social and behavioral components as well. In a study conducted by McWayne, Cheung, Green Wright, and Hahs-Vaughn (2012), the researchers looked at patterns and expectations for preschoolers in terms of school readiness. They found that a number of developmental challenges took place during the transition period from preschool to kindergarten. These challenges, which included engaging with others, negotiating school physically and psychologically, and learning school expectations, developed between the home and school environments. In addition, parents often begin to increase demands at home during this same time period as they want their child to be the smartest, fastest, or brightest student in the group. Both parents and teachers stated that the early acquisition of academic skills, especially literacy skills, should be the main focus of preschool programs (Hatcher, Nuner, and Paulsel, 2012). These young learners often feel pressure from school and home to achieve academically, socially, emotionally, and behaviorally on a steep learning curve (Hatcher & Engelbrecht, 2006; McWayne et al. 2012).

With federal and state mandates in place for public early childhood programs, requirements on these young students are increasingly becoming more academic and more intense. One study by Goldstein (2007) indicated that the changing culture of early childhood education, especially in kindergarten, has brought about questions regarding how preschool fits

into a child's overall school career. Many states have begun to create learning standards for preschool-aged children. Hatcher et al. (2012) identified that while preschool instruction can resist drilling students on isolated literacy and numeracy skills, "it is important to acknowledge that today's preschools are expected to provide a foundation for reading, writing, and computation" (p. 12). Looking at various kindergarten programs, their analysis revealed that kindergarten is a place of high expectations and task-oriented activities (Hatcher et al., 2012). This information built on the previous work by Hatcher and Engelbrecht (2006) that described negative feelings about the direction of current kindergarten classrooms. Graue (2010) described the culture of kindergarten as a place where children spend most of their time on literacy and numeracy activities at the expense of play, noting that "children spend 4-6 times as much time on reading and math activities as they do in play… Public perception is that kindergarten is what 1st grade used to be" (p. 29). Goldstein (2007) indicated that increased academic demands at the kindergarten level give the expectation that students will enter kindergarten with a familiarity of print, letter/sound recognition, and beginning writing skills.

The development of college and career readiness skills, as well as workforce expectations, have changed the focus on the creation of educational programs. Ideally, attention should be placed on building age-appropriate educational models that support academic, social, and emotional needs beginning in preschool. Once a solid foundation is established, programs can be developed through high school and beyond. The United States educational model does just the opposite. College and graduate programs set requirements for their expectations of incoming students. The trickle-down effect then causes changes at the high school level where prerequisites are put in place for each course or program. In turn, this affects the programs presented at the middle school level. This cycle continues until we reach the preschool and

kindergarten students who have academic demands placed upon them which are not age- or developmentally-appropriate, yet society continues to perpetuate these expectations.

In a study by Hatcher et al. (2012), the findings implied that parents and teachers alike now view preschool programs as precursory or preparatory programs to kindergarten, not as programs with intrinsic values for young learners. As educational administrators and teachers spend time planning for academics, being competitive, and "fitting it all in", they are forgetting to prepare these 3-, 4-, and 5-year-olds with other skills which will benefit their academics. These students need to learn how to adjust for social, emotional, and behavior skills as well as their academics. In fact, building these skills may help students to be more successful overall. Students are not coming to school with the necessary readiness skills and little time is spent in programs to build these skills. Some examples of readiness skills include, but are not limited to, self-regulatory skills, working with children and adults outside of the immediate family, understanding routines, navigating the school and classroom, and following directions, to name a few (Justice, Bowles, Pence Turnbull, and Skibbe, 2009; McWayne et al. 2012; Taylor, Gibbs, and Slate, 2000). In order to be successful academically, students must be taught to be "ready" for school as well.

Preparing students for academic success begins in the earliest of formal education. Linder, Ramey, and Zambak (2013) identified 24 predictors of school readiness in the early childhood areas of language arts literacy and mathematics. The top three predictors of school readiness included a high quality child care environment, a high quality child care curriculum, and high quality child care instruction. Lee and Goh (2012) discussed the importance of initial academic and social success for students in early childhood programs. This initial success often leads to long-term adjustment, achievement, and success in subsequent years. Another study, by

Taylor et al. (2000), conducted using data from the Georgia Kindergarten Assessment Program

(GKAP) indicated that preschool attendance may facilitate school readiness more so than non-

preschool attendance. The researchers found that students who attended preschool demonstrated

a higher degree of readiness in two areas of the GKAP. They concluded that greater effort

should be made to enroll more students in effective preschool programs to ensure school

readiness in later years.

School readiness is a term utilized in many school buildings and districts across the

country and around the world. As educational leaders and teachers prepare for students to enter

elementary school, they incorporate ways to assess school readiness, as well as to understand

how it affects various components of a child's education. A teacher's ability to educate students

depends upon a variety of factors including a child's readiness to learn upon school entry (Stacks

& Oshio, 2009). Research and data available on school readiness looks at its affects on various

components of the educational process and student success. Duncan et al. (2007) stated

"theoretically, children's attention and socioemotional skills should also affect achievement

because they influence children's engagement in learning activities and facilitate (or disrupt)

classroom processes" (p. 1431). For purposes of this work, the research will address school

readiness and its affect on student academic outcomes.

As academic rigor increases throughout elementary school, some students are not able to

handle the increased pressure associated with the expectations because they have not been taught

how to "be ready" for school (Duncan et al., 2007). Children most at-risk for later academic and

behavior problems, as well as poor relations with teachers are those identified early on as

disorganized. For these children to make a successful transition to school, they must develop

age-appropriate social skills and work habits prior to school entry (Stacks & Oshio, 2009). This

may include skills they develop in preschool programs prior to their kindergarten experience and skills taught at home (Dockett & Perry, 2003).

The importance of school readiness skills in a child's educational process cannot be underestimated. Duncan et al. (2007) stated that achievement at older ages is the product of sequential skill acquisition. They indicated that strengthening readiness skills prior to school entry might provide students the opportunity to master more advanced skills at an earlier age and possibly increase their ultimate level of achievement. Stacks and Oshio (2009) agreed stating, "A successful transition is important because early in children's schooling they decide if they see themselves as learners and by the end of third grade (age 8) most children are on an educational path that they will follow throughout their schooling" (p. 143-144). It is the responsibility of the educational administrators and their staff to ensure that students are getting the school readiness skills necessary at an early age to ensure later school success. By increasing the school readiness instruction early in a child's educational career, school administrators and other school personnel may be able to alleviate or eliminate some of the behavior problems students experience in the middle elementary grades and beyond.

Purpose of the Study

The purpose of this study is to examine the influence of early childhood program participation on academic achievement by grade 3. It is hypothesized that there is a connection between student participation in an early childhood program and academic outcomes at the elementary level. Specifically, it is believed that early childhood program exposure will enhance academic scores on the New Jersey Assessment of Skills and Knowledge (NJ ASK). Early childhood programs and exposure to specific academic and social-emotional experiences at this

level may influence later student achievement. This study will examine the influence of early childhood (preschool and kindergarten) program participation on academic achievement (proficiency) as measured by the NJ ASK 3. The study will look at the influence of student participation in one early childhood program in a P-12 school district in central New Jersey and minimum academic success for those students by the end of grade three as measured by the NJ ASK 3.

Research Question

How does participation in the early childhood program in one P-12 school district in central New Jersey influence academic outcomes as measured by the NJ ASK 3 for those students?

Subsidiary Questions

1. What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 when controlling for each of the following subcategories: (a) gender, (b) ethnicity, (c) economically disadvantaged students, (d) Limited English Proficient (LEP) students, and (e) special education students?

2. What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 for all significant independent variables?

Theoretical Framework

While looking at current events in the field of early childhood education, one would be remiss to exclude a discussion on the theoretical framework of those most prominently known for their work understanding child development in terms of the biology and psychology of these young learners. Three specific theorists who contributed to this field include Jean Piaget, Lev Vygotsky, and Erik Erikson. Each of these individuals spent at least some, if not all, of their career researching early childhood development. Jean Piaget was interested in how children acquire knowledge. Lev Vygotsky became interested in cognitive and language development and its role in learning. Erik Erikson studied child psychoanalysis. Combining the work and research of these three theorists provides a broader understanding of early childhood development and the individual needs of students.

Jean Piaget was interested in children's thought processes and how they arrive at answers to questions. Boden (1979) and Mooney (2000) discussed how most theorists believe that a child's learning is either intrinsic or extrinsic, while Piaget believed that interactions with one's environment create learning experiences allowing children to learn using intrinsic and extrinsic processes. Piaget believed that children learn best when they create their own learning environment, and when they are curious about their surroundings.

Through his research and work, Piaget created four stages of cognitive development in children. Piaget's work on the developmental stages of the child has been a primary influence on American preschool programs over the past 40 years (Boden, 1979; Mooney, 2000). For each of the four stages, Piaget discussed the approximate age of the child, and the behaviors exhibited at each stage. The four stages include sensorimotor, preoperational, concrete operational, and formal operational. The sensorimotor stage includes children from birth to age 18 months. In

this stage, the child relies on his or her senses and reflexes to learn about the world. The second stage, the preoperational stage, includes children from 18 months to 6 years old. At this stage, children are egocentric, they think of things only as it relates to them. The third stage, the concrete operational stage, includes children ages 6 to 12 years. In this stage, children form ideas based upon reasoning. The fourth stage, formal operations, occurs beginning at approximately age 12 and continues into adulthood. In this stage, children begin to develop logical reasoning skills, abstract thought, and problem-solving skills. An understanding of Piaget's stages of development is crucial to the development and implementation of appropriate early childhood programs.

Lev Vygotsky is another theorist whose research is important to understand and consider when developing early childhood programs. During his career, Vygotsky became interested in how cognitive and language development influence learning, particularly how children approach learning new things. Although Vygotsky believed Piaget's theory regarding intrinsic and extrinsic experiences contributing to learning, he took it one step further by considering the idea that social interactions also affect a child's learning and development. Vygotsky believed that a child's personal experiences could not be separated from his or her social interactions with others, and that social and personal interactions help create a child's knowledge (Berk & Winsler, 1995; Mooney, 2000). Vygotsky developed two important concepts in early childhood learning. Vygotsky defined the *zone of proximal development* as the distance between the most difficult task a child can do alone and the most difficult task a child can do with assistance of an adult. The idea of scaffolding learning originated from this research. Vygotsky also believed that language development is an important concept for learning and identified the need for incorporating conversation into learning and play.

The work of Erik Erikson also provides an important understanding of child development as it pertains to early education. Erikson constructed a theory on how children develop the foundation for social and emotional growth. Erikson outlined eight stages of psychosocial development. These stages address one's social and emotional growth from birth through adulthood. The first four stages of Erikson's work are important to the understanding of early childhood learning.

The work of Piaget, Vygotsky, and Erikson is important in developing an understanding of how students learn at the early childhood level. Piaget's four stages of cognitive development provide an understanding of the way in which students learn within specific age ranges. This information is important for administrators and teachers as they develop age-appropriate curricula and design learning activities for the early childhood level. Vygotsky took into account social interactions with learning. His work provides information on knowing the most difficult task a student can do on his or her own and the most difficult task a student can do with adult assistance. Vygotsky's work with scaffolding can assist administrators and teachers in providing differentiated classroom activities that allow students to be successful at the level most appropriate for the learner. Finally, Erikson provided information on the development of the social and emotional foundation. Bringing the work of these three theorists together will enhance the program and curriculum at the early childhood level. The theoretical framework is outlined in detail in Chapter II.

Methodology Overview

This case study research will take a quantitative approach to data collection. This quantitative approach will focus on the influence of early childhood program participation on NJ ASK 3 scores for one P-12 school district in central New Jersey.

The school district utilized for purposes of this study is located in central New Jersey. The district services approximately 3,288 students from preschool through grade 12. The district receives state funding for its early childhood program. In order to service the eligible population of preschool students, the district utilizes a preschool program in one of its elementary schools, as well as programs set up with three private providers within the municipality. For the private providers to be eligible to participate in the program they must utilize state certified teachers, follow the district's curriculum, participate in articulation meetings with district personnel, and follow residency requirements as outlined by the district.

In terms of data collection, the researcher worked with school district personnel to obtain student data for three cohorts of students. These cohorts included students in grades 4, 5, and 6 during the 2013-2014 school year. Cohort data is noted in Table 1.

Table 1

Student Information – Attendance and Assessment Years

Students – 2013-2014 School Year			
Current Grade	Anticipated Year Attended District Preschool	Anticipated Year Attended District Kindergarten	Year Took NJ ASK 3
4	2008-2009	2009-2010	2012-2013
5	2007-2008	2008-2009	2011-2012
6	2006-2007	2007-2008	2010-2011

These three cohorts were chosen for two reasons. First, these students took the most current version of the NJ ASK 3. During the time these students sat for the NJ ASK 3, district curricula was consistently written to the appropriate standards as outlined by the state of New Jersey. The NJ ASK 3 during each of these school years was written, at minimum, to the NJ Core Curriculum Content Standards (NJ CCCS; NJ Department of Education, 2009). During the 2012-2013 school year, the state required that curriculum documents in language arts literacy and mathematics be modified to align with the Common Core State Standards (CCSS). As per the New Jersey State Department of Education (2012), if curriculum documents are aligned with the CCSS, the curriculum addresses the same standards as the NJ CCCS and offers extension activities, therefore the students will be exposed to topics and content assessed on the NJ ASK 3. The second reason why these three cohorts of students were selected is because the early childhood program was consistent for the three years in which these students would have participated in the program.

Three years of data including 696 students was analyzed for this research. The data was collected from the identified school district. The Technology Director of that school district provided the demographic information for the students in each of the three cohorts. The Director downloaded the requested information from the district's student information system and archived files. The information was provided to the researcher in a database. Information was supplied by a local student identification number only. The information did not include the Student Identification (SID) number as assigned by the state. The students could not be tracked through their local identification number. Student names were not associated with the data. The researcher did not examine individual student files in district or have access to identifying information for any student whose information was included in the database.

The researcher used this data to review student proficiency levels as measured by the NJ ASK 3 for those students who attended the early childhood program and sat for the state assessment in the district. The researcher looked at data for each student including demographics on his or her registration in preschool and/or kindergarten in the school district, gender, ethnicity, economically disadvantaged status as measured by the free and reduced lunch application, Limited English Proficient, special education, and scores in language arts literacy and mathematics on the NJ ASK 3. Data was analyzed using SPSS 21.0 to look for trends in the student information.

Significance of the Study

This study will provide information to district and building administrators as well as teachers as to the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3. Administrators and teachers may use the information derived from this study to modify, enhance, or change the early childhood program in order to better prepare students for school readiness and academic achievement.

Delimitations

This research takes into account a number of delimiters. These delimiters include, but are not limited to, the following:

- The study focused on the early childhood program and NJ ASK 3 assessment results in one P-12 school district in central New Jersey.

- The study focused solely on quantitative data obtained from the school district.

- This study did not take into account administrator or teacher perceptions of the early childhood program.

- This study did not take into account parental involvement or the home environment.

- Assessment data was analyzed for students who attended the early childhood program (preschool and/or kindergarten) and sat for the NJ ASK 3 within the district. Assessment data was not analyzed for students who entered the district after their kindergarten year.

Limitations

The researcher is a public school administrator with 10 years experience in administrative roles. The researcher has held central office and building level administrative positions. Currently, the researcher holds the position of Assistant Superintendent of Schools. Prior to that, the researcher was a primary school principal for 4 years and a curriculum supervisor for 4 years. The researcher's experiences may have affected perceptions identified and explained in this study.

This research contains quantitative data on and an analysis of NJ ASK 3 scores for students who attended an early childhood program in one P-12 school district in central New Jersey. All school districts offering early childhood programs in New Jersey were not included in this research. No information was collected on urban or rural school districts. This research is limited to one public school district in the state of New Jersey. It does not include student or assessment information from private or parochial school settings. This study is restricted to quantitative data related to early childhood program participation and the influence on NJ ASK 3 scores. Generalizations should not be made for other grade levels based upon this research.

Definition of Terms

The definitions provided are for the purposes of this study. Any similarity to other published work is purely coincidental.

Academic achievement is the measurement of student success based upon assessment scores on the NJ ASK 3 in the proficient or advanced proficient range.

Curriculum includes documents available to teachers, parents, and administrators outlining the components of academic and/or social-emotional instruction that is expected to take place in the classroom.

Early childhood consists of teachers and/or students in preschool and/or kindergarten.

Early childhood program participation includes students who participated in the preschool and/or kindergarten program.

Elementary level consists of students in the middle elementary grades including grades three through five.

Later school success is the ability of a student to perform grade level tasks and achieve throughout his or her school experience.

New Jersey Assessment of Skills and Knowledge 3 (NJ ASK 3) refers to the state assessment students take in May of their third grade year. The assessment results are ranked in three categories including partially proficient (a score below 200), proficient (a score at or between 200 and 249), and advanced proficient (a score at or above 250). For the purposes of this study, minimum passing requirements will be utilized therefore any student receiving a score of 200 or above on the NJ ASK 3 will be considered to have achieved academically.

Off-task behavior is the behavior a student exhibits when he or she is not ready to learn. Examples of this behavior may include, but is not limited to, inability to focus, calling out, distracting others, or a lack of participation.

On-task behavior is the behavior a student exhibits when he or she is ready to learn. Examples of this behavior may include, but is not limited to, paying attention, listening to instruction, making eye contact, or participating in classroom activities and discussions.

Preparedness is the readiness skills students bring to school or that are taught in school which help the students achieve their academic learning goals.

Preschool is any program a student participates in prior to attending a kindergarten program. Preschool programs may include academic-based programs, religion-based programs, private day care, or other early learning environments. It may also include public school preschool programs.

Primary level consists of students in the early elementary grades including kindergarten through grade 2.

Program plan includes any information available to staff members or the public related to the programs offered in a school or district.

School failure is the inability of a student to achieve in school.

School readiness is the ability of a student to be ready to learn.

School readiness programs are those programs put in place in a school by the district or building administrators and staff that allow students to begin to build readiness skills and/or build upon the skills they bring with them.

School readiness skills are those skills students bring with them to school or learn while in school to help them achieve academically and become life-long learners.

Summary

Creating the opportunity for solid early childhood programs in schools that allow for the development of academic, social, and emotional skills will enhance the students' abilities to acquire the skills and be successful as they move through elementary school. Duncan et al. (2009) identifies the importance of a smooth transition into kindergarten. Difficult transitions to kindergarten often lead to weaknesses in academic skills as well as problems with social skills. These difficulties can affect each area of a kindergartener's development, impacting his or her later school success. Stacks and Oshio (2009) identified emotional regulation associated with attachment as a component of learning and social skills. They indicated that the ability to teach young learners to regulate their emotions and to respond to situations appropriately would enhance the students' ability to focus their attention therefore making it easier for them to learn. Building early childhood programs that take into account the academic and social/emotional development of learners will afford districts the opportunity to build programs that enhance skills while providing the necessary foundation for later academic achievement.

Information obtained from this study can be utilized in one P-12 school district in central New Jersey in order to enhance the early childhood program in that district to better service all students. While the focus may be on academic success, administrators and teachers must remember to address the social, emotional, and behavioral needs of the students as well in order to provide them with the skill set they need to be successful in school. Although this study examines one P-12 school district in central New Jersey, the information gleaned from this study may be utilized in other school districts with similar programs and/or populations of students.

Chapter II

LITERATURE REVIEW

Introduction

In this review, the reader will be introduced to research and literature related to the impact of early childhood programs on academic success at the elementary level. As part of this work, the reader will be exposed to information related to various subcategories and the impact on academic achievement. A number of concepts related to school readiness and academic achievement will be analyzed for this review. These concepts include: preschool attendance, student transition, later school success, parental interactions with students, parental involvement, and social success. Each of these areas will be reviewed based upon the impact on school readiness and academic achievement.

It would be remiss to exclude a discussion on the information intentionally left out of this review as well as the information missing from this review of the literature. As research articles were gathered and reviewed, it was noted that a large body of information exists on Head Start programs. While this data was important and pertinent to the development of skills for those children, it was not the intention of this research. The original goal was to look at factors affecting school readiness in kindergarten and the early elementary years. Some research regarding Head Start programs is included here as it is important to address the progression of students from preschool through elementary school, but it was not the initial focus. Therefore, only a few of the research articles presented here address Head Start programs. One very obvious area that was missing from the research related to school readiness and student success is that related to behavior. While a number of the research articles address student behavior as a

secondary component of the research, it was nearly impossible to find information related specifically to behavior as a primary source of school success. Particularly, little information was available pertaining to early elementary students. Much of the research discussed preschool and kindergarten student readiness and how student behaviors affect learning. No studies were noted in this research that addressed student behaviors at the elementary level as they relate to school readiness. This is an area where more research is needed. Educational administrators could use this data to support elementary school students. If behaviors can be modified for students in grades 1 through 3, they may be better able to grasp academics, which in turn could decrease the need for additional support programs such a remedial instruction, Response to Intervention, and special education services. More research is needed in the area of student behavior, school readiness, and later school success for the early elementary student.

This review contains information from research articles and literature. A majority of the review (60%) comes from the review of research. Research comprises most of the information represented in each of the subcategories within this chapter and is evident throughout this work. Also included is a review of literature which comprises 40% of this work. Within the literature review, 29% of the documents are related to a review of the theorists, 29% of the documents are related to a review of national and state goals and standards, and 42% of the documents relate to a review of literature on the topic. Overall, the focus of this review was on the research related to early childhood programs and the impact on academic achievement at the elementary level.

Overview

As society changes and federal and state mandates are implemented throughout the public education system, more is expected of students at a younger age. Preschool programs are

available for students in the public school setting, usually beginning at age 3. Students enter these programs as toddlers and are often thrust into an academic program with little regard for age-appropriate development including social-emotional, communication, and behavioral needs. Goldstein (2007) addressed the philosophy that preschool programs have become an extension of the child's overall school career. Graue (2010) and Hatcher et al. (2012) identified ways in which preschool programs focus on early literacy and numeracy skills, often times at the expense of play time. This impacts student growth in non-academic areas. In many cases, preschool programs are extending a child's exposure to academics without taking into consideration developmentally appropriate activities or the need to build social-emotional, communication, and behavior skills.

In an era of national standards including the Common Core State Standards (CCSS); high stakes testing including the Partnership for Assessment of Readiness for College and Career (PARCC) and the National Assessment of Educational Progress (NAEP); sequestration of federal funding; and various state mandates, school district personnel struggle to maintain a rigorous academic focus throughout their programs. One way in which district personnel look to maintain and increase rigor is by creating early childhood programs with a strong academic base. It is presumed that strong, academically-based, early childhood programs will enhance student learning to allow for increased performance on state and national assessments later in the child's school career. Early childhood programs with a strong academic base assume that the students are coming to school with a foundation for the necessary social-emotional, communication, and behavioral skills and are ready to learn academics. If students do not have these other skills, it will be difficult for them to acquire the academic skills in isolation. Students who do acquire the academic skills may fall behind in the areas of social-emotional, communication, and/or

behavioral development which could create a different set of problems for the student as he or she moves through their educational career. School administrators and teachers must look for a way to incorporate age-appropriate academic skills while providing instruction and support for the development of social-emotional, communication, and behavioral skills.

Factors Which Influence Learning

School administrators and teachers must keep in mind that a variety of factors influence a student's ability to learn. These factors may be external or internal to the school, but must be addressed through the program plan regardless of the origination of the factors. External factors are those that cannot be controlled by the school. Some of the characteristics of external factors may include having a student come to school well-rested, fed, on time, and feeling safe and secure about the transition from home to school. External factors are those for which the school or district has little or no control. Some internal factors may include having a curriculum written to the Common Core State Standards or early childhood standards for the state, having the proper educational tools and resources for staff and students, having teachers who are educated and prepared to teach, and having programs in place that support the academic, social, and emotional needs of the students. Supporting the various needs of students as they travel through their educational career is important at all grade levels. Having programs in place that specifically support the school's youngest learners will build the foundation that is necessary for them to become life-long learners and succeed throughout their educational experiences.

School Readiness

      One important component of the need to build programs to create life-long learners is for public school districts to utilize school readiness programs to prepare their youngest learners for their academic career. School readiness programs need to be put in place at the earliest grades students enter school. For most public schools, this is at the kindergarten level. Public schools with preschool programs should add similar programs to their curriculum. School readiness programs are important because they are utilized to teach the social-emotional, communication, and behavioral skills necessary for students to know how to act and interact in school and in life. Without the proper instruction with readiness skills, it is hypothesized that students will increasingly struggle in school as they travel through grade levels and experience the increased demands of each subsequent grade level. As some students begin to have difficulty with academics because of a lack social-emotional, communication, or behavioral preparedness, this may present itself as a decrease in on-task behavior. It is speculated that these difficulties can begin in the middle elementary grades, as early as grades 2 and 3. On-task behavior is defined as the behavior a student exhibits when he or she is ready to learn. Examples of this behavior may include, but are not limited to, paying attention, listening to instruction, making eye contact, and participating in classroom activities and discussions. School administrators and teachers need to put in place programs that will effectively prepare our youngest learners for school at the primary level so that they have the ability to work through academic difficulties and succeed throughout their educational careers.

      School readiness is a term utilized in many school buildings and districts across the country and around the world. As educational leaders and teachers prepare for students to enter elementary school, they incorporate ways in which to assess school readiness as well as

understand how it affects various components of a child's education. Research and data available on school readiness looks at its affects on various components of the educational process and student success. For purposes of this work, school readiness and its effects on the early childhood experience, transition into elementary school, and later academic success will be reviewed in detail. Subsets of this research will include early language development, parental interactions, single-parent households, student social success, and student behavior as it relates to the early childhood student. While the focus of this work is on early childhood programs and later academic success, it is important to have a solid understanding of how school readiness skills affect a variety of areas related to the student and his or her ability to learn.

First and foremost, it is important to have a solid and consistent definition of school readiness. While many of the definitions found in literature and research are similar, the authors utilize definitions that closely align with their specific research. Dockett and Perry (2009) noted that, "Readiness for school is a contested and controversial term" (p. 20). Many researchers mentioned the idea of preparedness for school. Preparedness and readiness seem to be synonymous in the literature. Justice et al. (2009) define school readiness in their own terms:

> This notion of preparedness is often referred to as *school readiness*, a multidimensional construct that encompasses both skill-based academic competencies (*e.g.*, reading and mathematics abilities) and social, behavioral, and self-regulatory skills that enable children to socialize with peers, communicate effectively, and engage and persist in structured and unstructured tasks. (p. 461)

These authors discuss school readiness as it refers to a number of areas of research. Another interesting view on school readiness is that, "Readiness means different things for different people, yet almost always there is a perception that readiness for school involves some

assessment of the characteristics of individual children against some set of standard expectations or desirable attributes" (Dockett & Perry, 2009, p. 20). For the purposes of this literature review, school readiness is defined as the skills students bring to school that will provide them with the academic, social, and emotional ability to learn. Regardless of the specific definition of school readiness, it is certain that school readiness and achievement is at the forefront of this country's domestic social policy concerns (Ramey & Ramey, 2004).

In 1997, the United States developed a National Education Goals Panel. This group looked at a number of factors affecting public schools in the United States. They developed eight goals related to student success from early childhood through high school. The published document, *The National Education Goals Report: Building a Nation of Learners* (1997), identified the first goal as Ready to Learn. This goal incorporated early childhood needs such as health care and immunizations, as well as parental involvement and preschool education. This panel identified three components of school readiness: children being ready for school so that they can participate in the classroom and in various learning experiences, schools being ready for the children by responding to the needs of the children enrolled in the program, and promoting family and community environments that support learning. The need for continued understanding of how to reach out to young children and their families to facilitate learning once the children arrive at school is an important component of school readiness.

The views of the National Education Goals Panel related to school readiness are prevalent throughout the research. As children's readiness skills are researched and discussed, it is also important to keep in mind the need for schools and districts to prepare their staff and their buildings to be ready for the young learners (Espinosa, Thornburg, and Mathews, 1997). Schools need to prepare for the needs of these early learners including academic, social-

emotional, communication, and behavioral needs, as well as have plans and practices in place to work with the students even after they enter school to continue to prepare them to be effective learners. Justice et al. (2009) identified that some children go to school having never been exposed to the skills necessary to begin to learn:

> The theoretical construct of school readiness as defined in current empirical research refers to the "minimum development levels" children need to exhibit to respond adequately to the demands of schooling, which for many children may use routines and discourse practices for which they have not yet been socialized. (p. 460)

These views support the need for well-rounded early childhood programs that incorporate all aspects of child development, not just academics. By continuing to build programs and provide staff training related to the needs of early learners, schools and districts can build their academic programs while also addressing the social and emotional needs of these young learners. Through awareness of the needs of the young child and the needs of the school, school failure may be prevented by promoting school readiness (Ramey & Ramey, 2004).

Theoretical Framework

In order to develop solid, effective programs as well as plans to promote and build school readiness skills in children, it is important to understand the theoretical background of child development and student needs. A number of theories related to child development were hypothesized by those in the field of biology and psychology. Three specific theorists who contributed information to this field include Jean Piaget, Lev Vygotsky, and Erik Erikson. Jean Piaget, an epistemologist and psychologist, was particularly interested in how children acquire knowledge. Lev Vygotsky, originally a teacher of literature at the secondary level, became

interested in cognitive and language development and its role in learning. Erik Erikson also began his career as a teacher and later studied child psychoanalysis. These three theorists made available a wealth of knowledge about child pedagogy that can be utilized to develop school readiness skills in children.

Jean Piaget was educated as a biologist. After completing his degree, he went to work in a laboratory school converting an intelligence test from British to French. Through this work he began to notice similarities in the wrong answers children gave to certain questions when they were at a particular age. This made him wonder about the thought processes that lead the children to their answers. "While others wanted to know *what* children know or *when* they know it, Piaget asked *how* children arrive at what they know" (Mooney, 2000, p. 59). While most theorists believed a child's learning was either intrinsic (coming from within the child) or extrinsic (coming from the environment or taught by others), Piaget believed a child's interactions with his or her environment create learning experiences, therefore a child is utilizing intrinsic and extrinsic modalities to learn (Boden, 1979; Mooney, 2000).

Piaget's theory included the belief that children learn best when they are doing the work themselves. He believed that by doing, children create their own understanding of the world around them. Piaget discussed how the opportunity for a child to construct his or her own learning environment is far superior to any instruction an adult could provide. He also believed that children only learn when their curiosity is not fully satisfied. Through his research and work, Piaget created four stages of cognitive development. Piaget's work on the developmental stages of the child has been a primary influence on American preschool programs over the past 40 years (Boden, 1979; Mooney, 2000).

Piaget developed four stages to describe cognitive development in children. He discussed the approximate age of the child and the behaviors exhibited at each stage. The four stages include sensorimotor, preoperational, concrete operational, and formal operational. The sensorimotor stage includes children from birth to age 18 months. In this stage, the child relies on his or her senses and reflexes to learn about the world. Children in this stage only know what they see until they develop object permanence around age 8-10 months. Once object permanence is developed, children begin to understand that even if they cannot see something, it still exists. This is evident when a baby in a high chair drops an item on the floor only to drop it again once it is given back. This is also the time in which separation anxiety may occur because the child realizes that when the parent leaves him or her in child care or with another adult, the parent is somewhere else (Boden, 1979; Mooney, 2000).

The second stage, the preoperational stage, includes children from 18 months to 6 years old. At this stage, children are egocentric; they think of things only as it relates to them. For example, a child sharing a toy or story with his or her classmates may receive a number of comments from peers about their own belongings instead of questions specific to the child's toy or story. Another characteristic of this stage is that children can only focus on one trait of an object or a person at a time. Comments and directions are taken literally at this stage. For example, children will often confuse *heavy* and *large*. A child in this stage would believe that a beach ball, because of its size, is heavier than softball. Another example would be that a child at this stage would believe that the shortest person in a group is also the youngest person in that group. Children at this stage gather information from what they experience rather than what they are told. This is one reason why Piaget believed that children need to create their own learning situations (Boden, 1979; Mooney, 2000).

The third stage, the concrete operational stage, includes children ages 6-12 years. In this stage, children form ideas based upon reasoning. One of the most significant developments in this stage is the characteristic of *reversibility*. Reversibility is when a child begins to understand the relationship of objects with one another. For example, in the preoperational stage, a child believes that a larger object is a heavier object. In the concrete operational stage, a child understands the relationship between size and weight, that the larger object is not always the heavier object. The child also begins to categorize objects. In the preoperational stage, all dogs may be called "doggies" or "puppies." In the concrete operational stage, a child can distinguish between types of dogs, such as a retriever and a bulldog. At this stage, children also begin to perform mathematics "in their heads" (Boden, 1979; Mooney, 2000).

The fourth and final stage, formal operations, occurs beginning at approximately age 12 and continues into adulthood. In this stage, children begin to develop logical reasoning skills, abstract thought, and problem-solving skills. Children can think beyond the immediate problem to begin to consider possible outcomes and consequences for actions. They can also begin to plan an approach to solve a problem (Boden, 1979; Mooney, 2000). Piaget's four stages of development are important to understand as teachers and administrators continue to build and implement effective programs to obtain school readiness in children of various ages.

A second theorist whose research would help create appropriate programs for school readiness is Lev Vygotsky. Vygotsky began his career as a secondary school teacher. He became interested in how cognitive and language development influences learning. He was particularly interested in how children approach learning new things. Vygotsky believed that student ability should not be based solely on test scores but should also include observation. His method used a quantitative and qualitative approach to research about the child. Although

Vygotsky believed Piaget's theory about a child's knowledge as being constructed from personal experiences, he built upon it, considering the idea that social interactions also affect a child's development. Vygotsky did not believe that a child's personal experiences could be separated from their social interactions with other children and adults. He did, however, believe that together social and personal interactions help create a child's knowledge (Berk & Winsler, 1995; Mooney, 2000).

One of Vygotsky's important concepts was the *zone of proximal development*. Vygotsky defined this as the distance between the most difficult task a child can do alone and the most difficult task a child can do with assistance from an adult. From this, he developed the concept of *scaffolding*. Scaffolding occurs when the adult provides specialized instructional support to facilitate student learning. This instructional strategy occurs in classrooms throughout the United States on a daily basis. Vygotsky also believed that language development is an important concept to learning. He identified the need for conversations as a learning tool for children. Incorporating conversation and play enhances a child's learning experience. For example, a dramatic play area in a classroom provides the opportunity for social interactions, conversation, role play, taking turns, and the development of countless other skills necessary in life. Vygotsky's theories on children's cognitive and social development helped shape education as we know it today (Berk and Winsler, 1995; Mooney, 2000).

One additional theorist whose work is important in developing age-appropriate school readiness programs is Erik Erikson. Erikson began his career as a teacher and later went to school to become a child psychoanalyst. His theories show how children develop the foundation for emotional and social development. Erikson developed eight stages of psychosocial development. These stages occur from birth through adulthood. Unlike Piaget who believed that

children progressed through each of his stages, Erikson believed that there is a task to be accomplished at each stage and only successful resolution of that task will lead individuals to the next stage. "As people pass through each stage, they form personality strengths and weaknesses based on their development during that stage" (Mooney, 2000, p. 38). Erikson branded the term *identity crisis*. He believed that it is inevitable that, at some stage, individuals would struggle with where they belong. He felt that this was especially true for young adults as they moved into adulthood (Coles, 2000; Mooney, 2000).

Erikson developed eight stages of psychosocial development. The first four stages of Erikson's theory are the most appropriate and important to understand when developing school readiness programs for children. Therefore, these will be the only stages outlined in this work. The first stage, Trust versus Mistrust, occurs from birth to age 1. At this stage, babies begin to develop a sense of trust. Erikson believes trust has two parts, external and internal. Babies must develop both of these. External trust is the belief that adults will be present to meet the needs of the baby. Internal trust is the belief that the baby has the power to effect change and cope with various circumstances. If trust is fulfilled, babies develop *attachment* to adults. The second stage, called Autonomy versus Shame and Doubt, occurs from age 2 to 3. The goal at this stage is to develop autonomy without shame and doubt. In this stage, children need to learn how to *hold on* and *let go*. The goal is to achieve balance between the two. When adults are unable to adjust to the swinging needs of the child to hold on and let go, the child is often shamed for his or her behavior. At this stage, adults need to give clear choices and set clear and consistent limits (Coles, 2000; Mooney, 2000).

The third stage, Initiative versus Guilt, occurs from age 4 to 5. At this stage, the goal is to acquire a sense of purpose. A child who successfully completes this stage will emerge

confident and competent. This stage is usually easier for the adults supporting the children to navigate. The adults are expending less energy chasing the children and attending to their behaviors. Adults have to be careful at this stage not to hinder child development. This may occur if the adult is focused on correcting the child's mistakes or cleaning up after the child. The fourth stage, Industry versus Inferiority, occurs from age 6 to 12. This is the last of Erikson's stages that might play a role in the development of school readiness skills. At this stage, children begin to develop a sense of pride in their work and their accomplishments. Laverick (2007) stated, "Erikson cautions 'a child's development is disrupted when family life has failed to prepare him for school life'" (p. 322). It is important for children to be encouraged and praised by adults at this stage. Without encouragement and praise, children will begin to doubt their ability to be successful (Coles, 2000; Mooney, 2000). Understanding, utilizing, and reflecting on the first four stages of Erikson's theories on psychosocial development may help educational administrators and teachers develop effective school readiness programs that meet the specific age-appropriate needs of the students.

Preschool Attendance and School Readiness

Many studies related to school readiness and academic achievement begin with students entering preschool. Two particular studies include research by Ramey and Ramey (2004), related to early intervention as a way to reach young learners, and research by Taylor et al. (2000) regarding preschool attendance and kindergarten readiness. Both of these studies address the need for young children to attend preschool environments that begin to build school readiness skills, especially for students in low socioeconomic groups.

Ramey and Ramey (2004) looked at school readiness and academic achievement. They noted that a large number of children started kindergarten with major delays in language and academic skills. Often, school districts wait for these children to fail and then provide assistance in terms of remedial or other academic support programs. The authors of this study discussed how providing programs after students fail does not sufficiently help these children "catch up" to their grade level peers and then achieve at that grade level. Ramey and Ramey (2004) completed a study called the Abecedarian or ABC Study. It was a randomized, controlled trial that tested the efficacy of early childhood education for high-risk children and their families. Two groups, a treatment group and a control group, were provided with adequate nutrition in the form of unlimited formula from birth; social services for the family related to housing, job training, and health services; and free medical care from birth to age 5. Children in the treatment group were enrolled in a specially created early childhood center from age 6 months to 5 years. The students in the control group were not enrolled in the program. Children in both groups were provided with assessments from 6 months to 5 years old. Through 9 months of age, no noticeable differences were noted. After age 9 months, students began to show a difference in performance and IQ. By age 4r, 95% of children in the treatment group were performing in the normal range of cognitive abilities for their age while only 45% of children in the control group were performing in the normal range. The results of this study also indicated those children whose mothers had less than a high school degree performed at the lowest levels. As the mother's education level increased so did the child's ability to perform within the normal range. This study went on to discuss special education classification by age 15 and then early adulthood results at age 21 for the two groups of children. The results of this study indicated that increased

early intervention from 9 months of age causes greater, sustainable educational gains through age 21 for children in families with low socioeconomic status.

This study could have great implications for school readiness as a means of academic achievement for young learners. Some of the strengths of this study include the comprehensive nature of following both groups from age 6 months through age 21. The assessments provided to the children appeared comprehensive and age-appropriate. One of the weaknesses of this study was the idea that the treatment and control groups were both treated for purposes of this study. Participates in both groups were provided with proper nutrition in terms of formula, social services, and medical care. Then, the treatment group was provided with an academic preschool program from age 6 months to 5 years. While for the purposes of this study the research was thorough and comprehensive, in reality, it would be nearly impossible to provide these basic services to all families. Following that, it might prove to be difficult to then provide high-quality educational programs for the first 5 years of life. It would have been interesting for the researchers to go into detail as to how a program such as this could be implemented throughout a large city or within a state. The information is logically consistent and based upon supported data collection and analysis. This study is relevant to educational administrators who might be looking for ways to support young learners and their families in communities with a greater need for high-quality early childhood education.

A second study related to this was conducted by Taylor et al. (2000). The researchers were interested in examining preschool attendance or lack thereof with school readiness during the elementary grades. Taylor et al. (2000) stated:

The purpose of this research was to investigate the effect of public/private or no preschool attendance on school readiness among early elementary students. In particular,

we were interested in determining whether students exhibited a differential level of

readiness as a function of participation in preschool programs. (p. 192)

This study followed 171 students enrolled in kindergarten in a small town in south Georgia. At

the end of the kindergarten year, the students were categorized into two groups, a preschool

group and a non-preschool group. Students were assigned to groups based upon school records

or parent-provided information. Students in the preschool groups were subcategorized into three

groups, a public preschool group, a Head Start group, and a private or church preschool group.

All students were given the Georgia Kindergarten Assessment Program. It is an assessment

developed by the state Department of Education and mandated for all children enrolled in the

state public kindergarten program with the purpose of determining readiness for first grade. The

assessment looked at five areas including communication, logical-mathematical, physical,

personal, and social development. Students who attended a preschool program exhibited higher

overall scores and higher scores on the physical and personal sub-sections, but did not exhibit

higher scores in the academic areas. At-risk children were positively impacted by attending

preschool. Findings from this study were interpreted as meaning that preschool attendance may

facilitate school readiness more so than non-preschool attendance.

This study could have implications on school readiness and student achievement for

students entering kindergarten. While this study did not seem as strong as the Ramey and

Ramey (2004) study, it did indicate areas in which students in Georgia achieved higher scores in

terms of school readiness based upon the state-mandated assessment. One of the weaknesses of

this study was that initially the researchers separated the students into two categories including

preschool attendance and no preschool. The researchers discussed how the group of students

who attended preschool were further separated into three groups, including public preschool,

Head Start preschool, and private or church preschool. The authors of this study did not address any differences that may have occurred among children attending each of these three types of preschool programs. If the purpose was to identify differences between the groups, the information should have been provided in the results section. If the authors were not planning to address the differences between the three preschool types, they should not have categorized the groups in the initial sections of the study. If the three categories were important enough to mention, the researchers should have clearly stated why preschool attendance was categorized but not studied in this research. To extend this research, it would be interesting to see developments as to why those who attended preschool did not perform as well as initially expected. Were there differences in the academic and social sub-categories based upon the sub-categories of the preschool group? This data, including the results and discussions, was not thoroughly interpreted or discussed within this study. The information presented initially was logically consistent, but the results and discussion were lacking in data and additional results. This study might prove to be relevant to educational administrators if it had a more in-depth review of the data and a deeper discussion on the results.

In summary, these two studies identify the relationship between preschool attendance and later school readiness. Ramey and Ramey (2004) began by identifying the need to provide early childhood programs that support young learners. They stated that the process of waiting for students to enter school, seeing if they fail, and then providing remedial programs does not provide the opportunity for the students to catch up and then achieve at grade level. Taylor et al. (2000) looked at students who attended preschool as compared to students who did not attend a preschool program. Utilizing state testing, they found that students who attended a preschool program had higher overall scores on the state assessment than students who did not attend a

preschool program. Although these two studies looked at different aspects of preschool attendance and student achievement, both concluded that students who attended a preschool program performed better overall academically than their peers who did not attend a preschool program.

Student Transition and School Readiness

School readiness and student transition is another important area of study. Many researchers have looked at the effects of school readiness and transition on academic achievement. Transition into a school setting is said to be extremely important given the resounding effects that academic failure or early behavior problems can have on later student development (Obradovic, Bush, Stamperdahl, Adler, and Boyce, 2010). Many studies look into transition processes of schools and families and how these might affect students as they continue through school. It is important for schools and families to communicate throughout the process to ensure a smooth, safe, and enjoyable transition from the home into the first school experience and again during important transitions such as between preschool and kindergarten and again from kindergarten into elementary school, especially when the student is attending a new school or program. Dockett and Perry (2003) identified eight important areas that affect transition to school. These areas include: knowledge (academic skills), social adjustment (knowing how to interact in a large group or responding to the teacher), skills (tying shoelaces or holding a pencil appropriately), disposition (attitude towards school), rules (expectations of behavior), physical attributes (age and general health), family issues (family interactions with the school and changes to the child's family life because he or she is starting school), and education environment (what happens at school). Laverick (2007) agreed that there are developmental characteristics that play

a role in school readiness and extrapolated the information to identify how these characteristics influence the transition process allowing adults to become proactive in planning transition activities that are responsive to the children's needs. While the school community must work to put programs in place to allow for a smooth transition for students, without parental support and collaborative efforts, these programs will not be successful. The one constant throughout the research on the importance of transition for school readiness is the recognition that a collaborative effort is needed to welcome young children and their families into the school experience (Laverick, 2007). Dockett and Perry (2009) addressed how many "prior-to-school" settings and preschool programs collaborated to support continuity and transition as students and their families moved from one program to the next. Supporting the students and helping the families to feel comfortable were found to be two important components when teachers and educational administrators began to look at school readiness and the programs needed to support the identified and necessary skills.

A review of the factors that impede and promote successful transition into kindergarten was conducted by Stormont, Beckner, Mitchell, and Richter (2005). This work begins by addressing the lack of continuity between preschool programs and progresses into a discussion of the challenges which affect successful transition practices at various levels. For many children, what will present as difficulty with successful transition into kindergarten can occur while the child is still at the preschool level. Stormont et al. (2005) indicated:

> …preschool education varies from program to program, often ranging from nonregulated babysitters to federally funded classes within the public schools. As a result, the quality of prekindergarten education varies, and curricular similarities between early childhood and kindergarten programs are often limited. (p. 766)

A lack of continuity in preschool programs is the first inhibition to a successful kindergarten transition. In conjunction with this, a lack of communication between the public schools and the various preschool programs is also a hindrance.

Stormont et al. (2005) continued by discussing the various levels of challenges to transition practices. The challenges cited include: systemic challenges, classroom-level challenges, family-level challenges, and child-level challenges. Systematic transition practices are often hindered because of a variety of factors. Often, children entering public school districts with specific behavior problems have been working with outside agencies. Stormont et al. (2005) indicated that "Often, lack of a central team or group to take responsibility for organizing resources and efforts within a community or district further complicates the process" (p. 767). The authors indicated that the development of a formal transition team and plan can help alleviate a lack of communication from the district level. The second challenge that occurs is at the classroom level. Stormont et al. (2005) indicated that large class sizes, receiving a class list close to the start of school, insufficient professional development related to transition practices for kindergarten teachers, and poor classroom management affect successful transition practices in the kindergarten classroom. Family-level challenges occur during the transition process. Stormont et al. (2005) noted that families in preschool programs are used to being the central focus. The researchers identified that once children go to public kindergarten, the parents or guardians indicated that the focus shifts from what was a family-oriented approach to an individual focus on student learning. Stormont et al. (2005) indicated that this caused some families to feel as if they are not welcome in the school environment. Child-level challenges are the last set of risk factors indicated by Stormont et al. (2005). They noted that "early school success if affected by multiple risk factors in young children's lives, and the experiences in early

elementary school will impact the effect of these risk factors…" (p. 769). Children who already experience behavioral problems may have these problems escalate as they try to transition to a new school or program. When planning for the development of school readiness skills, it is important to evaluate how these programs and practices will be implemented and carried through at the district, school, and classroom level, as well as how the classroom teacher, student, and family will be supported throughout the process.

In summary, the transition of students into and between programs is an important factor for the success of students in the program and in their future academic achievement. School administrators, teachers, and parents need to be cognizant of the students' developmental characteristics so that the transition can be smooth and appropriate to each student. Communication is a key factor in the transition process. Family members, school personnel, and members of outside agencies must all participate in the communication process during the transition. Communication must remain open beyond the initial transition to allow school personnel and parents to assist the student throughout the process. The successful transition of students into an early childhood program will set them up for future academic achievement.

<div align="center">**School Readiness and Later School Success**</div>

One major area of research related to school readiness is later school success. Numerous studies have been completed comparing school readiness to various aspects of school success through elementary school and beyond. For purposes of this literature review, later school success will encompass education through elementary school. While studies can be noted which indicate the affects of school readiness with students' academic and social development in high school and beyond, the scope of this work will include elementary school level indicators. The

foundation for later school success begins to build in preschool and continues into kindergarten. Preparing students for later school success can be compared to building a house. When building a house, without a solid foundation the walls will eventually collapse. Even a small crack in the foundation will jeopardize the integrity of the structure. Preschool and kindergarten begin to build that solid foundation for the youngest learners. For this reason, it is important to ensure that the best possible foundation is built to support each student's learning needs.

When looking at students in kindergarten, two main areas may be noted related to building the foundation for later school success. First, there are a variety of student needs the teachers must address. Second, there is the teacher's view of the students' needs. While these two areas may seem similar, they do play two different roles in developing later school success. In terms of addressing student needs, kindergarten teachers begin from the first day helping students transition into the school and program. Often teachers address the fears, anxieties, and tears the students bring to school that arise from leaving their parents, riding the bus, and a variety of other school-related concerns. The teachers are also in constant communication with parents to discuss concerns such as those related to health or behavior (Laverick, 2007). Much of the available research indicates that children who make a smooth transition and experience school success early in their academic career maintain higher levels of academic achievement and social competence as they continue through elementary school (Dockett & Perry, 2003). Part of the transition must include ways for the students to adjust quickly and effectively into the new school setting and the educational program. If adjustment does not occur it creates problems for students as they move through school. Adjustment problems that may affect later school success include, but are not limited to, following directions, lack of academic skills, difficulty working independently or as part of a group, and lack of development of social skills

(Laverick, 2007). At times, parents choose or school personnel may suggest that students wait a year to attend school based upon their age. It has been noted by Dockett and Perry (2009) that the school program is more important to later school success than the age at which students enter school. Addressing student needs from early in their educational career will help build the skills needed for later school success.

Another important component of later school success for students is the teacher's view of what is best for achievement. Teachers spend a majority of their time teaching the students the academics and social skills necessary to succeed. It is important to take into consideration their views as to how to help students succeed. One area in which teachers feel students need to develop skills in order to achieve is adjustment. Teachers have indicated that students need to know how to work as part of a group, how to work with others without relying on the teacher's attention to guide behavior, and how to take direction from adults outside their family as three important areas that grow out of adjustment to school (Dockett & Perry, 2003). Another factor noted by teachers for school readiness and later school success is student participation in a high-quality preschool program (Espinosa et al., 1997). Teachers note differences in student readiness and adjustment when comparing those who attended a high-quality preschool program and those with little or no preschool experience. Espinosa et al. (1997) reported that teachers who stated that children were more ready for school indicated that these children usually had a positive preschool experience which contributed to their overall academic preparedness. These researchers also indicated that teachers believed that high-quality preschool programs enhanced young children's readiness for school. Teachers who work with young children as they enter kindergarten and early elementary school have valuable information about the skills and abilities students need to prepare for their primary school experience.

One study related to school readiness and later school success was conducted by Espinosa et al. (1997). It compared the views of 46 kindergarten teachers on school readiness with the results of the Carnegie Study (1991). The Carnegie Study, conducted by the Carnegie Foundation for the Advancement of Teaching in 1991, gathered the perceptions of 7,000 kindergarten teachers as related to school readiness. The Espinosa et al. (1997) study targeted 11 rural communities and included 46 kindergarten teachers. This study was designed to assess the kindergarten teachers' perceptions of the readiness skills for entering students and to compare these findings with those of the Carnegie Study. Kindergarten teachers were asked to rate their students' readiness in 12 school readiness categories. These school readiness categories were adapted from the Carnegie Study. The rating categories provided to the teachers, in the form of a survey, included information related to communication, interest and enthusiasm for school, compliance with adult directions, working in large and small groups, level of health and nourishment, and social competence, to name a few categories. Based upon the results of the survey, as compared with the results of the Carnegie Study, most of the kindergarten teachers felt that their students were not ready for kindergarten. The majority of the teachers surveyed indicated that their students were less prepared for kindergarten as students who attended 5 years prior (55%) while some teachers (36%) indicated that the students were more prepared for kindergarten than students who attended 5 years prior. Of the teachers who felt that the students were not ready for school, most of them cited lack of parent availability and involvement as the reason. The teachers indicated that the children were not getting the attention they needed at home due to a lack of parental interest and involvement. The teachers seemed to feel as if the children were not being sent to high-quality preschool programs that could begin to build

academic and social skills. This study outlined the expectations and perceptions of kindergarten teachers in one rural community.

This study by Espinosa et al. (1997) could be utilized to extend research on teachers' perceptions of school readiness and later school success. Some of the strengths of this study include the comprehensive nature of the survey utilized to collect data and the comparison with the Carnegie Study. The data collection tool had questions about a variety of areas related to school readiness. It not only looked at academic achievement, but took into account categories that related to the development of the whole child. The survey included information on communication, health and well-being, enthusiasm, compliance, attention, academics, family history, and preschool care. The comparison of this data collection with that of the Carnegie Study (1991), a collection of data from 7,000 kindergarten teachers, provided the authors with a solid base of information with which to compare their study. One of the weaknesses of this study was the lack of information about the teachers taking the survey. While the researchers indicated that 44 of the 46 available teachers participated, it would be interesting to have more information about the teachers. This became evident when reviewing the data related to school readiness. Of those surveyed, 55% of the teachers felt the students were less ready for kindergarten than students who attended 5 years prior to the study, while 36% of the teachers felt the students were more ready for kindergarten than those who attended 5 years prior to the study. It would be interesting to know the experience level of these teachers as well as their time in the district and the time in their kindergarten position. Do they teachers feel the students are more or less ready based upon their own experience with kindergarten students, or is it a perception based upon other factors? How many of these teachers were in the same position or program 5 years before the study? Are any of the teachers in a personal position, such as close to retirement or

have other issues occurring in their lives, which might give them a skewed perception of student readiness from 5 years prior to the survey and the year of the survey? While for the purposes of this study the research and data collection seemed thorough, it would be necessary and important to have additional information about the teaching staff taking the survey. Also, this study did not address any of the possible limitations. Due to this factor, this research is lacking in an important component of understanding the larger picture of the need for data and the limitations with the study. That the authors did not address the limitations of the study leads one to believe that they either were not thorough in their compilation of the data, or they missed part of the information that could affect the results. As presented, this information is logically consistent and based upon supported data collection and analysis as outlined in the study. Additional questions need to be addressed and answered to make this data solid. This study is relevant to educational administrators who might be looking for ways to support their kindergarten teachers through professional development and other resources to begin to build school readiness skills instruction in their programs.

School readiness and early language development is yet another area of concern for some researchers. Early language development is another facet of later school success as related to school readiness. Large numbers of children are said to begin public kindergarten programs with major delays in language development that affect basic academic skills (Ramey & Ramey, 2004). A lack of early language development that has missed the early intervention process causes additional problems for students entering kindergarten. On top of socialization and acclimation to the school environment, these students may have difficulty communicating and/or understanding their peers and adults in the program. Espinosa et al. (1997) indicated that many kindergarten teachers cited a lack of proficiency in language as a hindrance for students entering

kindergarten. Lunkenheimer et al. (2008) indicated that language and self-regulation skills, independent of each other, have been shown to be key contributors to children's successful adaptation to school. They also noted that language and self-regulation skills were positively associated with parental involvement. As noted throughout the study, while it is important for schools to be prepared for the incoming students and their needs, it is equally important for parents to remain involved with their children and the educational process. Parents must maintain a language-rich environment at home as students build language skills at school. Although a lack of early language skills can cause a decrease in school readiness and the ability to learn, Ramey and Ramey (2004) noted that with the right types and amounts of cognitive experiences, especially in warm and responsive social environments, children can show gains in their linguistic competence. Early language development is one area where improved skills and early intervention may help prepare students for kindergarten and beyond.

Early language development and how it relates to school readiness and later school success is another area that is prevalent in the research. Justice et al. (2009) wanted to show that underdeveloped language skills at school entry served as risk indicators for poor academic and social outcomes in the later primary grades. They found that kindergarten teachers indicated that students with poor behavior also displayed a lack of academic and communication skills. Participants in this study were part of a larger study by the National Institute of Child Health and Human Development. Children were selected for the study based upon unremarkable scores on a developmental assessment at age 24 months. Children with unremarkable scores were selected because the scores indicated that there was not significant cognitive impairment. The 1,064 children selected were assessed further and classified with receptive or expressive language difficulties as measured at four points from age 15 months to 4.5 years. Kindergarten teachers

completed an academic, social, and behavioral rating scale for each child in the study. The data was compiled to determine how school readiness is affected by the persistence and timing of language difficulties. The researchers noted that while persistence of language difficulties did not seem to impact later school success, the timing of the onset and treatment of the language difficulties did impact later school success. By providing early intervention and language skill development from birth to age 5, children may be better able to come to school ready to learn with fewer obstacles impeding their development.

The results of the Justice et al. (2009) study could have implications for early intervention as it relates to language development and school readiness. One of the strengths of this study included the ability of the researchers to gather information on the children from birth through the start of kindergarten and into the primary grades. This longitudinal study allowed for a deep and thorough understanding of the children involved and how their language development affected their later school success. One weakness of this study is the lack of information provided about school success in the early primary grades. Throughout the study, it was indicated that the children were followed to measure the impact of language difficulties on later school success in the early primary grades. While it was inferred that early primary grades equated to first and second grade, the grade span was never specified. The authors' interpretation of early primary grades was not stated in this article. The researchers could have made this study stronger by defining and interpreting *early primary grades*. Reading this study, the researcher wondered what information indicated school success for early primary grades. It would be interesting to know if the expressive and receptive language development affected the students academically or socially into the elementary grades. The information presented was logically consistent. It was substantive and based upon thorough research of a large pool of

participants as well as the analysis of a significant amount of data. This study would be relevant to educational administrators who are looking to increase early intervention and possibly preschool instruction in the area of language development in an effort to increase later school success at the primary and elementary grades.

In summary, school readiness plays an important role in a student's success in school. A number of factors including transition, social skills, participation in preschool, and language development were addressed in this section. Transition in relation to school readiness included not only the movement into a school program but also adjustment to that program. As part of the adjustment to the program, teachers cited taught social skills as a factor for later school success (Dockett & Perry, 2003). The skills identified by the teachers included the student being able to work in a group, work with others without the teacher's assistance, and taking directions from adults outside of the home. Participation in high-quality preschool programs was identified as a factor in later school success (Espinosa et al., 1997). The researchers in this study identified the perceptions of kindergarten teachers on school readiness. The teachers reported that over the course of a 5-year time span, even for students who attended a high-quality preschool program, students were coming to school less prepared to be successful in kindergarten. Finally, it was cited that language development plays a role in student success in school. When language skills are not developed, students have difficulty with transition, acclimation, and early learning. Early intervention, from birth to age 5, helps alleviate some of these concerns. In order for students to achieve academically into early elementary school, they must come to school prepared with a language and social skills to help them be successful. For students who may be lacking on one or both of these areas, administrators, teachers, and supplemental staff must be cognizant of the students' needs and provide support from the beginning of their school careers.

Parental Interactions with Students and School Readiness

Parental interactions with their child and with school personnel have a great affect on school readiness. Teachers and other school personnel working together with parents will ensure school success for students. Espinosa et al. (1997) indicated that a child's early care and learning experiences are powerful determinants of future academic and life success. Taylor et al. (2000) seems to agree in stating that many relevant issues, such as parental involvement, home environment, and socioeconomic status, play a role in school readiness variables. Promoting a positive transition from home to school for students requires mutual understanding and respect between school personnel and parents, as well as an understanding of what occurs in each context (Dockett & Perry, 2009). Teachers can often alleviate some of the parental concerns by providing information about routine procedures such as getting off and on the bus, restroom routines, cafeteria procedures, separation anxiety, and getting acclimated with a full day of school, to name a few (Laverick, 2007). The National Education Goals Panel (1997) identified three elements of effective family and community support. These include access to high-quality and developmentally appropriate preschool programs, recognition of the importance of parents in the learning process, and the provision of adequate nutrition, physical activity, and health care. Using these as building blocks and opening communication between the home and school will help support learning to enhance school readiness and later school success. Obradovic et al. (2010) indicated that students who come from highly educated families are often able to overcome adversity exposure and achieve academic success because of the support in the home.

Not all students have the opportunity to come from a household with highly educated individuals. Support is that much more necessary for those children who come from families that are not highly educated and have additional social and emotional needs. Espinosa *et al.*

(1997) noted that some children are not receiving the nurturing care and early stimulation that they need because parents in low-income families are more likely to be stressed, young, on drugs, or unable to adequately parent. Lunkenheimer et al. (2008) indicated that "School readiness is a crucial concern for young children from high-risk families because difficulties with learning at the transition into formal schooling can set children up for a cycle of failure" (p. 1738). Family adversity is associated with a number of factors that affect kindergarten students including lower school engagement and decreased pro-social behavior and school engagement (Obradovic et al., 2010). Once these behaviors are brought to school, kindergarten teachers may develop a clear understanding that some young children's developmental status has been compromised by the inaccessibility of their parents. Teachers have perceived that as the amount of time parents spend with young children decreases, their child's readiness for school also decreases (Espinosa et al., 1997). The ability of parents to prepare their children for early learning experiences and indirectly for later school success can be supported with communication and programs. Dockett and Perry (2009) stated that attention to family and community supports which allow for high-quality prior-to-school programs allow children and their families to engage in a range of experiences. It is important for school districts to put into place programs and disseminate information that allows families to learn about ways to support their young children in a friendly and non-threatening way. With the proper supports in place within the school and community, parents and families can learn how to better support the readiness of their young children.

In summary, parental interactions with students, prior to them being school-aged, play an important role in student acclimation to school and later success in school. Before students come to school, parents play a role in the child's readiness. It is beneficial if parents provide their

child with high-quality preschool experiences, understand their role in their child's learning

process, and provide nutrition, physical activity, and health care to their child from birth. School

readiness is a greater concern for high-risk families. Often families in these situations do not

have the means or the ability to provide their children with those factors which influence

academic achievement. The school and community must work with these families to provide the

resources necessary which will allow the students to achieve in school.

Parental Involvement and Later School Success

Two studies will be discussed that examine parental involvement and later school

success. The first study, by Lunkenheimer et al. (2008), examined the longitudinal effects of

parents' positive behavior support and their children's school readiness in early education. In

this study, 731 families from Women, Infants, and Children Nutrition Programs were recruited to

participate. Families participated at the time their child was 2 years old. They were asked to

complete a follow-up activity when their child was 3-years-old, and again at 4-years-old. Of the

initial sample, 619 families participated in the age 4 follow-up activities. Families participated in

an in-home assessment of parental involvement, a videotaped session that was later coded for

specific behaviors related to positive reinforcement, a parental engagement interaction, and an

assessment of proactive parenting. In the area of parents' positive behavior support, the

researchers found that providing support that modifies parental behaviors increased parent-child

interactions that provided collateral benefits to the child. In the area of school readiness, the

researchers noted that parental positive behavior supports to the child at age 2 promoted the

children's self-regulation skills at age 3, which contributed positively to language development

at age 4. Overall, by supporting the parents in an environment within which they were

comfortable, parental ability to positively influence their child's development and ability for school readiness and later school success increased.

This study by Lunkenheimer et al. (2008) is an important example of how proper parental involvement and interaction can help support young children as they build the skills necessary for school readiness and later school success. One strength of this study was the large sample size and the ability of the researchers to gather a population with similar socioeconomic and familial needs. A second strength of this study was that the treatment occurred in the families' homes where they felt most comfortable and which provided the opportunity for the parents to better understand how to affect their child's growth in their own home. One weakness of this study was the explanation of information provided about the work with the families. This study would have been better if the authors presented detailed information about how the individuals working with the families provided specific supports and answered questions by the parents about the treatments. The description of the study did not provide an explanation of the actual treatments which took place in the homes. It would have been interesting to know more about the interactions with the families. The material presented is logically consistent. It is substantive and based upon data gathered from a large number of families who agreed to participate in the study. The researcher also gathered information over a 3-year period from those families who chose to participate beyond the first data collection cycle. This study is relevant to educational administrators who are looking for ways to teach families how they can support school readiness skills at home prior to a child entering kindergarten.

The second study, by McIntyre, Eckert, Fiese, DiGennaro, and Wildenger (2007), addressed how family experiences and involvement helped students transition into kindergarten. The researchers investigated the experiences of 132 families as their children completed an early

education program and transitioned into kindergarten. The authors wrote that "creating education practices that encourage family-school partnerships may be especially important as children move from early education programs to kindergarten" (p. 83-84). This is even more imperative for families who are transitioning into a kindergarten program that is not affiliated with their preschool program. This study, conducted in an urban school district in the northeast United States, surveyed parents of entering kindergarten students. Surveys were sent home just prior to the start of the school year. The survey incorporated 57 items in five areas including: child educational history, family concerns regarding transition, family identified needs during transition, family involvement in transition-related activities, and family socio-demographic information. Results from the survey indicated that a majority of the respondents wanted more information regarding the transition to kindergarten. This included the areas of curriculum, assigned teachers, student placement, and how the parent could prepare the child for school. Results from the survey also indicated that those who received government aid were less likely to be involved in kindergarten transition than those who did not receive government aid. The researchers indicated that early childhood and kindergarten personnel should attend professional development that provides the opportunity for instruction on transition practices. As administrators address the needs of the parents in terms of transition and provide training to staff to alleviate some of the parental concerns, school readiness skills may increase as parents become more supportive of the school environment.

This study by McIntyre et al. (2007) provides insight into parental expectations and feelings about what school personnel can do to alleviate parental concerns and provide support as they prepare to send their young children to kindergarten. One strength of this study is the diversity of the group of parents surveyed. The parents who responded represented a variety of

ethnic and socio-economic groups and included various levels of education and a variety of preschool programs. This study could be improved by providing more information about the initial population surveyed. The study outlined how the researchers worked with the school district to distribute surveys by mail to the incoming kindergarten families. The study indicated that 64 surveys were returned by the postal service and 132 surveys were completed and returned. The information provided indicated that the response rate was 17%. It would be interesting to know exactly how many surveys were sent and if the researchers were able to ascertain why some families chose not to return the survey. Was the survey too long? Were the families able to read the survey? Would offering an incentive encourage the families to complete the survey? Gathering this type of information would help the researchers better prepare for future surveys. The material presented is logically consistent. It is substantive and based upon data gathered from the families who agreed to participate in the study. This study would be relevant to educational administrators who are looking for ways to support families as they begin to transition their children to a new school and community for their kindergarten program.

Some research is available on single-parent households and school readiness. While the plethora of information available for some of the other topics covered is not readily available for this topic, it is still an important component of the research and data related to school readiness and later school success. One may consider single-parent households and immediately think about urban environments. Speculation of the affects of single-parent households and children in an urban environment are plentiful. Espinosa et al. (1997) indicated that, in reality, students in rural environments might actually be worse off than their urban peers. Children in rural settings are more likely to be poor, have less access to health care, are more likely to attend non-

educationally based preschool programs, and are more likely to have teenage mothers. Children in rural environments are more likely to live in two-parent households where the parents have not been divorced or widowed.

> There is some evidence that rural individuals are more conservative and value family and community interactions, have more traditional gender ideologies, and value kindness, physical development, honesty, religion, self-control, social skills, status, and creativity. (Espinosa et al., 1997, p. 121)

Single-parent households generally tend to include a mother and child. These mothers may face difficulties for a variety of reasons. Ricciuti (1999) indicated:

> Because single-parent mothers generally tend to be younger, poorer, less-well educated, and more likely to have experienced racial discrimination, they are assumed to have significantly more limited personal, social, and economic resources available for optimal child care and rearing than in the case of two-parent families. (p. 450)

Another factor related to school readiness in single-parent households is parent education levels. Ramey and Ramey (2004) discussed how "children whose mothers have less than a high school degree perform at the very lowest levels (with an average IQ around 85 – the same that appears in almost all inner-city schools throughout the United States)…" (p. 482). The researchers compared the mother's education level with the child's ability level. The results indicated that the higher the mother's level of education the better the child did in school, even when the child was from single-parent households. Single-parent households affect a child's ability to be ready for school. When considering household status coupled with lower IQ levels of the mother and living in an inner-city environment, Ramey and Ramey (2004) indicated that this group of

students may need additional support to be prepared for kindergarten and elementary school programs.

One study by Ricciuti (1999) examined the impact of single-parent households on school readiness for White, Black, and Hispanic 6- and 7-year-olds. The first important goal of this study was to define single-parenthood. For the purposes of the study, single-parenthood was defined by whether or not the child's mother is living with a spouse or partner. Utilizing National Longitudinal Survey of Labor Market Experience of Youth (NLSY) data, the researcher selected two groups of 6- and 7-year-old children from women followed yearly in the NLSY study. The survey was conducted during 1986 and 1988. The 1986 sample included 700 children. The 1988 sample included 1,000 children. Both groups consisted of White, Black, and Hispanic families. The information gathered from the NLSY survey was utilized, and home visits were conducted in 1986 and 1988. During home visits, the data collectors looked at family structure (identified single parents living with a spouse or partner – these families were not considered single-parent households), maternal and household measures (looked at maternal ability level, maternal education, net family income, mother's employment, living at poverty level, child gender, and the number of maternal relatives living in the household), and child outcomes (looked at vocabulary, reading, and mathematics scores given during a home visit as well as maternal responses on a behavior questionnaire). The results of this study indicated that single-parenthood was unrelated to school readiness and achievement across all ethnic groups and gender. Mothers employment and number of hours worked did not increase the likelihood of an influence on child outcomes.

This study by Ricciuti (1999) provided information related to single-parent households and its effect on school readiness and later school success. One strength of this study is the

number of participants for which data was collected over the 2 years the study was conducted. Combined the study addressed the progress of 1,700 6- and 7-year-olds. Such a large sample size may have provided more concrete evidence. A second strength of this study is the data collected from home visits. Based upon the description presented in the article, it was assumed that the researcher had the opportunity to gather information during site visits to most, if not all, of the families who participated in the study. While the ability to gather data from site visits is a definite strength of this study, an idea related to it is a weakness. In the Methods section, the author discussed measurement procedures. In this area, the author briefly discussed home visits and then outlined the three areas in which information would be gathered during the home visits. The author of the study did not indicate who would complete the home visits, how they would be scheduled, what would happen if a family did not want to participate in a home visit, or any other information related to this important component of the research. This study would have been stronger had the author taken the time to include information about the home visit procedures. This is an important component of the research, yet it seemed to be skimmed over in the research article. If the author did not feel that this component held much importance, the reasons should have been indicated in the discussion. The material presented is logically consistent. It is substantive and based upon data gathered from numerous families who participated in a longitudinal study by NLSY. It is stronger than some other studies, such as that by McIntyre et al. (2007), as it included survey data as well as home visit data on 1,700 mothers and their 6- or 7-year-olds. This study would be relevant to educational administrators who are looking to support non-traditional families within their community. While the results of this study do not indicate that these elementary students are at a greater risk for school readiness and student achievement, educational administrators may not wish to conclude that single parenthood does

not create risks for students. While the results revealed little to no affect on school readiness and later school success for elementary students from single-parent households, educational administrators may still wish to put in place programs to support this ever-growing group of students.

In summary, parental involvement in a child's early developmental years plays a role in later school success. Lunkenheimer et al. (2008) studied 619 families and found that providing support that modified parental behaviors and interactions with their child increased the benefits to their child once he or she was school-aged. McIntyre et al. (2007) studied 132 families and gathered information on transition practices. They discovered that parents wanted more information regarding the transition to kindergarten. This was especially true for those families not affiliated with a preschool program. Single-parent households are a factor in parental involvement. A review of the literature indicated that most children in single-parent households live with their mother and that the mother's education level affects the child's success in school. Ricciuti (1999) completed a study looking at 1,700 students of single-family households. This study indicated that single-parenthood was unrelated to school readiness. Overall, parental involvement, whether through an intact couple or a single-parent household, plays a role in student success in school.

Social Success and School Readiness

Social success is also an important component of school readiness for children. Dockett and Perry (2009) described how success at school is often equated with academic success, but social success for students is equally important. Much of the available research related to social success discusses the child's view of what is important in school. At times, parents, teachers,

and administrators spend so much energy preparing for student arrival and building up to that important first day of school that they forget to discuss with the children that school in an on-going experience. It is important to keep in mind the child's perspective as the adults prepare them for school. Laverick (2007) shared an anecdotal view of the child's perspective of school readiness,

> Another child was surprised when his mother got him out of bed on the second day of kindergarten. All of the attention had been focused on the first day of school and he didn't realize that it was an ongoing commitment. 'You mean I have to do this again?' he asked in surprise. (p. 321)

As children are prepared for school, the adults must stress the idea that school is not a one-day event. Looking to the theorists views on child development, adults must also consider the stages in which children pass through as they develop skills and an understanding of the world around them. When children were asked about their views of school readiness, their ideas of what is important differed from that of the teachers and parents. Laverick (2007) discussed how parents valued social adjustment for their children as they begin school, while the children valued how they felt about the school and the rules in school. Dockett and Perry (2003) found that some of the children's responses focused on disposition, that is, how the children felt about school and the friendships they would acquire. Social success is an important component of school readiness for children. Parents and teachers must remember to ask the children what is important for them as they begin school. Adults imposing their own social concerns on children may cause anxiety for the children as they begin school, especially if their own concerns are not addressed as well.

Two relevant studies were conducted related to social success of students as they begin school. A study by Ladd and Price (1987) looked at children's social and school adjustment as

they transitioned from preschool to kindergarten. The purpose of this study was to identify factors that predicted children's social and school adjustment as they began a new program. This study looked at 58 children as they prepared to attend kindergarten in a midwestern grade school system. The children came from 12 preschool programs into the public kindergarten program. Parent and school data was gathered at three points including during late preschool, early kindergarten, and late kindergarten. Data collection included observation of students in their classrooms as well as questionnaires mailed home during the same period of time. In the questionnaires, aside from the demographic information collected, parents were asked to provide information about their child's preschool experience, list the names of peers their child interacted with outside of school, and describe non-school community settings with which their child had regular contact with peers. Students were also assessed in the classroom with a variety of inventory tests, and the teachers completed rating scales on the students. The results of the study indicated that group-acceptance, peer-liking, and peer-rejection measures were the most significant in terms of predicting children's social adjustment in preschool and kindergarten. The findings indicated that children with higher levels of cooperative play in preschool tended to be better liked by their peers in kindergarten and perceived by teachers as more involved with their new classmates. This study provided an important view of how preschool participation can affect kindergarten adjustment even when the children are attending a new environment with unfamiliar peers.

This study, by Ladd and Price (1987), offered a thorough look at preschool participation and how it can affect kindergarten social success and school readiness. One strength of this study was the methodical collection of data. The researchers took the time to collect data from a number of sources in a variety of ways. Demographic and survey data was collected from

parents. Students were observed in their school setting and took a series of inventory assessments. Teachers completed a rating scale on each student and participated in interviews. The researchers also took the time to outline specifically and in detail in the Methods section how and why the data was collected in this fashion. It makes this study easy to replicate. While no specific weaknesses were noted, this study would be even stronger if the researchers included in the document an appendix that incorporated the surveys and assessments. This would afford the reader the opportunity to better understand the assessment tools utilized in this study. The material presented is logically consistent. It is substantive and based upon data gathered from numerous sources including the parents, teachers, and children through a variety of modalities. This study is relevant to educational administrators who are looking to build transition programs and provide support for students and families, especially those who are entering kindergarten from preschool programs that are not affiliated with the district in which the kindergarten program is housed.

A second study related to social success and school readiness was conducted by Ladd (1990). The researcher examined how making and keeping friends predicted early school adjustment. The researcher measured the peer relationships of 125 kindergarten students in four midwestern schools at three points throughout the school year. Measurements were taken at the beginning of the kindergarten school year, two months later, and at the end of the school year. All of the children who participated in the study attended a kindergarten program that was not affiliated with their preschool program. Questionnaires were mailed to the parents of the children in the study. The questionnaires gathered information about the child's age, previous school experience, and the child's peer relationships. Trained examiners conducted inventory assessments on the students, and graduate assistants conducted interviews with the students.

School adjustment data was collected from parents, teachers, children, and observers. The results of the study indicated that the development of early classroom peer relations were an antecedent to later school adjustment. Maintaining prior friendships provided emotional support for students. Children who formed more new friendships gained in school performance over the course of the year. It is believed that these children saw gains because they were creating a larger peer support base for themselves. This study provided a wealth of knowledge from a variety of viewpoints related to children's friendships and school success.

The study by Ladd (1990) provides insight as to how children's friendships in kindergarten affect later academic and social success. As with the previously discussed study by Ladd and Price (1987), this study had similar strengths. The various types and amount of data collected for this study is a strength. The researcher collected data from parents in the form of a questionnaire. Students were assessed individually with inventory tests, and they were also interviewed about their relationships with their peers. Teachers documented information about peer relationships and participated in interviews. Peer interactions were observed in the classroom setting. The detailed and thorough collection of data is a strength of this study. One area for improvement is the inclusion of the actual questionnaire. The article outlined the type of information asked on the questionnaire but it did not provide specifics. If one was interested in replicating this study, having the questionnaire used in Ladd's research would enhance the reliability of the replication. The material presented is logically consistent. It is substantive and based upon a large amount of data gathered from numerous sources including the parents, teachers, children, and independent observers. Data was collected using questionnaires, inventory assessments, interviews, and observations. This study is beneficial to educational administrators who are interested in building social supports within their building. Very often,

the focus of schools is on the educational component. Parents and educators often forget that, especially for primary-aged students, it is important to build upon the social and emotional components of the child as well as the academics. Educational administrators have to remember to put supports in place for children, teachers, and parents that provide information and resources to support the whole child, not just the academic component.

In summary, social success plays a role in the academic success of students. In looking at the differences in perceptions between adults and children, adults put significant emphasis on the first day of school, while children view social success in school in terms of how they feel about school and the friendships they develop in school. Two studies provided information related to social success in students. Ladd and Price (1987) indicated that children with increased levels of cooperative play in preschool were better liked by their peers in kindergarten. Ladd (1990) found that a student's ability to make and keep friends predicted early school adjustment and that the more friends a student has the more gains he or she saw in school performance. While social success plays a role in later academic success for students, the social roles seem to stem more from how the student interacts with his or her peers than what teachers and parents offer their students in terms of social roles.

Student Behavior and Later School Success

A substantial amount of time has been spent presenting information related to school readiness and various components of a child's overall well-being in school. One last component of school readiness is the role of behavior and later school success. A variety of factors can contribute to student behavioral problems in school. These may include, but are not limited to, underdeveloped academic skills, early school failure, or problems at home that carry over into

the school environment. Justice et al. (2009) discussed how poor academic and social outcomes in the later primary grades may occur because of underdeveloped skills in language, reading, or social-behavioral competence. Kindergarten teachers reported that the behaviors children exhibit that undermine their school readiness the most include lack of academic skills, inability to follow directions, difficulty with social skills and communication, and difficulty working independently or as part of a group (Justice et al., 2009). (Many of these ideas have been previously addressed in this document.) Ramey and Ramey (2004) stated that children who have early failure experiences in school are most likely to become the children who are disruptive, inattentive, or withdrawn. While behavior problems can be caused by various difficulties in school, they can also stem from problems in the home. Obradovic et al. (2010) indicated that children who are exposed to stressful events at home such as marital problems, financial stress, or parental depression, are more likely to exhibit social-emotional problems at school. Student behavior in school can be affected by a variety of internal or external sources. If behavior problems are not addressed and remediated, they have the potential to inhibit later school success in children.

Two studies will be discussed related to behavior and later school success. In the first study, Raver, Jones, Li-Grining, Zhai, Metzger, and Solomon (2009) looked at the effect of targeting children's behavior problems in the preschool classroom. Thirty-five Head Start classrooms in high-poverty neighborhoods were chosen to participate in this study. Two cohorts of students and teachers, a year apart, were followed during this study. The study began with 87 teachers and increased to 90 by the end of the study. The study also began with 543 students. By the end of the study, 509 students remained in the program. Some of the children in the study were in classrooms in which the teacher was trained in the Chicago School Readiness Project (CSRP) and some were not. The study included teacher training for behavior management,

teacher coaching, stress reduction workshops for staff, and direct services for children with the highest level of emotional and behavioral problems. The children who participated in the study were 3- and 4-years-old. Data was collected by utilizing teacher rating scales and classroom observations. The researchers also collected data from on-site administrators that included staff characteristics and demographic data about children and families. The results indicated that children exposed to high-poverty environments and multiple family stressors associated with poverty were at an increased risk for behavior problems in school. Students in the CSRP classrooms had a reduction in the amount of internalizing (disconnection and withdrawal) and externalizing (physical and verbal aggression) behavior problems exhibited in the classroom. The results of this study could help address and curb behavior problems in students in Head Start and other preschool programs across the United States.

This study by Raver et al. (2009) provided information relevant to modifying and controlling the behavior of 3- and 4-year-olds in Head Start programs. One strength of this study is the amount of teacher support provided for the implementation of the CSRP program in the classrooms. In this study, the researchers outlined how the teachers were trained in the model as well as how they were provided with in-class coaching and stress management techniques. After training for the program, teachers were afforded the opportunity to practice and implement the program with support in their classrooms. It is speculated that this level of teacher support will ensure that the program is being implemented effectively therefore solidifying the data collection. A weakness of this study is that it is impossible to determine which components of the CSRP program are most effective in the classroom. This program provided a number of strategies and skills for teachers to control student behavior in their classrooms. While the CSRP program was multi-faceted, one cannot determine from this study if any particular component

was more or less effective than another component. Future research to determine the effectiveness of individual components would help streamline the training and implementation from a teacher perspective, possibly providing more time to address student needs. The material presented is logically consistent. It is substantive and based upon data gathered from 35 Head Start classrooms in high poverty areas. This study would be relevant to educational administrators who work in impoverished communities. An intense behavioral modification program that can identify and adjust student behaviors at a young age would increase the likelihood that those students would achieve later school success.

In a second study related to preschool children and classroom behavior, Fantuzzo, Bulotsky-Shearer, McDermott, McWayne, Frye, and Perlman (2007) looked at classroom adjustment behavior in students in urban Head Start programs. A sample of 1,764 children in a large urban Head Start program in the Northeast participated in the study. The researchers utilized five assessment instruments which included: an adjustment scale to measure emotional and behavior adjustment, a learning behaviors scale to measure approaches to learning, a child observation record to measure classroom learning competence, an early mathematics ability scale to measure mathematics readiness, and an early screening inventory to measure early learning success. The study included teacher observations, teacher rating scales, assessments administered individually to students, and classroom observations. Data was collected in the early fall and late spring for the same group of students and teachers. Results indicated that students who scored higher on regulated behavior are more likely to take instructional feedback well, have lower levels of aggression, and higher levels of attention. Students who exhibited academically disengaged behavior also exhibited problematic classroom behavior which affected the ability to participate in learning activities. Younger children exhibited more behavior

problems and less emotional regulation than their older peers. Girls demonstrated higher regulated behavior than boys. This study measured student academic development and behavior controls for students in a large urban Head Start program.

The study by Fantuzzo et al. (2007) utilized the results gathered from five measurement instruments to discuss classroom behavior and academic engagement for preschool students in a Head Start program. One strength of this study was the data collection. The researchers utilized five measurement tools to gather information on early social-emotional classroom behaviors and readiness outcomes. The utilization of each tool as well as the desired outcome was described in detail. One weakness of this study is also related to the measurement instruments. The researchers clearly outlined what instruments were used and why they were chosen for the study. The measurement instruments included a comprehensive assessment of behavior adjustment, approaches to learning, readiness, learning competence, learning success, and mathematics skills. None of the assessments included pre-reading or reading skills. A more comprehensive study would have included student data related to reading including phonemic awareness, listening comprehension, vocabulary development, pre-reading skills, and pre-writing skills. While the author does state that further research is needed in this area, the study does not address why reading skills were omitted. The material presented is logically consistent. It is substantive and based upon data gathered from 1,764 students in an urban Head Start programs. Similar to the previous study, this study would be relevant to educational administrators who work in impoverished communities. It would help administrators build academic and social programs centered on the needs of this particular group of students. An educational administrator could also utilize this research to put academic and behavior modification programs in place in the school setting to help these children succeed.

It is important to note two specific pieces of information related to behavior and later school success. First, all of the studies identified that are related to behavior pertain to preschool- and kindergarten-aged students. Little data was available about the effects of on-task behavior at the early elementary student and later school success. More research is needed in this area. Secondly, it is interesting to note that the few studies available about behavior and later school success were centered on students in Head Start preschool programs. Much of the literature reviewed supports the notion that children from low income homes may have additional needs in order to be prepared for school. While it is understandable that children in Head Start programs may have additional academic, social, and behavioral needs, these children are not the only ones with behavior issues in school. It would be interesting to read studies conducted on preschool, kindergarten, and primary grade children in non-Head Start or early intervention programs, as related to behavioral concerns, including on-task behavior, and later school success.

One study reviewed but not outlined in detail is that by Byrd, Weitzman, and Auinger (1997). This study looked at behavior problems of children aged 7- to 17-years-old. It was specifically omitted from this review because, while it addressed the behaviors of students from elementary school through high school and later school success, it specifically addressed delayed school entry and delayed school progress. For the purposes of the study, delayed school entry referred to students who started school at a later age. Delayed school progress referred to students who were retained in a grade. While a connection may be made between delayed school entry or delayed school progress and later school success, that topic was not the intended focus of this literature review.

In summary, a student's ability to regulate his or her behavior plays a role in later school success. Often, students who enter school with underdeveloped academic skills, who have experienced early school failure or have problems at home, exhibit behaviors that do not align with later school success. Justice et al. (2009) indicated that when students lack academic and/or social skills, they have difficulty following directions which leads to difficulty learning. Raver et al. (2009) studied 543 students in 35 Head Start classrooms. They found that students exposed to high-poverty environments and multiple family stressors had an increased risk for behavior problems. Fantuzzo et al. (2007) studied 1,764 children in a large urban Head Start program. Their findings indicated that students with increased regulatory behavior could better handle academic feedback, young children had more behavioral problems, and girls had increased regulatory behavior. Increasing opportunities for students to learn how to control their behavior will allow them a better chance of success academically in school.

Summary

The research outlined on school readiness and student success encompasses a variety of areas related to students across a variety of learning environments. This work addressed school readiness as it relates to the preschool experience, transition into elementary school, later academic success, early language development, parental interactions, single-parent households, student social success, and student behavior. Most of the available research addressed the needs of preschool and kindergarten students as they transition into new schools or programs. The research reviewed is of scholarly significance. Much of the research reviewed utilized thorough data collection from large population sizes. The research that was lacking in data collection or sample size was described during the discussion of the strengths and weaknesses of each

research article. The research reviewed also has practical significance. Most of the articles

reviewed contained a section that outlined the implications for policy and practice. Many of the

research articles included information relevant for the educational administrator. For all of the

articles, regardless of the inclusion of specific information pertinent to educational

administrators, one can deduce from the data and discussion ways in which the information

could be applied to school or district operations to help support the learning needs of the students

as well as the needs of the teachers and parents. Review of the data would help an educational

administrator make informed decisions about school readiness programs and school success.

This body of research has implications on policy, practice, and future research. In terms

of policy, this research could be relevant to age requirements for the start of school. In New

Jersey, for example, students must be 5-years-old by a specific date to enter kindergarten. While

the purpose of this policy is understood, there are two problems with it. First, local districts have

the opportunity to set the kindergarten entry cut-off date. A date set in one district may be

completely different than the neighboring district. Entry dates should be uniform across that

state. The second problem is that many parents who can afford to will send their child to a

private kindergarten program to by-pass the entry date requirements of public school programs.

A student who misses the cut-off date and completes a private kindergarten program can then be

enrolled in first grade the following year, possibly younger than most of his or her peers, unless

the district has a policy on birth date cut-off for first grade entry. A second area of policy where

this research might be relevant is that of entry assessments for academic and social skills. If and

how districts assess incoming kindergarten students varies from district to district. Some

districts assess students in the spring prior to the start of kindergarten. Some districts assess

students just prior to the start of the school year. Other districts may not assess students until

after the start of kindergarten in the fall. Some districts do not access at all. Lunkenheimer et al. (2008) indicated that more comprehensive measurements of school readiness are needed. The research from the Lunkenheimer et al. (2008) study indicated that measures are needed which include language and cognitive skills, behavioral and emotional self-regulation, and socio-emotional competence. Putting into policy guidelines for uniform kindergarten assessments across the state, including multi-faceted assessments, would assist school districts in measuring student needs and placing students appropriately in local programs as well as supporting the needs of students who transition into a school or program from another district.

A second area in which this research has implications is in practice. Utilizing the information presented in this literature review, educational administrators and school district personnel could implement a variety of programs to assist students and families as children transition into elementary school from preschool programs. Transition programs are necessary to alleviate some of the fears and concerns parents and children have about going to a new school or starting a new program. This is particularly evident as parents send their young learners from preschool programs into the public school system for kindergarten. It is important to support parents and their students as they get their first public school experience. Teachers and administrators should be available to answer questions and provide support for the various needs of parents and students. It may help to include parent workshops or other information sessions related to how the parents can assist and support their children, building school readiness skills, and providing the support at home that is necessary to ensure a positive school experience. It is also important to look at family dynamics and meet the needs of a specific population within a district, if one is present, to help support all families equally. The practices

of educational administrators, teachers, and other school personnel are an important component to helping parents and children feel welcome in schools.

A third area in which this information has implications is in future research to support schools and programs. After the analysis of the research presented for purposes of this literature review, it is evident that there are significant deficits in the research is in the areas of student behavior, school readiness skills, and later school success for the elementary student. More studies need to be conducted related to the behavior of students in grades 1, 2, and 3. Based upon the theories of Piaget, Vygotsky, and Erikson, as well as the amount of money spent on support and intervention programs at these grade levels, it is important to understand how student behavior affects learning. If age-appropriate programs could be put in place to address the behavior needs of this population of elementary students, school districts may be able to decrease the number of academic and social supports necessary to assist this population of students. Individuals in school districts across the United States should consider utilizing research on school readiness and student success to modify and enhance their current programs. Providing support for students at an early age may afford districts the opportunity to modify the programs they have in place for students in later elementary grades. In the future, districts may be able to decrease or even eliminate programs that are no longer necessary because student needs were supported early in their school experience. The implications of policy, practice, and future research as related to school readiness and later school success are great for school districts across the country.

School readiness affects students in a number of areas. It has an impact on preschool experience, transition into elementary school, later academic success, early language development, parental interactions, single-parent households, student social success, and student

behavior. Research related to each of these specific areas has important implications for parents,

teachers, educational administrators, and school programs. Dockett and Perry (2009) noted:

> …any discussion of school readiness should consist of much more than measures of
>
> individual children's skills and knowledge. Schools' readiness for children, and the
>
> available family and community supports, play an important role in developing children's
>
> competencies and creating environments where all children are supported. (p. 25)

Utilizing the available research, data, and studies to assess current programs may help

educational administrators modify current school programs, educate parents as to how they can

help, assist students based upon their individual school readiness needs, and provide support to

students, parents, and teachers. Addressing school readiness skills at a young age may help

students have less difficulty in school and perform better academically and socially as they move

through elementary, middle, and high school, and into their adult life.

Chapter III

METHODOLOGY

Introduction

This study was designed to examine the influence of early childhood program participation on academic achievement by grade 3. It is hypothesized that there is a connection between early childhood program participation and academic achievement at the elementary level. Specifically, it is believed that early childhood program participation will enhance academic achievement as measured by the NJ ASK 3. The purpose of this study is to examine the influence of early childhood program participation on academic achievement by grade 3. This chapter presents the research design, research procedures and instrumentation, data collection, and data analysis.

Research Design

This case study utilized a quantitative approach to data collection. Case study research is an analysis of an individual unit, in this case a school district, which is studied in order to make an informed decision regarding some aspect of that unit. For purposes of this research, one P-12 school district in central New Jersey was studied to look at the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3.

A quantitative approach to this research was used to remove opinions and perceptions from the data collection. The researcher was interested in collecting pure data. In looking at early childhood programs, there are a number of different philosophies as to how and why to teach these young learners in different ways. Many educators and administrators have varying

opinions as to what is best for these students. By looking strictly at the data, the perceptions of

others as it related to student development and academic achievement were removed.

One P-12 public school district in central New Jersey with a long-standing (13 years)

early childhood program was utilized for the purposes of data collection. Quantitative data was

collected through demographic information and NJ ASK 3 results for three cohorts of students

including those who participated in the early childhood program within the school district and

continued through the same public school system through grade 3.

The researcher met with central office administrators from the school district to discuss

and outline the research. Central office administrators approved the data collection. The

superintendent granted permission for the Director of Technology to download the requested

information from the student database. Identifying information was not provided to the

researcher.

The researcher worked with school district personnel to obtain student data for three

cohorts of students. These cohorts included students in grades 4, 5, and 6 during the 2013-2014

school year. These three cohorts were chosen for two reasons. First, these students took the

most current version of the NJ ASK 3. During the time these students sat for the NJ ASK 3,

district curriculum was consistently written to the appropriate standards as outlined by the New

Jersey State Department of Education. The NJ ASK 3 for each of these school years was

written, at minimum, to the 2009 NJ Core Curriculum Content Standards (NJ CCCS). During

the 2012-2013 school year, the New Jersey State Department of Education required that

curriculum documents in language arts literacy and mathematics be modified to align with the

2010 adoption of the Common Core State Standards (CCSS). As per the New Jersey State

Department of Education, if curriculum documents are aligned with the CCSS, the curriculum

addresses the same standards as the NJ CCCS and offers extension activities, therefore the students will be exposed to topics and content assessed on the NJ ASK 3. The second reason why these three cohorts of students were selected was because the early childhood program was consistent for the 3 years that these students would have participated in preschool and/or kindergarten.

While no students or staff members were directly contacted to provide information, this study included data collection of NJ ASK 3 scores for students who participated in the district's early childhood program and sat for the NJ ASK 3 in the same district. All data collection came from one P-12 school district in central New Jersey with a long-standing (13 years) early childhood program. The school district has a District Factor Grouping (DFG) of DE as described by the school district funding formula for stratified socio-economic status (SES) generated by the New Jersey State Department of Education. The data collected from the NJ ASK 3 results was used to assess the influence of early childhood program participation on academic achievement by grade 3.

Research Procedures and Instrumentation

Research procedures and instrumentation utilized during this study assisted the researcher with the organization and analysis of data. For this research, a quantitative approach was utilized to collect and analyze data. Student information was collected and analyzed looking at indicators including participation in the early childhood program, gender, ethnicity, economically disadvantaged status as measured by the free and reduced lunch application, Limited English Proficient students, special education students, and scores in language arts literacy and mathematics on the NJ ASK 3.

Data Collection

The researcher collected data from the school district using various indicators for each student. Three years worth of data regarding 696 students was analyzed for this research. The researcher looked at data for each student, including his or her registration in preschool and/or kindergarten in the school district, gender, ethnicity, economically disadvantaged status as measured by the free and reduced lunch application, Limited English Proficiency, special education status, and scores in language arts literacy and mathematics on the NJ ASK 3. Students were not identified during the data collection. The NJ ASK 3 scores were tabulated to make a hypothesis of the influence of early childhood program participation on academic achievement by grade 3. The information collected was entered into a database and analyzed for trends.

Data Analysis

Data analysis was conducted using SPSS 21.0. This program was used to run regression analyses including multiple, simultaneous, and logistic regressions. Mean, median, and mode for the NJ ASK 3 scores was also tabulated. For this data, the researcher did not utilize correlation, analysis of variance (ANOVA), or analysis of covariance (ANCOVA). Information on each of the analyses used in the study is as follows:

- Mean, Median, and Mode

  Mean, median, and mode were used to gather information related to the NJ ASK 3 scores. This analysis helped the researcher determine the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3 language arts literacy and mathematics scores for this school district.

- Multiple Regression

  Multiple regression was used to predict the value of an outcome from several predictors. This regression analysis was used to measure multiple predictors as related to early childhood program participation. For example, multiple regression was used to assess the effects of early childhood program participation and another subcategory (gender, ethnicity, economically disadvantaged status as measured by the free and reduced lunch application, Limited English Proficient, or special education) on NJ ASK 3 results.

- Simultaneous Regression

  Simultaneous regression was used when there was a small set of variables and there was no prior information about the order of the variables that created the best prediction of the model (Leech, Barrett, and Morgan, 2011). Simultaneous regression was used in this study to analyze the significant independent variables from individual regressions in the overall model.

- Logistic Regression

  Logistic regression was used when the dependent variables, and at least some of the independent variables, were dichotomous. Logistic regression was used to analyze individual independent variables against early childhood program participation. It was used later in the study to analyze early childhood program participation and all other significant variables to ascertain the influence of early childhood program participation on the overall model.

Summary

This case study looked at the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3. Quantitative data was collected from one P-12 school district in central New Jersey and analyzed for the influence of early childhood program participation and academic achievement as measured by the NJ ASK 3 in language arts literacy and mathematics. Demographic information was used to examine results by subcategories. SPSS 21.0 was utilized to run statistical analysis on the data.

Chapter IV

PRESENTATION OF RESEARCH FINDINGS

Background

The purpose of this study was to examine the influence of early childhood program participation on academic achievement by grade 3. Quantitative research methodology was used to gather and analyze data related to the purpose of the study. A quantitative approach to this research was used to remove opinions and perceptions from the data collection. The researcher was interested in collecting pure data. In looking at early childhood programs, there are a number of different philosophies as to how and why to teach these young learners in different ways. Many educators and administrators have varying opinions as to what is best for these students. By looking strictly at the data, it removed the perceptions of others as it related to student development and academic achievement.

Data was collected for this case study from one P-12 public school district in central New Jersey. The researcher met with central office administrators from the school district to discuss and outline the research prior to the Superintendent of Schools granting permission for the data collection. The researcher worked with school district personnel to obtain student data for three cohorts of students. These cohorts included students in grades 4, 5, and 6 during the 2013-2014 school year.

These three cohorts were chosen for two reasons. First, these students took the most current version of the NJ ASK 3. During the time these students sat for the NJ ASK 3, district curriculum was consistently written to the appropriate standards as outlined by the New Jersey State Department of Education. The NJ ASK 3 during each of these school years was written, at

minimum, to the 2009 NJ Core Curriculum Content Standards (NJ CCCS). During the 2012-

2013 school year, the New Jersey State Department of Education required that curriculum

documents in language arts literacy and mathematics be modified to align with the Common

Core State Standards (CCSS). As per the New Jersey State Department of Education, if

curriculum documents are aligned with the CCSS, the curriculum addresses the same standards

as the NJ CCCS and offers extension activities, therefore the students will be exposed to topics

and content assessed on the NJ ASK 3. The second reason why these three cohorts of students

were selected is because the early childhood program was consistent for the 3 years in which

these students would have participated in preschool and/or kindergarten.

The original pool of data included information for 696 students. Students were not

identified during the data collection. Student data was organized and analyzed for trends related

to early childhood program participation and academic achievement as measured by the NJ ASK

3. Data was reorganized and information was extrapolated based upon various subcategories of

students. Additional information related to the data analysis follows.

The main research question for this study was, How does participation in the early

childhood program in one P-12 school district in central New Jersey influence academic

outcomes as measured by the NJ ASK 3 for those students? Subsidiary questions for this study

included:

1. What is the influence of early childhood program participation in one P-12 school district

   in central New Jersey on academic achievement as measured by the NJ ASK 3 when

   controlling for each of the following subcategories: (a) gender, (b) ethnicity, (c)

   economically disadvantaged students, (d) Limited English Proficient (LEP) students, and

   (e) special education students?

2. What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 for all significant independent variables?

Data collected and analyzed throughout this research was utilized to draw conclusions about early childhood program participation and later academic achievement as measured by the NJ ASK 3 for one P-12 school district in central New Jersey. Conclusions drawn from this research may be used to inform decisions for other New Jersey school districts with similar demographics.

Presentation of Research Findings

The presented findings are based on research conducted through this case study of one P-12 school district in central New Jersey. Data gathered from the school district was analyzed using SPSS 21.0 to answer the research question and subsidiary questions. The results of this study are organized with the general response to each research question, an overview of the data population, an analysis of the NJ ASK 3 results, and a summary of the findings.

The research question and subsidiary questions are outlined in Table 2. Next to each research question is the short response of the results to that question based upon the data and research from the school district. Detailed findings for each of these research questions can be found in the NJ ASK 3 Data Analysis and Summary of Results sections.

Table 2

Subsidiary Research Questions and Findings

Research Question	Short Response for LAL	Short Response for Math
What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 when controlling for Gender?	Not significant	Not significant
What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 when controlling for Ethnicity?	Significant for all analyzed ethnicities	Significant – Hispanic Not significant – African American and Other
What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 when controlling for Economically Disadvantaged?	Significant	Significant
What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 when controlling for Limited English Proficient?	Significant	Significant
What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 when controlling for Special Education?	Significant	Significant
What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 for all significant independent variables?	Not significant	Not significant

Outlined in Table 3 is a breakdown of the total population of students in this study. A total of 696 students were included in the original database. These students were from three cohorts that included students in grades 4, 5, and 6 during the 2013-2014 school year. During

the original analysis of data, the special education population was going to be excluded as these students may have been participating in a different program or been using a modified curriculum based upon their Individual Education Plan (IEP). This study looked at participation in an early childhood program in one P-12 public school district in central New Jersey. It did not break down the early childhood program plan or curriculum as the school district was in compliance with the state-required standards and programs. Therefore, special education students were included in the total population as the research looks at participation in these programs, not the content of the programs. The analysis of these cohorts of students included all students, typically-developing and special education, who attended the early childhood program in the school district. Of the original population of 696 students, two students were not included in the data analysis because they were placed out-of-district based upon their specific needs. These two students attended a different program and did not sit for the NJ ASK 3 in the school district; therefore the student demographic information was not included in this research.

Table 3

Student Data

Population	Total Participants
Total Population	696
Students Who Participated in the Early Childhood Program	457
Students Who Entered the District after the Early Childhood Program	237
Out-of-District Placement Students	2

NJ ASK 3 Data Analysis

Data analysis for this research included a review of the NJ ASK 3 results for three cohorts of students in one P-12 school district in central New Jersey. Data analysis centered on the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3 for the total population. The analysis also reviewed statistical information for subcategories of students including gender, ethnicity, economically disadvantaged students, Limited English Proficient students, and special education. The NJ ASK 3 scores were analyzed to make a hypothesis of the influence of early childhood program participation on academic achievement by grade 3.

The NJ ASK 3 results in language arts literacy and mathematics for the total population of students, as well as the subcategories of students, were analyzed for trends. The assessment scores were analyzed for the mean, median, and mode for students who did and did not attend the early childhood program in the school district. In terms of statistical analysis, regressions were run on this student data by total population and subcategories of students for language arts literacy and mathematics. The results of the statistical analyses are presented in this section.

Table 4 lists the mean, median, and mode for NJ ASK 3 scores in the areas of language arts literacy and mathematics for students who participated in the early childhood program in the district and students who did not participate in the early childhood program in the district. Looking at the category of language arts literacy, students who participated in the early childhood program had higher mean and median scores (198 and 200, respectively) than students who did not participate in the program (190 and 188, respectively). Students who did not participate in the early childhood program had a mode six points higher (191) than students who participated in the program (185). Looking at the category of mathematics, students who

participated in the early childhood program had higher mean, median, and mode scores (216, 212, and 250, respectively) than students who did not participated in the program (204, 201, and 225, respectively).

Table 4

Mean, Median, and Mode for NJ ASK 3 Scores by Content Area and Participation

NJ ASK 3 Scores – Language Arts Literacy			
Participated in Early Childhood Program		Did Not Participate in Early Childhood Program	
Mean	198	Mean	190
Median	200	Median	188
Mode	185	Mode	191
NJ ASK 3 Scores – Mathematics			
Participated in Early Childhood Program		Did Not Participate in Early Childhood Program	
Mean	216	Mean	204
Median	212	Median	201
Mode	250	Mode	225

The same analysis of assessment scores was completed for students by ethnicity. This P-12 school district in central New Jersey has a breakdown of ethnicity as follows: African American – 21.5%, Asian – 4.3%, Caucasian – 13.3%, Hispanic – 59.1%, and Other (American Indian, Hawaiian, Multi) – 1.8%. Table 5 lists the mean, median, and mode for NJ ASK 3 scores in the areas of language arts and mathematics for students by ethnicity regardless of early childhood program participation. In the area of language arts literacy, Caucasian students had the highest mean and median scores (207 and 206, respectively) than the remaining groups while African American students had the highest mode (209 and 213). In the area of mathematics, Caucasian students had the highest mean, median, and mode (238, 239, and 300, respectively) than the remaining groups, with the exception of the students identified with an ethnicity of multi. Four students in the sample had an ethnicity of multi. The language arts literacy mean score for the multi sample is 201. The mathematics mean score for the multi sample is 253.

Median and mode were not calculated due to the small population size. Table 5 details the results of the mean, median and mode calculations.

Table 5

Mean, Median, and Mode for NJ ASK 3 Scores by Content Area and Ethnicity

NJ ASK 3 Scores – Language Arts Literacy					
	African American	Asian	Caucasian	Hispanic	Multi
Mean	198	200	207	192	201
Median	201	201	206	191	See notes
Mode	209 and 213	201	185	185	in analysis.

NJ ASK 3 Scores – Mathematics					
	African American	Asian	Caucasian	Hispanic	Multi
Mean	213	211	238	204	253
Median	208	204	239	167	See notes
Mode	200 and 201	225	300	200	in analysis.

After the mean, median, and mode were tabulated, the data was analyzed for significance within the total population and subcategories of students. In order to analyze the student information to ascertain if early childhood program participation influenced academic achievement as measured by NJ ASK 3 scores, regressions were run on the total population as well as sub-populations.

The main research question of this study was answered through a detailed analysis of each subsidiary research question. In order to answer each subsidiary research question, a multiple regression and logistic regression was run on the data for the dependent variable of language arts literacy and then for mathematics. Each regression looked at the independent variable, Early Childhood (EC) Participation, and the independent variable in question as compared to the NJ ASK 3 scores for that population.

A detailed analysis of each subsidiary research question follows. Included in each analysis is the subcategory of the subsidiary research question, a narrative summary of the results, and the regressions (multiple and logistic) associated with each question. Each question was answered separately for NJ ASK 3 results in language arts literacy and in mathematics. The narrative summary addresses both content areas, while the regressions depict both sets of results separately. The Durbin-Watson residual was included in each multiple regression to show that there is no significant correlation between the residuals in each analysis. Logistic regressions were also run for multiple variables. Results of this analysis are reported later in the chapter.

Statistical Analysis

1. What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 when controlling for each of the following subcategories: (a) gender, (b) ethnicity, (c) economically disadvantaged students, (d) Limited English Proficient (LEP) students, and (e) special education students?

a. Gender

Language Arts Literacy and Gender – Multiple Regression

When looking at the multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 7 shows the model was statistically significant ($F=7.822$; $df= 2$; $p<.001$). An examination of the Adjusted R Square (see Table 6) reveals that 2.0% of the variance in NJ ASK 3 Language Arts Literacy achievement was explained by predictor variables entered in the model. The Durbin-Watson (.921) (see Table 6) indicates that there is no

significant correlation between residuals. The equation for collinearity tolerance, which

examines multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance

value must be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .980.

Table 8 shows that the tolerance value for all variables is greater than .980, suggesting that no

collinearity issues are present in this model. Table 8 lists the significance of each of the

variables in the regression. This model indicates that EC Participation is significant ($p<.001$)

contributing approximately 1.8% of the variance to the overall model while gender is not a

significant contributor (.081).

Table 6

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.152[a]	.023	.020	.4947	.921

a. Predictors: (Constant), Gender, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Table 7

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.829	2	1.914	7.822	.000[b]
	Residual	162.513	664	.245		
	Total	166.342	666			

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Gender, Early Childhood Program Participation

Table 8

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Err	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.346	.038		9.135	.000		
	Early Childhood Program Participation	.143	.041	.134	3.498	.000	.999	1.001
	Gender	.067	.038	.067	1.750	.081	.999	1.001

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Language Arts Literacy and Gender – Logistic Regression

The logistic regression model for language arts literacy with these same variables included is significant ($\chi^2 = 15.515$, $df = 2$, $N = 667$, $p < .001$). The Nagelkerke R Square (.031) in Table 13 indicates that 3.1% of the variance in NJ ASK 3 Language Arts Literacy achievement was explained by predictor variables entered in this logistic regression model. Table 15 shows that EC Participation is a significant contributor to the model (p<.010) while gender (.080) is not a significant contributor. The Exp (B) in Table 15 indicates that students with EC Participation are 1.8 times more likely to pass the NJ ASK 3 Language Arts Literacy then students who did not attend the program. Table 11 indicates that the model and prediction of a student passing NJ ASK 3 Language Arts Literacy is improved by EC program participation ($p<.010$).

Block 0: Beginning Block

Table 9

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 =	.0	350	0	100.0
	P and AP, 0 = PP	1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 10

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 11

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	12.348	1	.000
		Gender	3.341	1	.068
	Overall Statistics		15.352	2	.000

Block 1: Method = Enter

Table 12

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	15.515	2	.000
	Block	15.515	2	.000
	Model	15.515	2	.000

Table 13

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	907.510ª	.023	.031

a. Estimation terminated at iteration number 3 because

parameter estimates changed by less than .001.

Table 14

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 =	.0	255	95	72.9
	P and AP, 0 = PP	1.0	195	122	38.5
	Overall Percentage				56.5

a. The cut value is .500

Table 15

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.587	.170	11.949	1	.001	1.798
	Gender	.275	.157	3.056	1	.080	1.316
	Constant	-.630	.159	15.671	1	.000	.533

a. Variable(s) entered on step 1: Early Childhood Program Participation, Gender

Mathematics and Gender – Multiple Regression

When looking at the multiple regression for mathematics, it is noted that the ANOVA

reported in Table 17 shows the model was statistically significant (F=5.315; df=2; p<.010). An

examination of the Adjusted R Square (see Table 16) reveals that 1.3% of the variance in NJ

ASK 3 Mathematics achievement can be explained by predictor variables entered in the model.

The Durbin-Watson (.869) (see Table 16) indicates that there is no significant correlation

between residuals. The equation for collinearity tolerance, which examines multicollinearity

between the variables entered in the model, is $1-R^2$. The tolerance value must be greater than 1-

R^2 to meet the collinearity threshold. For this model, $1-R^2$ is .987. Table 18 shows that the

tolerance value for all variables is greater than .987, suggesting that no collinearity issues were

present in this model. Table 18 lists the significance of each of the variables in the regression.

This model indicates that EC Participation is significant (p<.010) contributing approximately

1.4% of the variance to the overall model while gender is not a significant contributor (.362).

Table 16

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.125[a]	.016	.013	.4818	.869

a. Predictors: (Constant), Gender, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Table 17

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.468	2	1.234	5.315	.005[b]
	Residual	154.609	666	.232		
	Total	157.076	668			

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Gender, Early Childhood Program Participation

Table 18

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.524	.037		14.268	.000		
	Early Childhood Program Participation	.123	.040	.119	3.100	.002	.999	1.001
	Gender	.034	.037	.035	.913	.362	.999	1.001

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Mathematics and Gender – Logistic Regression

The logistic regression model for mathematics with these same variables included is

significant (χ^2 = 10.417, *df* =2, *N* = 669, *p* =<.010). The Nagelkerke R Square (.021) (see Table

23) indicates that 2.1% of the variance in NJ ASK 3 Mathematics achievement can be explained

by predictor variables entered in this logistic regression model. Table 25 shows that EC

Participation is a significant contributor to the model (*p*<.010) while Gender (.361) is not a

significant contributor. Table 19 shows that, just by chance, one can predict 62% of the time if a

student will pass the NJ ASK 3 Mathematics, which is significant. The Exp (B) (see Table 25)

indicates that students with EC Participation are 1.7 times more likely to pass the NJ ASK 3

Mathematics then students who did not attend the program. Table 21 shows that the model and

prediction of a student passing NJ ASK 3 Mathematics is improved by EC program participation

(*p*<.010).

Block 0: Beginning Block

Table 19

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP	.0	0	252	.0
		1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 20

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 21

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	9.686	1	.002
		Gender	1.007	1	.316
	Overall Statistics		10.510	2	.005

Block 1: Method = Enter

Table 22

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	10.417	2	.005
	Block	10.417	2	.005
	Model	10.417	2	.005

Table 23

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	875.896[a]	.015	.021

a. Estimation terminated at iteration number 3 because
parameter estimates changed by less than .001.

Table 24

Classification Table

			Predicted		Percentage Correct
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP	.0	0	252	.0
		1.0	0	417	100.0
	Overall Percentage				62.3

a. The cut value is .500

Table 25

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1ª	Early Childhood Program Participation	.519	.169	9.436	1	.002	1.680
	Gender	.148	.161	.836	1	.361	1.159
	Constant	.091	.154	.351	1	.553	1.096

a. Variable(s) entered on step 1: Early Childhood Program Participation, Gender

These models indicate that in both language arts literacy and mathematics, early childhood program participation is a significant contributor to and reliable predictor of academic achievement as measured by the NJ ASK 3; however, a student's gender does not seem to influence or predict performance in either area.

b. Ethnicity

Language Arts Literacy and Ethnicity-Hispanic – Multiple Regression

When looking at the multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 27 shows the model was statistically significant (F=24.047; df= 2; p<.001). An examination of the Adjusted R Square (see Table 26) indicates that 6.5% of the

variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.976) (see Table 26) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is $1\text{-}R^2$. The tolerance value must be greater than $1\text{-}R^2$ to meet the collinearity threshold. For this model, $1\text{-}R^2$ is .935. Table 28 shows that the tolerance value for all variables is greater than .935, suggesting that no collinearity issues are present in this model. Table 28 lists the significance of each of the variables in the regression. EC Participation was found to be significant ($p<.001$) contributing approximately 2.1% of the variance to the overall model. Ethnicity-Hispanic is also significant ($p<.001$) contributing approximately 4.9% of the variance, favoring non-Hispanic, to the overall model.

Table 26

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.260[a]	.068	.065	.4833	.976

a. Predictors: (Constant), Ethnicity - Hispanic, Early Childhood Program Participation
b. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Table 27

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.235	2	5.617	24.047	.000[b]
	Residual	155.107	664	.234		
	Total	166.342	666			

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP
b. Predictors: (Constant), Ethnicity - Hispanic, Early Childhood Program Participation

Table 28

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.500	.039		12.819	.000		
	Early Childhood Program Participation	.155	.040	.145	3.874	.000	.998	1.002
	Ethnicity - Hispanic	-.224	.038	-.222	-5.909	.000	.998	1.002

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Language Arts Literacy and Ethnicity-Hispanic – Logistic Regression

The logistic regression model for language arts literacy with these same variables included is significant ($\chi^2 = 46.101$, $df = 2$, $N = 667$, $p < .001$). The Nagelkerke R Square (.089) (see Table 33) indicates that 8.9% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in this logistic regression model. Table 35 shows that EC Participation is a significant contributor to the model ($p<.001$). Ethnicity – Hispanic is also significant ($p<.001$). The Exp (B) (see Table 35) indicates that students with EC Participation are 1.9 times more likely to pass the NJ ASK 3 Language Arts Literacy then students who did not attend the program and Ethnicity-Hispanic students are .4 times more likely to pass the NJ ASK 3 language arts literacy then students who are not Ethnicity-Hispanic. Table 31 shows that the model and prediction of a student passing NJ ASK 3 Language Arts Literacy is improved by EC program participation ($p<.001$) and by Ethnicity-Hispanic ($p<.001$).

Block 0: Beginning Block

Table 29

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 = P and AP, 0 = PP	.0	350	0	100.0
		1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 30

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 31

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	12.348	1	.000
		Ethnicity-Hispanic	30.990	1	.000
	Overall Statistics		45.048	2	.000

Block 1: Method = Enter

Table 32

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	46.101	2	.000
	Block	46.101	2	.000
	Model	46.101	2	.000

Table 33

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	876.924[a]	.067	.089

a. Estimation terminated at iteration number 3 because

parameter estimates changed by less than .001.

Table 34

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 = P	.0	284	66	81.1
	and AP, 0 = PP	1.0	199	118	37.2
	Overall Percentage				60.3

a. The cut value is .500

Table 35

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.667	.175	14.541	1	.000	1.947
	Ethnicity-Hispanic	-.934	.164	32.640	1	.000	.393
	Constant	-.016	.165	.010	1	.921	.984

a. Variable(s) entered on step 1: Early Childhood Program Participation, Ethnicity-Hispanic.

Mathematics and Ethnicity-Hispanic – Multiple Regression

When looking at the multiple regression in the area of mathematics, it is noted that the ANOVA reported in Table 37 shows the model was statistically significant (F=14.568; df=2; p<.001). An examination of the Adjusted R Square (see Table 36) indicates that 3.9% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.895) (see Table 36) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is 1-R^2. The tolerance value must be greater than 1-R^2 to meet the collinearity threshold. For this model, 1-R^2 is .961. Table 38 shows that the tolerance value for all variables is greater than .998, suggesting that no collinearity issues are present in this model. Table 38 lists the significance of each of the variables in the regression. This model indicates that EC Participation is significant (p<.010) contributing approximately 1.6% of the variance to the overall model. Ethnicity-Hispanic is also significant (p<.001) contributing approximately 2.8% of the variance, favoring non-Hispanic, to the model.

Table 36

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.205ᵃ	.042	.039	.4754	.895

a. Predictors: (Constant), Ethnicity - Hispanic, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Table 37

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.584	2	3.292	14.568	.000ᵇ
	Residual	150.492	666	.226		
	Total	157.076	668			

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Ethnicity - Hispanic, Early Childhood Program Participation

Table 38

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.628	.038		16.474	.000		
	Early Childhood Program Participation	.133	.039	.128	3.372	.001	.998	1.002
	Ethnicity - Hispanic	-.163	.037	-.166	-4.367	.000	.998	1.002

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Mathematics and Ethnicity-Hispanic – Logistic Regression

The logistic regression model for mathematics with these same variables included is

significant ($\chi^2 = 28.508$, $df = 2$, $N = 669$, $p = <.001$). The Nagelkerke R Square (.057) (see Table

43) indicates that 5.7% of the variance in NJ ASK 3 Mathematics achievement can be explained

by predictor variables entered in this logistic regression model. Table 45 shows that EC

Participation is a significant contributor to the model ($p<.010$). Ethnicity-Hispanic is also a

significant contributor to the model ($p<.001$). It is revealed in Table 39 that, just by chance, one

can predict 62% of the time if a student will pass the NJ ASK 3 Mathematics, which is

significant. The Exp (B) (see Table 40) indicates that students with EC Participation are 1.7

times more likely to pass the NJ ASK 3 Mathematics then students who did not attend the

program. It also indicates that Ethnicity-Hispanic were 0.49 times more likely to pass the NJ

ASK 3 Mathematics then students who are not Hispanic. Table 41 shows that the model and

prediction of a student passing NJ ASK 3 Mathematics is improved by EC program participation

($p<.010$). The model and prediction of a student passing the NJ ASK 3 Mathematics is improved

by Ethnicity-Hispanic ($p<.001$).

Block 0: Beginning Block

Table 39

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P	.0	0	252	.0
	and AP, 0 = PP	1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 40

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 41

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	9.686	1	.002
		Ethnicity-Hispanic	17.095	1	.000
	Overall Statistics		28.041	2	.000

Block 1: Method = Enter

Table 42

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	28.508	2	.000
	Block	28.508	2	.000
	Model	28.508	2	.000

Table 43

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	857.805[a]	.042	.057

a. Estimation terminated at iteration number 4 because parameter

estimates changed by less than .001.

Table 44

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP	.0	62	190	24.6
		1.0	56	361	86.6
	Overall Percentage				63.2

a. The cut value is .500

Table 45

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.574	.172	11.153	1	.001	1.776
	Ethnicity-Hispanic	-.723	.169	18.339	1	.000	.485
	Constant	.556	.168	10.994	1	.001	1.744

a. Variable(s) entered on step 1: Early Childhood Program Participation, Ethnicity-Hispanic.

Language Arts Literacy and Ethnicity-African American – Multiple Regression

When looking at the multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 47 shows the model was statistically significant (F=11.009; df= 2; p<.001). An examination of the Adjusted R Square in see Table 46 indicates that 2.9% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.937) (see Table 46) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is 1-R^2. The tolerance value must be greater than 1-R^2 to meet the collinearity threshold. For this model, 1-R^2 is .971. Table 48 shows that the tolerance value for all variables is greater than .971, suggesting that no collinearity issues are present in this model. Table 48 lists the significance of each of the variables in the regression. This model indicates that EC Participation is significant (p<.001) contributing approximately 2.3% of the variance to the overall model. Ethnicity-African American is also significant (p<.010) contributing approximately 1.4% of the variance to the overall model.

Table 46

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.179[a]	.032	.029	.4924	.937

a. Predictors: (Constant), Ethnicity - African American, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Table 47

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.339	2	2.669	11.009	.000^b
	Residual	161.003	664	.242		
	Total	166.342	666			

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Ethnicity - African American, Early Childhood Program Participation

Table 48

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.335	.036		9.249	.000		
	Early Childhood Program Participation	.161	.041	.151	3.914	.000	.985	1.016
	Ethnicity - African American	.142	.046	.117	3.053	.002	.985	1.016

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Language Arts Literacy and Ethnicity-African American – Logistic Regression

The logistic regression model for language arts literacy with these same variables included is significant ($\chi^2 = 21.749$, $df = 2$, $N = 667$, $p < .001$). The Nagelkerke R Square (.043) (see Table 53) indicates that 4.3% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in this logistic regression model. Table 55 shows that EC Participation is a significant contributor to the model ($p<.001$). Ethnicity-African American is also significant ($p<.010$). The Exp (B) (see Table 55) indicates that students with EC

Participation are 1.9 times more likely to pass the NJ ASK 3 Language Arts Literacy then

students who did not attend the program and Ethnicity-African American students are 1.8 times

more likely to pass the NJ ASK 3 Language Arts Literacy then students who are not Ethnicity-

African American. Table 51 indicates that the model and prediction of a student passing NJ

ASK 3 Language Arts Literacy is improved by EC program participation ($p<.001$) and by

Ethnicity-African American ($p<.050$).

Block 0: Beginning Block

Table 49

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 = P	.0	350	0	100.0
	and AP, 0 = PP	1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 50

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 51

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	12.348	1	.000
		Ethnicity-African American	6.515	1	.011
	Overall Statistics		21.407	2	.000

Block 1: Method = Enter

Table 52

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	21.749	2	.000
	Block	21.749	2	.000
	Model	21.749	2	.000

Table 53

Model Summary

Table 48 - Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	901.276[a]	.032	.043

a. Estimation terminated at iteration number 3 because parameter

estimates changed by less than .001.

Table 54

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 = P	.0	319	31	91.1
	and AP, 0 = PP	1.0	265	52	16.4
	Overall Percentage				55.6

a. The cut value is .500

Table 55

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.666	.173	14.839	1	.000	1.947
	Ethnicity-African American	.586	.194	9.146	1	.002	1.798
	Constant	-.683	.155	19.482	1	.000	.505

a. Variable(s) entered on step 1: Early Childhood Program Participation, Ethnicity-African American.

Mathematics and Ethnicity-African American – Multiple Regression

When looking at the multiple regression in the area of mathematics, it is noted that the

ANOVA reported in Table 57 shows that the model was statistically significant (F=6.264; df=2;

p<.010). An examination of the Adjusted R Square in Table 56 indicates that 1.6% of the

variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered

in the model. The Durbin-Watson (.879) (see Table 56) indicates that there is no significant

correlation between residuals. The equation for collinearity tolerance, which examines

multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance value must

be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .984. Table 58

shows that the tolerance value for all variables is equal to .984, suggesting that no collinearity

issues are present in this model. Table 58 lists the significance of each of the variables in the

regression. This model indicates that EC Participation is significant ($p<.010$) contributing

approximately 1.6% of the variance to the overall model while Ethnicity-African American is not

a significant contributor (.101).

Table 56

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.136[a]	.018	.016	.4811	.879

a. Predictors: (Constant), Ethnicity - African American, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Table 57

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.900	2	1.450	6.264	.002[b]
	Residual	154.176	666	.231		
	Total	157.076	668			

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Ethnicity - African American, Early Childhood Program Participation

Table 58

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.517	.035		14.657	.000		
	Early Childhood Program Participation	.133	.040	.128	3.316	.001	.984	1.016
	Ethnicity - African American	.074	.045	.064	1.644	.101	.984	1.016

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Mathematics and Ethnicity-African American – Logistic Regression

The logistic regression model for mathematics with these same variables included is

significant ($\chi^2 = 12.307$, $df = 2$, $N = 669$, $p = <.010$). The Nagelkerke R Square (.025) (see Table

63) indicates that 2.5% of the variance in NJ ASK 3 Mathematics achievement can be explained

by predictor variables entered in this logistic regression model. Table 65 shows that EC

Participation is a significant contributor to the model ($p<.010$) while Ethnicity-African American

is not a significant contributor to the model (.102). Table 59 shows that, just by chance, one can

predict 62% of the time if a student will pass the NJ ASK 3 Mathematics, which is significant.

The Exp (B) (see Table 65) indicates that students with EC Participation are 1.8 times more

likely to pass the NJ ASK 3 Mathematics then students who did not attend the program. Table

61 indicates that the model and prediction of a student passing NJ ASK 3 Mathematics is

improved by EC program participation ($p<.010$).

Block 0: Beginning Block

Table 59

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P	.0	0	252	.0
	and AP, 0 = PP	1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 60

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 61

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	9.686	1	.002
		Ethnicity-African American	1.508	1	.219
	Overall Statistics		12.351	2	.002

Block 1: Method = Enter

Table 62

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	12.307	2	.002
	Block	12.307	2	.002
	Model	12.307	2	.002

Table 63

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	874.006ᵃ	.018	.025

a. Estimation terminated at iteration number 3 because parameter
estimates changed by less than .001.

Table 64

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 Math Results - 1 = P	.0	0	252	.0
	and AP, 0 = PP	1.0	0	417	100.0
	Overall Percentage				62.3

a. The cut value is .500

Table 65

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.561	.171	10.785	1	.001	1.752
	Ethnicity-African American	.327	.200	2.670	1	.102	1.387
	Constant	.062	.148	.172	1	.678	1.063

a. Variable(s) entered on step 1: Early Childhood Program Participation, Ethnicity-African American.

Language Arts Literacy and Ethnicity-Other – Multiple Regression

When looking at the multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 67 shows the model was statistically significant (F=10.338; df= 2; p<.001). An examination of the Adjusted R Square in Table 66 indicates that 2.7% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.923) (see Table 66) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance value must be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .973.

Table 68 shows that the tolerance value for all variables is greater than .973, suggesting that no collinearity issues are present in this model. Table 68 lists the significance of each of the variables in the regression. This model indicates that EC Participation is significant ($p<.001$) contributing approximately 2.0% of the variance to the overall model. Ethnicity-Other is also significant ($p<.010$) contributing approximately 1.2% of the variance to the overall model.

Table 66

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.174[a]	.030	.027	.4929	.923

a. Predictors: (Constant), Ethnicity - Other, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Table 67

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.023	2	2.512	10.338	.000[b]
	Residual	161.319	664	.243		
	Total	166.342	666			

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Ethnicity - Other, Early Childhood Program Participation

Table 68

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.360	.034		10.570	.000		
	Early Childhood Program Participation	.150	.041	.140	3.665	.000	.999	1.001
	Ethnicity - Other	.233	.082	.108	2.829	.005	.999	1.001

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Language Arts Literacy and Ethnicity-Other – Logistic Regression

The logistic regression model for language arts literacy with these same variables included is significant ($\chi^2 = 20.533$, $df = 2$, $N = 667$, $p < .001$). The Nagelkerke R Square (.040) (see Table 73) indicates that 4.0% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in this logistic regression model. Table 75 shows that EC Participation is a significant contributor to the model ($p < .001$). Ethnicity-Other is also significant ($p < .010$). The Exp (B) (see Table 75) indicates that students with EC Participation are 1.9 times more likely to pass the NJ ASK 3 Language Arts Literacy then students who did not attend the program and Ethnicity-Other students are 2.7 times more likely to pass the NJ ASK 3 Language Arts Literacy then students who are not Ethnicity-Other. Table 71 shows that the model and prediction of a student passing NJ ASK 3 Language Arts Literacy is improved by EC program participation ($p < .001$) and by Ethnicity-Other ($p < .010$).

Block 0: Beginning Block

Table 69

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 = P	.0	350	0	100.0
	and AP, 0 = PP	1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 70

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 71

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	12.348	1	.000
		Ethnicity-Other	7.054	1	.008
	Overall Statistics		20.142	2	.000

Block 1: Method = Enter

Table 72

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	20.533	2	.000
	Block	20.533	2	.000
	Model	20.533	2	.000

Table 73

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	902.492ᵃ	.030	.040

a. Estimation terminated at iteration number 3 because parameter
estimates changed by less than .001.

Table 74

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 = P	.0	128	222	36.6
	and AP, 0 = PP	1.0	72	245	77.3
	Overall Percentage				55.9

a. The cut value is .500

Table 75

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.618	.171	13.083	1	.000	1.856
	Ethnicity-Other	.991	.363	7.475	1	.006	2.695
	Constant	-.576	.144	15.939	1	.000	.562

a. Variable(s) entered on step 1: Early Childhood Program Participation, Ethnicity-Other.

Mathematics and Ethnicity-Other – Multiple Regression

When looking at the multiple regression in the area of mathematics, it is noted that the

ANOVA reported in Table 77 shows the model was statistically significant (F=5.058; df=2;

p<.010). An examination of the Adjusted R Square (see Table 76) indicates that 1.2% of the

variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered

in the model. The Durbin-Watson (.868) (see Table 76) indicates that there is no significant

correlation between residuals. The equation for collinearity tolerance, which examines

multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance value must

be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .988. Table 78

shows that the tolerance value for all variables is greater than .998, suggesting that no

collinearity issues are present in this model. Table 78 lists the significance of each of the

variables in the regression. This model indicates that EC Participation is significant (p<.010)

contributing approximately 1.5% of the variance to the overall model while Ethnicity-Other is

not a significant contributor (.568).

Table 76

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.122[a]	.015	.012	.4820	.868

a. Predictors: (Constant), Ethnicity - Other, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Table 77

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.350	2	1.175	5.058	.007[b]
	Residual	154.726	666	.232		
	Total	157.076	668			

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Ethnicity - Other, Early Childhood Program Participation

Table 78

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.536	.033		16.149	.000		
	Early Childhood Program Participation	.125	.040	.121	3.148	.002	.999	1.001
	Ethnicity - Other	.046	.081	.022	.571	.568	.999	1.001

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Mathematics and Ethnicity-Other – Logistic Regression

The logistic regression model for mathematics with these same variables included is significant (χ^2 = 9.911, *df* =2, *N* = 669, *p* =<.010). The Nagelkerke R Square (.020) (see Table 83) indicates that 2.0% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in this logistic regression model. Table 85 shows that EC Participation is a significant contributor to the model (*p*<.010) while Ethnicity-Other is not a significant contributor to the model (.569) Table 79 indicates that, just by chance, one can predict 62% of the time if a student will pass the NJ ASK 3 Mathematics, which is significant. The Exp (B) (see Table 85) indicates that students with EC Participation are 1.7 times more likely to pass the NJ ASK 3 Mathematics then students who did not participate in the program. Table 81 indicates that the model and prediction of a student passing NJ ASK 3 Mathematics is improved by EC program participation (*p*<.010).

Block 0: Beginning Block

Table 79

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P	.0	0	252	.0
	and AP, 0 = PP	1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 80

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 81

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	9.686	1	.002
		Ethnicity-Other	.205	1	.651
	Overall Statistics		10.009	2	.007

Block 1: Method = Enter

Table 82

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	9.911	2	.007
	Block	9.911	2	.007
	Model	9.911	2	.007

Table 83

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	876.402[a]	.015	.020

a. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Table 84

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP	.0	0	252	.0
		1.0	0	417	100.0
	Overall Percentage				62.3

a. The cut value is .500

Table 85

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.527	.169	9.728	1	.002	1.693
	Ethnicity-Other	.202	.355	.324	1	.569	1.224
	Constant	.143	.138	1.072	1	.301	1.154

a. Variable(s) entered on step 1: Early Childhood Program Participation, Ethnicity-Other.

These models indicate that in both language arts literacy and mathematics, early childhood program participation is a significant contributor to and reliable predictor of academic achievement as measured by the NJ ASK 3; however, a student's ethnicity is only a significant contributor and a reliable predictor when the student is Hispanic. Students with an ethnicity of African American or Other are not significant contributors or reliable predictors of the model.

c. Economically Disadvantaged

Language Arts Literacy and Economically Disadvantaged– Multiple Regression

When looking at the multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 87 shows the model was statistically significant ($F=29.311$; $df= 2$;

$p<.001$). An examination of the Adjusted R Square (see Table 86) indicates that 7.8% of the

variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor

variables entered in the model. The Durbin-Watson (.975) (see Table 86) indicates that there is

no significant correlation between residuals. The equation for collinearity tolerance, which

examines multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance

value must be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .922.

Table 88 shows that the tolerance value for all variables is greater than .922, suggesting that no

collinearity issues are present in this model. Table 88 lists the significance of each of the

variables in the regression. This model indicates that EC Participation is significant ($p<.010$)

contributing approximately 1.3% of the variance to the overall model. Economically

Disadvantaged is also significant ($p<.001$) contributing approximately 6.3% of the variance to

the overall model.

Table 86

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.285[a]	.081	.078	.4798	.975

a. Predictors: (Constant), Economically Disadvantaged, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Table 87

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.494	2	6.747	29.311	.000[b]
	Residual	152.847	664	.230		
	Total	166.342	666			

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Economically Disadvantaged, Early Childhood Program Participation

Table 88

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.297	.035		8.535	.000		
	Early Childhood Program Participation	.121	.040	.113	3.019	.003	.991	1.009
	Economically Disadvantaged	.260	.039	.251	6.726	.000	.991	1.009

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Language Arts Literacy and Economically Disadvantaged – Logistic Regression

The logistic regression model for language arts literacy with these same variables included is significant ($\chi^2 = 55.239$, $df = 2$, $N = 667$, $p < .001$). The Nagelkerke R Square (.106) (see Table 93) indicates that 10.6% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in this logistic regression model. Table 95 shows that EC Participation is a significant contributor to the model ($p < .010$). Economically Disadvantaged is also significant ($p < .001$). The Exp (B) (see Table 95) indicates that students with EC Participation are 1.7 times more likely to pass the NJ ASK 3 Language Arts Literacy then students who did not attend the program and Economically Disadvantaged students are 2.9

times more likely to pass the NJ ASK 3 Language Arts Literacy then students who are not

Economically Disadvantaged. Table 91 indicates that the model and prediction of a student

passing NJ ASK 3 Language Arts Literacy is improved by EC program participation (*p*<.001)

and by Economically Disadvantaged (*p*<.001).

Block 0: Beginning Block

Table 89

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 = P	.0	350	0	100.0
	and AP, 0 = PP	1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 90

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 91

Variable not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	12.348	1	.000
		Economically Disadvantaged	45.695	1	.000
	Overall Statistics		54.110	2	.000

Block 1: Method = Enter

Table 92

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	55.239	2	.000
	Block	55.239	2	.000
	Model	55.239	2	.000

Table 93

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	867.786^a	.079	.106

a. Estimation terminated at iteration number 3 because parameter

estimates changed by less than .001.

Table 94

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 = P	.0	262	88	74.9
	and AP, 0 = PP	1.0	157	160	50.5
	Overall Percentage				63.3

a. The cut value is .500

Table 95

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.523	.175	8.950	1	.003	1.688
	Economically Disadvantaged	1.079	.168	41.245	1	.000	2.940
	Constant	-.858	.156	30.158	1	.000	.424

a. Variable(s) entered on step 1: Early Childhood Program Participation, Economically Disadvantaged.

Mathematics and Economically Disadvantaged – Multiple Regression

When looking at the multiple regression in the area of mathematics, it is noted that the ANOVA reported in Table 97 shows the model was statistically significant ($F=25.426$; $df=2$; $p<.001$). An examination of the Adjusted R Square (see Table 96) indicates that 6.8% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.917) (see Table 96) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance value must be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .932. Table 98 shows that the tolerance value for all variables is greater than .988, suggesting that no collinearity issues are present in this model. Table 98 lists the significance of each of the variables in the regression. This model indicates that EC Participation is significant ($p<.010$) contributing approximately 0.1% of the variance to the overall model. Economically Disadvantaged is also significant ($p<.001$) contributing approximately 5.7% of the variance to the overall model.

Table 96

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.266[a]	.071	.068	.4681	.917

a. Predictors: (Constant), Economically Disadvantaged, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Table 97

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.143	2	5.571	25.426	.000[b]
	Residual	145.934	666	.219		
	Total	157.076	668			

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Economically Disadvantaged, Early Childhood Program Participation

Table 98

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.465	.034		13.755	.000		
	Early Childhood Program Participation	.102	.039	.099	2.630	.009	.992	1.008
	Economically Disadvantaged	.239	.038	.239	6.362	.000	.992	1.008

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Mathematics and Economically Disadvantaged – Logistic Regression

The logistic regression model for mathematics with these same variables included is

significant (χ^2 = 49.454, *df* =2, *N* = 669, *p* =<.001). The Nagelkerke R Square (.097) (see Table

103) indicates that 9.7% of the variance in NJ ASK 3 Mathematics achievement can be explained

by predictor variables entered in this logistic regression model. Table 105 shows that EC

Participation is a significant contributor to the model (*p*<.010). Economically Disadvantaged is

also a significant contributor to the model (*p*<.001). Table 99 shows that, just by chance, one

can predict 62% of the time if a student will pass the NJ ASK 3 Mathematics, which is

significant. The Exp (B) (see Table 105) indicates that students with EC Participation are 1.6

times more likely to pass the NJ ASK 3 Mathematics then students who did not attend the

program. Economically Disadvantaged were 3.0 times more likely to pass the NJ ASK 3

Mathematics then students who are not Economically Disadvantaged. Table 101 shows that the

model and prediction of a student passing NJ ASK 3 Mathematics is improved by EC program

participation (*p*<.010) and by Economically Disadvantaged (*p*<.001).

Block 0: Beginning Block

Table 99

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P	.0	0	252	.0
	and AP, 0 = PP	1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 100

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 101

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	9.686	1	.002
		Economically Disadvantaged	41.003	1	.000
	Overall Statistics		47.457	2	.000

Block 1: Method = Enter

Table 102

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	49.454	2	.000
	Block	49.454	2	.000
	Model	49.454	2	.000

Table 103

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	836.859[a]	.071	.097

a. Estimation terminated at iteration number 4 because parameter

estimates changed by less than .001.

Table 104

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 Math Results - 1 = P	.0	81	171	32.1
	and AP, 0 = PP	1.0	69	348	83.5
	Overall Percentage				64.1

a. The cut value is .500

Table 105

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.452	.174	6.752	1	.009	1.571
	Economically Disadvantaged	1.107	.182	36.859	1	.000	3.025
	Constant	-.166	.149	1.244	1	.265	.847

a. Variable(s) entered on step 1: Early Childhood Program Participation, Economically Disadvantaged.

These models indicate that in both language arts literacy and mathematics, early childhood program participation and Economically Disadvantaged are significant contributors to and reliable predictors of academic achievement as measured by the NJ ASK 3.

d. Limited English Proficient

Language Arts Literacy and Limited English Proficient – Multiple Regression

When looking at the multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 107 shows the model was statistically significant (F=15.377; df=2; p<.001). An examination of the Adjusted R Square (see Table 106) indicates that 4.1% of

the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.921) (see Table 106) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance value must be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .959. Table 108 shows that the tolerance value for all variables is greater than .959, suggesting that no collinearity issues are present in this model. Table 108 lists the significance of each of the variables in the regression. This model indicates that EC Participation is significant ($p<.010$) contributing approximately 1.1% of the variance to the overall model. Limited English Proficient is also significant ($p<.001$) contributing approximately 2.9% of the variance, in favor of non-Limited English Proficient students, to the overall model.

Table 106

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.210[a]	.044	.041	.4893	.921

a. Predictors: (Constant), LEP, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Table 107

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.363	2	3.682	15.377	.000ᵇ
	Residual	158.979	664	.239		
	Total	166.342	666			

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), LEP, Early Childhood Program Participation

Table 108

Coefficients

		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.422	.035		12.043	.000		
	Early Childhood Program Participation	.112	.041	.105	2.704	.007	.963	1.039
	LEP	-.316	.075	-.164	-4.230	.000	.963	1.039

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Language Arts and Limited English Proficient – Logistic Regression

The logistic regression model for language arts literacy with these same variables included is significant ($\chi^2 = 32.333$, $df = 2$, $N = 667$, $p < .001$). The Nagelkerke R Square (.063) (see Table 113) indicates that 6.3% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in this logistic regression model. Table 115 shows that EC Participation is a significant contributor to the model ($p<.010$). Limited English Proficient is also significant ($p<.001$). The Exp (B) (see Table 115) shows that students with EC Participation are 1.6 times more likely to pass the NJ ASK 3 Language Arts Literacy then

students who did not participate in the program and Limited English Proficient students are 0.2

times more likely to pass the NJ ASK 3 Language Arts Literacy then students who are not

Limited English Proficient. Table 111 indicates that the model and prediction of a student

passing NJ ASK 3 Language Arts Literacy is improved by EC program participation ($p<.001$)

and by Limited English Proficiency ($p<.001$).

Block 0: Beginning Block

Table 109

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 = P	.0	350	0	100.0
	and AP, 0 = PP	1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 110

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 111

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	12.348	1	.000
		LEP	22.507	1	.000
	Overall Statistics		29.526	2	.000

Block 1: Method = Enter

Table 112

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	32.333	2	.000
	Block	32.333	2	.000
	Model	32.333	2	.000

Table 113

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	890.692[a]	.047	.063

a. Estimation terminated at iteration number 4 because parameter

estimates changed by less than .001.

Table 114

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 = P	.0	147	203	42.0
	and AP, 0 = PP	1.0	85	232	73.2
	Overall Percentage				56.8

a. The cut value is .500

Table 115

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.467	.174	7.237	1	.007	1.596
	LEP	-1.625	.421	14.906	1	.000	.197
	Constant	-.326	.147	4.909	1	.027	.722

a. Variable(s) entered on step 1: Early Childhood Program Participation, LEP.

Mathematics and Limited English Proficient – Multiple Regression

When looking at the multiple regression in the area of mathematics, it is noted that the ANOVA reported in Table 117 shows the model was statistically significant (F=16.463; df=2; p<.001). An examination of the Adjusted R Square (see Table 116) indicates that 4.4% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.861) (see Table 116) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance value must be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .956. Table 118 shows that the tolerance value for all variables is greater than .956, suggesting that no

collinearity issues are present in this model. Table 118 lists the significance of each of the

variables in the regression. This model indicates that EC Participation is significant ($p<.050$)

contributing approximately 0.1% of the variance to the overall model. Limited English

Proficient is also significant ($p<.001$) contributing approximately 3.4% of the variance, in favor

of non-Limited English Proficient, to the overall model.

Table 116

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.217[a]	.047	.044	.4741	.861

a. Predictors: (Constant), LEP, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Table 117

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.400	2	3.700	16.463	.000[b]
	Residual	149.676	666	.225		
	Total	157.076	668			

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), LEP, Early Childhood Program Participation

Table 118

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.591	.034		17.402	.000		
	Early Childhood Program Participation	.086	.040	.083	2.141	.033	.958	1.043
	LEP	-.340	.071	-.185	-4.776	.000	.958	1.043

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Mathematics and Limited English Proficient – Logistic Regression

The logistic regression model for mathematics with these same variables included is significant (χ^2 = 30.804, *df* =2, *N* = 669, *p* =<.001). The Nagelkerke R Square (.061) (see Table 123) indicates that 6.1% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in this logistic regression model. Table 125 shows that EC Participation is a significant contributor to the model (*p*<.050). Limited English Proficient is also a significant contributor to the model (*p*<.001). Table 119 shows that, just by chance, one can predict 62% of the time if a student will pass the NJ ASK 3 Mathematics, which is significant. The Exp (B) (see Table 125) indicates that students with EC Participation are 1.5 times more likely to pass the NJ ASK 3 Mathematics then students who did not participate in the program. Limited English Proficient students are 0.2 times more likely to pass the NJ ASK 3 Mathematics then students who are not Limited English Proficient. Table 121 indicates that the model and prediction of a student passing NJ ASK 3 Mathematics is improved by EC program participation (*p*<.010) and by Limited English Proficient (*p*<.001).

Block 0: Beginning Block

Table 119

Classification Table

	Observed		Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
			.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP	.0	0	252	.0
		1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 120

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 121

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	9.686	1	.002
		LEP	27.128	1	.000
	Overall Statistics		31.516	2	.000

Block 1: Method = Enter

Table 122

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	30.804	2	.000
	Block	30.804	2	.000
	Model	30.804	2	.000

Table 123

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	855.509[a]	.045	.061

a. Estimation terminated at iteration number 4 because parameter

estimates changed by less than .001.

Table 124

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP	.0	36	216	14.3
		1.0	14	403	96.6
	Overall Percentage				65.6

a. The cut value is .500

Table 125

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.373	.175	4.555	1	.033	1.453
	LEP	-1.444	.331	18.964	1	.000	.236
	Constant	.365	.146	6.247	1	.012	1.441

a. Variable(s) entered on step 1: Early Childhood Program Participation, LEP.

These models indicate that in both language arts literacy and mathematics, early childhood program participation and Limited English Proficient are significant contributors to and reliable predictors of academic achievement as measured by the NJ ASK 3.

e. Special Education

Language Arts Literacy and Special Education – Multiple Regression

When looking at the multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 127 shows the model was statistically significant (F=36.322; df=2; p<.001). An examination of the Adjusted R Square (see Table 126) indicates that 9.6% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in the model. The Durbin-Watson (.984) (see Table 126) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is 1-R^2. The tolerance value must be greater than 1-R^2 to meet the collinearity threshold. For this model, 1-R^2 is .904. Table 128 shows that the tolerance value for all variables is greater than .904, suggesting that no collinearity issues are present in this model. Table 128 lists the significance of each of the variables in the regression. This model indicates that EC Participation is significant (p<.050)

contributing approximately 0.1% of the variance to the overall model. Special Education is also

significant ($p<.001$) contributing approximately 8.2% of the variance to the overall model.

Table 126

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.314[a]	.099	.096	.4752	.984

a. Predictors: (Constant), Special Education, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Table 127

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.404	2	8.202	36.322	.000[b]
	Residual	149.938	664	.226		
	Total	166.342	666			

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Special Education, Early Childhood Program Participation

Table 128

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.077	.051		1.526	.127		
	Early Childhood Program Participation	.095	.040	.089	2.388	.017	.973	1.027
	Special Education	.395	.051	.287	7.682	.000	.973	1.027

a. Dependent Variable: NJ ASK 3 LA Results - 1 = P and AP, 0 = PP

Language Arts Literacy and Special Education – Logistic Regression

The logistic regression model for language arts literacy with these same variables included is significant (χ^2 = 73.544, df = 2, N = 667, p <.001). The Nagelkerke R Square (.139) (see Table 133) indicates that 13.9% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in this logistic regression model. Table 135 shows that EC Participation is a significant contributor to the model (p<.050). Special Education is also significant (p<.001). The Exp (B) (see Table 135) indicates that students with EC Participation are 1.5 times more likely to pass the NJ ASK 3 Language Arts Literacy then students who did not attend the program and Special Education students are 7.6 times more likely to pass the NJ ASK 3 Language Arts Literacy then students who are not Special Education. Table 131 indicates that the model and prediction of a student passing NJ ASK 3 Language Arts Literacy is improved by EC program participation (p<.001) and by Special Education (p<.001).

Block 0: Beginning Block

Table 129

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 = P and AP, 0 = PP	.0	350	0	100.0
		1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 130

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 131

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	12.348	1	.000
		Special Education	60.612	1	.000
	Overall Statistics		65.777	2	.000

Block 1: Method = Enter

Table 132

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	73.544	2	.000
	Block	73.544	2	.000
	Model	73.544	2	.000

Table 133

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	849.481[a]	.104	.139

a. Estimation terminated at iteration number 5 because parameter

estimates changed by less than .001.

Table 134

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 = P	.0	180	170	51.4
	and AP, 0 = PP	1.0	87	230	72.6
	Overall Percentage				61.5

a. The cut value is .500

Table 135

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.427	.178	5.742	1	.017	1.533
	Special Education	2.034	.310	43.067	1	.000	7.646
	Constant	-2.177	.315	47.841	1	.000	.113

a. Variable(s) entered on step 1: Early Childhood Program Participation, Special Education

Mathematics and Special Education – Multiple Regression

When looking at the multiple regression in the area of mathematics, it is noted that the

ANOVA reported in Table 137 shows the model was statistically significant (F=23.082; df=2;

p<.001). An examination of the Adjusted R Square (see Table 136) indicates that 6.2% of the

variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered

in the model. The Durbin-Watson (.891) (see Table 136) indicates that there is no significant

correlation between residuals. The equation for collinearity tolerance, which examines

multicollinearity between the variables entered in the model, is 1-R^2. The tolerance value must

be greater than 1-R^2 to meet the collinearity threshold. For this model, 1-R^2 is .938. Table 138

shows that the tolerance value for all variables is greater than .938, suggesting that no

collinearity issues are present in this model. Table 138 lists the significance of each of the

variables in the regression. This model indicates that EC Participation is significant (*p*<.050)

contributing approximately 0.1% of the variance to the overall model. Special Education is also

significant (*p*<.001) contributing approximately 5.2% of the variance to the overall model.

Table 136

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.255[a]	.065	.062	.4696	.891

a. Predictors: (Constant), Special Education, Early Childhood Program Participation

b. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Table 137

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.182	2	5.091	23.082	.000[b]
	Residual	146.894	666	.221		
	Total	157.076	668			

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

b. Predictors: (Constant), Special Education, Early Childhood Program Participation

Table 138

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.310	.050		6.227	.000		
	Early Childhood Program Participation	.085	.039	.082	2.171	.030	.972	1.028
	Special Education	.303	.051	.228	5.988	.000	.972	1.028

a. Dependent Variable: NJ ASK 3 Math Results - 1 = P and AP, 0 = PP

Mathematics and Special Education – Logistic Regression

The logistic regression model for mathematics with these same variables included is significant ($\chi^2 = 42.364$, $df = 2$, $N = 669$, $p = <.001$). The Nagelkerke R Square (.084) (see Table 143) indicates that 8.4% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in this logistic regression model. Table 145 shows that EC Participation is a significant contributor to the model ($p<.050$). Special Education is also a significant contributor to the model ($p<.001$). Table 139 indicates that, just by chance, one can predict 62% of the time if a student will pass the NJ ASK 3 Mathematics, which is significant. The Exp (B) (see Table 145) indicates that students with EC Participation are 1.5 times more likely to pass the NJ ASK 3 Mathematics then students who did not attend the program. Special Education students are 3.5 times more likely to pass the NJ ASK 3 Mathematics then students who are not Special Education. Table 141 indicates that the model and prediction of a student passing NJ ASK 3 Mathematics is improved by EC program participation ($p<.010$) and by Special Education ($p<.001$).

Block 0: Beginning Block

Table 139

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP	.0	0	252	.0
		1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 140

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 141

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Early Childhood Program Participation	9.686	1	.002
		Special Education	38.939	1	.000
	Overall Statistics		43.366	2	.000

Block 1: Method = Enter

Table 142

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	42.364	2	.000
	Block	42.364	2	.000
	Model	42.364	2	.000

Table 143

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	843.949[a]	.061	.084

a. Estimation terminated at iteration number 3 because parameter

estimates changed by less than .001.

Table 144

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 Math Results - 1 = P	.0	68	184	27.0
	and AP, 0 = PP	1.0	37	380	91.1
	Overall Percentage				67.0

a. The cut value is .500

Table 145

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Early Childhood Program Participation	.379	.175	4.673	1	.031	1.461
	Special Education	1.263	.226	31.279	1	.000	3.536
	Constant	-.802	.225	12.726	1	.000	.449

a. Variable(s) entered on step 1: Early Childhood Program Participation, Special Education

These models indicate that in both language arts literacy and mathematics, early childhood program participation and Special Education are significant contributors to and reliable predictors of academic achievement as measured by the NJ ASK 3.

2. What is the influence of early childhood program participation in one P-12 school district in central New Jersey on academic achievement as measured by the NJ ASK 3 for all significant independent variables?

In order to address the research question for this study, the data analysis began with an in-depth look at the influence of early childhood program participation, as measured by the NJ ASK 3 in the areas of language arts literacy and mathematics, when controlling for individual variables. For each of the individual variables, multiple and logistic regressions were run in the areas of language arts literacy and mathematics. The purpose was to see how the primary variable, early childhood program participation, interacted with the other variables. Based upon this preliminary analysis, the researcher then examined how early childhood program participation in one P-12 school district in central New Jersey influenced performance in the

areas of language arts literacy and mathematics when controlling for all significant variables. Based on this, the researcher ran a simultaneous regression and a logistic regression with early childhood program participation and all other significant variables to ascertain the significance of early childhood program participation on the overall model. In order to control for each of the original ethnicities entered in the initial regressions, the simultaneous and logistic regressions including all significant variables was run with Ethnicity-Caucasian.

The following is an analysis of the simultaneous and logistic regressions for language arts literacy and mathematics including early childhood program participation with all significant variables.

Simultaneous Regression – Language Arts Literacy, Significant Variables, and Ethnicity-Caucasian

When looking at the simultaneous multiple regression in the area of language arts literacy, it is noted that the ANOVA reported in Table 150 shows the model was statistically significant (F=48.115; df=5; p<.001). An examination of the Adjusted R Square (see Table 149) indicates that 2.6% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in the model. The Durbin-Watson (1.163) (see Table 149) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which examines multicollinearity between the variables entered in the model, is 1-R^2. The tolerance value must be greater than 1-R^2 to meet the collinearity threshold. For this model, 1-R^2 is .739. Table 151 shows that the tolerance value for all variables is greater than .739, suggesting that no collinearity issues are present in this model. Table 151 lists the significance of each of the variables in the regression. This model indicates that each of the variables is significant (p<.001) with the exception of EC Participation (.170) which is not a significant contributor. Of

the significant variables in this model, they each contribute to the variance of the overall model

as indicated: Economically Disadvantaged, 4.5%; Limited English Proficient, 2.9% (to non-

Limited English Proficient students); Special Education, 11.7%; and Ethnicity-Caucasian, 1.9%.

Table 146

Descriptive Statistics

	Mean	Std. Deviation	N
G3 LAL Score	195.639	21.6953	667
Economically Disadvantaged	.372	.4837	667
Limited English Proficient	.072	.2586	667
Special Education	.844	.3631	667
Early Childhood Program Participation	.678	.4677	667
Ethnicity - Caucasian	.145	.3528	667

Table 147

Correlations

		G3 LAL Score	Economically Disadvantaged	LEP	Special Education	EC Program Participation	Ethnicity - Caucasian
Pearson Correlation	G3 LAL Score	1.000	.311	-.235	.362	.172	.207
	Econ Disadvantaged	.311	1.000	-.154	.074	.093	.307
	Limited English Proficient	-.235	-.154	1.000	-.024	-.193	-.098
	Special Education	.362	.074	-.024	1.000	.163	-.057
	EC Program Participation	.172	.093	-.193	.163	1.000	.112
	Ethnicity - Caucasian	.207	.307	-.098	-.057	.112	1.000
Sig. (1-tailed)	G3 LAL Score	.	.000	.000	.000	.000	.000
	Econ Disadvantaged	.000	.	.000	.028	.008	.000
	Limited English Proficient	.000	.000	.	.266	.000	.005
	Special Education	.000	.028	.266	.	.000	.070
	EC Program Participation	.000	.008	.000	.000	.	.002
	Ethnicity - Caucasian	.000	.000	.005	.070	.002	.
N	G3 LAL Score	667	667	667	667	667	667
	Econ Disadvantaged	667	667	667	667	667	667
	Limited English Proficient	667	667	667	667	667	667
	Special Education	667	667	667	667	667	667
	EC Program Participation	667	667	667	667	667	667
	Ethnicity - Caucasian	667	667	667	667	667	667

Table 148

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Ethnicity - Caucasian, Special Education, Limited English Proficient, Early Childhood Program Participation, Economically Disadvantaged[b]	.	Enter

a. Dependent Variable: G3 LAL Score

b. All requested variables entered.

Table 149

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.517[a]	.267	.261	18.6467	.267	48.115	5	661	.000	1.163

a. Predictors: (Constant), Ethnicity - Caucasian, Special Education, LEP, Early Childhood Program Participation, Economically

Disadvantaged

b. Dependent Variable: G3 LAL Score

Table 150

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	83646.984	5	16729.397	48.115	.000[b]
	Residual	229828.938	661	347.699		
	Total	313475.922	666			

a. Dependent Variable: G3 LAL Score

b. Predictors: (Constant), Ethnicity - Caucasian, Special Education, LEP, Early Childhood Program

Participation, Economically Disadvantaged

Table 151

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	173.136	2.085		83.050	.000					
	Econ Disadvantaged	9.521	1.591	.212	5.985	.000	.311	.227	.199	.882	1.134
	Limited English Proficient	-14.319	2.878	-.171	-4.976	.000	-.235	-.190	-.166	.943	1.061
	Special Education	20.439	2.031	.342	10.062	.000	.362	.364	.335	.960	1.042
	EC Program Participation	2.207	1.605	.048	1.375	.170	.172	.053	.046	.927	1.079
	Ethnicity - Caucasian	8.570	2.173	.139	3.944	.000	.207	.152	.131	.888	1.126

a. Dependent Variable: G3 LAL Score

Table 152

Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions					
				(Constant)	Econ Disadv	LEP	Special Education	EC Program Participation	Ethnicity - Caucasian
1	1	3.445	1.000	.01	.03	.00	.01	.02	.02
	2	1.053	1.808	.00	.04	.59	.00	.00	.14
	3	.755	2.137	.00	.01	.28	.01	.03	.58
	4	.461	2.734	.00	.88	.02	.00	.06	.23
	5	.210	4.049	.05	.04	.08	.19	.84	.02
	6	.076	6.728	.93	.00	.02	.78	.05	.01

a. Dependent Variable: G3 LAL Score

Table 153

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	158.817	213.872	195.639	11.2070	667
Residual	-58.3420	59.4258	.0000	18.5766	667
Std. Predicted Value	-3.286	1.627	.000	1.000	667
Std. Residual	-3.129	3.187	.000	.996	667

a. Dependent Variable: G3 LAL Score

Logistic Regression – Language Arts Literacy, Significant Variables, and Ethnicity-Caucasian

The logistic regression model for language arts literacy with all significant variables as identified through the initial multiple and logistic regressions included is significant ($\chi^2 = 131.404$, $df = 5$, $N = 667$, $p<.001$). The Nagelkerke R Square (.239) (see Table 158) indicates that 24% of the variance in NJ ASK 3 Language Arts Literacy achievement can be explained by predictor variables entered in this logistic regression model. Table 160 shows that Economically

Disadvantaged ($p<.001$), LEP ($p<.010$), and Special Education ($p<.001$) were significant

contributors to the model. This table also indicates that EC Participation (.311) and Ethnicity-

Caucasian (.106) were not significant contributors to the model. The Exp (B) (see Table 160)

indicates that students in each of the subcategories are more likely to pass the NJ ASK 3

Language Arts Literacy by the number of times indicated after each subcategory: Economically

Disadvantaged (2.5), LEP (0.2), and Special Education (8.6). Table 156 indicates that the model

and prediction of a student passing NJ ASK 3 Language Arts Literacy is improved by each of the

variables individually (all $p<.001$) with the exception of Ethnicity-Caucasian which is $p<.050$.

Block 0: Beginning Block

Table 154

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 LA Results - 1 = P	.0	350	0	100.0
	and AP, 0 = PP	1.0	317	0	.0
	Overall Percentage				52.5

a. Constant is included in the model.

b. The cut value is .500

Table 155

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-.099	.078	1.631	1	.202	.906

Table 156

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Economically Disadvantaged	45.695	1	.000
		Limited English Proficient	22.507	1	.000
		Special Education	60.612	1	.000
		Early Childhood Program Participation	12.348	1	.000
		Ethnicity-Caucasian	9.346	1	.002
	Overall Statistics		115.476	5	.000

Block 1: Method=Enter

Table 157

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	131.405	5	.000
	Block	131.405	5	.000
	Model	131.405	5	.000

Table 158

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	791.620[a]	.179	.239

a. Estimation terminated at iteration number 5 because parameter
estimates changed by less than .001.

Table 159

Classification Table

			Predicted		
			NJ ASK 3 LA Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 1	NJ ASK 3 LA Results - 1 = P	.0	283	67	80.9
	and AP, 0 = PP	1.0	151	166	52.4
	Overall Percentage				67.3

a. The cut value is .500

Table 160

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Economically Disadvantaged	.932	.185	25.245	1	.000	2.539
	Limited English Proficient	-1.476	.436	11.470	1	.001	.229
	Special Education	2.155	.323	44.475	1	.000	8.628
	Early Childhood Program Participation	.193	.191	1.026	1	.311	1.213
	Ethnicity-Caucasian	.430	.266	2.619	1	.106	1.537
	Constant	-2.445	.337	52.573	1	.000	.087

a. Variable(s) entered on step 1: Economically Disadvantaged, LEP, Special Education, Early Childhood Program Participation, Ethnicity-Caucasian.

Simultaneous Regression – Mathematics, Significant Variables, and Ethnicity-Caucasian

When looking at the simultaneous multiple regression in the area of mathematics, it is noted that the ANOVA reported in Table 165 shows the model was statistically significant (F=36.124; df=5; p<.001). An examination of the Adjusted R Square (see Table 164) indicates that 2.1% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in the model. The Durbin-Watson (1.268) (see Table 164) indicates that there is no significant correlation between residuals. The equation for collinearity tolerance, which

examines multicollinearity between the variables entered in the model, is $1-R^2$. The tolerance

value must be greater than $1-R^2$ to meet the collinearity threshold. For this model, $1-R^2$ is .792.

Table 166 shows that the tolerance value for all variables is greater than .792, suggesting that no

collinearity issues are present in this model. Table 166 lists the significance of each of the

variables in the regression. This model indicates that each of the variables is significant ($p<.001$)

with the exception of EC Participation (.691) which is not a significant contributor. Of the

significant variables in this model, they each contribute to the variance of the overall model as

indicated: Economically Disadvantaged, 4.3%; Limited English Proficient, 3.8% (to non-Limited

English Proficient students); Special Education, 4.8%; and Ethnicity-Caucasian, 3.6%.

Table 161

Descriptive Statistics

	Mean	Std. Deviation	N
Gr3 Math Score	211.816	41.8952	669
Economically Disadvantaged	.372	.4838	669
Limited English Proficient	.075	.2632	669
Special Education	.843	.3640	669
Early Childhood Program Participation	.676	.4685	669
Ethnicity - Caucasian	.146	.3539	669

Table 162

Correlations

		Gr3 Math Score	Econ Disadv	LEP	Special Education	EC Program Participation	Ethnicity - Caucasian
Pearson Correlation	Gr3 Math Score	1.000	.309	-.252	.232	.129	.258
	Econ Disadvantaged	.309	1.000	-.148	.069	.091	.302
	Limited English Proficient	-.252	-.148	1.000	-.034	-.204	-.086
	Special Education	.232	.069	-.034	1.000	.166	-.054
	EC Program Participation	.129	.091	-.204	.166	1.000	.106
	Ethnicity - Caucasian	.258	.302	-.086	-.054	.106	1.000
Sig. (1-tailed)	Gr3 Math Score	.	.000	.000	.000	.000	.000
	Econ Disadvantaged	.000	.	.000	.038	.009	.000
	Limited English Proficient	.000	.000	.	.193	.000	.013
	Special Education	.000	.038	.193	.	.000	.083
	EC Program Participation	.000	.009	.000	.000	.	.003
	Ethnicity - Caucasian	.000	.000	.013	.083	.003	.
N	Gr3 Math Score	669	669	669	669	669	669
	Econ Disadvantaged	669	669	669	669	669	669
	Limited English Proficient	669	669	669	669	669	669
	Special Education	669	669	669	669	669	669
	EC Program Participation	669	669	669	669	669	669
	Ethnicity - Caucasian	669	669	669	669	669	669

Table 163

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Ethnicity - Caucasian, Special Education, Limited English Proficient, Early Childhood Program Participation, Economically Disadvantaged[b]	.	Enter

a. Dependent Variable: Gr3 Math Score

b. All requested variables entered.

Table 164

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.463^a	.214	.208	37.2803	.214	36.124	5	663	.000	1.268

a. Predictors: (Constant), Ethnicity - Caucasian, SpEd, LEP, Early Childhood Program Participation, Econ Disadvantaged

b. Dependent Variable: Gr3 Math Score

Table 165

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	251026.865	5	50205.373	36.124	.000^b
	Residual	921449.521	663	1389.818		
	Total	1172476.386	668			

a. Dependent Variable: Gr3 Math Score

b. Predictors: (Constant), Ethnicity - Caucasian, Special Education, LEP, Early Childhood Program

Participation, Economically Disadvantaged

Table 166

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	182.077	4.159		43.774	.000					
	Econ Disadvantaged	17.909	3.166	.207	5.656	.000	.309	.215	.195	.887	1.128
	LEP	-30.960	5.651	-.194	-5.479	.000	-.252	-.208	-.189	.941	1.063
	Special Education	25.208	4.042	.219	6.237	.000	.232	.235	.215	.961	1.041
	EC Program Participation	1.276	3.205	.014	.398	.691	.129	.015	.014	.923	1.084
	Ethnicity - Caucasian	22.348	4.311	.189	5.184	.000	.258	.197	.178	.894	1.119

a. Dependent Variable: Gr3 Math Score

Table 167

Collinearity Diagnostics

						Variance Proportions			
Model	Dimension	Eigenvalue	Condition Index	(Constant)	Econ Disadv	LEP	Special Education	EC Program Participation	Ethnicity - Caucasian
1	1	3.445	1.000	.01	.03	.00	.01	.02	.02
	2	1.040	1.820	.00	.04	.61	.00	.00	.13
	3	.764	2.123	.00	.01	.25	.01	.03	.59
	4	.464	2.725	.00	.88	.02	.00	.06	.24
	5	.210	4.046	.05	.04	.09	.20	.84	.02
	6	.076	6.714	.93	.01	.03	.78	.05	.01

a. Dependent Variable: Gr3 Math Score

Table 168

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	151.117	248.818	211.816	19.3853	669
Residual	-116.4699	91.4390	.0000	37.1405	669
Std. Predicted Value	-3.131	1.909	.000	1.000	669
Std. Residual	-3.124	2.453	.000	.996	669

a. Dependent Variable: Gr3 Math Score

Logistic Regression – Mathematics, Significant Variables, and Ethnicity-Caucasian

The logistic regression model for mathematics with all significant variables as identified through the initial multiple and logistic regressions included is significant ($\chi^2 = 103.961$, $df = 5$, $N = 669$, $p<.001$). The Nagelkerke R Square (.196) (see Table 173) indicates that 20% of the variance in NJ ASK 3 Mathematics achievement can be explained by predictor variables entered in this logistic regression model. Table 175 shows that Economically Disadvantaged ($p<.001$), LEP ($p<.001$), Special Education ($p<.001$), and Ethnicity-Caucasian ($p<.010$) were significant contributors to the model. EC Participation (.524) was not a significant contributor to the model.

Table 169 indicates that, just by chance, one can predict 62% of the time if a student will pass

the NJ ASK 3 Mathematics, which is significant. The Exp (B) (see Table 175) shows that

students in each of the subcategories are more likely to pass the NJ ASK 3 Mathematics by the

number of times indicated after each subcategory: Economically Disadvantaged (2.5), LEP (0.3),

Special Education (4.0), and Ethnicity-Caucasian (2.2). Table 175 shows that the model and

prediction of a student passing NJ ASK 3 Mathematics is improved by each of the variables

individually (all *p*<.001) with the exception of EC Participation which is *p*<.010.

Block 0: Beginning Block

Table 169

Classification Table

			Predicted		
			NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		Percentage
	Observed		.0	1.0	Correct
Step 0	NJ ASK 3 Math Results - 1 = P	.0	0	252	.0
	and AP, 0 = PP	1.0	0	417	100.0
	Overall Percentage				62.3

a. Constant is included in the model.

b. The cut value is .500

Table 170

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.504	.080	39.846	1	.000	1.655

Table 171

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	Economically Disadvantaged	41.003	1	.000
		Limited English Proficient	27.128	1	.000
		Special Education	38.939	1	.000
		Early Childhood Program Participation	9.686	1	.002
		Ethnicity-Caucasian	16.342	1	.000
	Overall Statistics		98.769	5	.000

Block 1: Method=Enter

Table 172

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	103.961	5	.000
	Block	103.961	5	.000
	Model	103.961	5	.000

Table 173

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	782.352[a]	.144	.196

a. Estimation terminated at iteration number 4 because parameter
estimates changed by less than .001.

Table 174

Classification Table

	Observed	Predicted		Percentage Correct
		NJ ASK 3 Math Results - 1 = P and AP, 0 = PP		
		.0	1.0	
Step 1	NJ ASK 3 Math Results - 1 = P and AP, 0 = PP .0	92	160	36.5
	1.0	39	378	90.6
	Overall Percentage			70.3

a. The cut value is .500

Table 175

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Economically Disadvantaged	.878	.196	20.109	1	.000	2.406
	Limited English Proficient	-1.288	.346	13.847	1	.000	.276
	Special Education	1.388	.243	32.701	1	.000	4.005
	Early Childhood Program Participation	.120	.189	.406	1	.524	1.128
	Ethnicity-Caucasian	.804	.298	7.268	1	.007	2.235
	Constant	-1.029	.251	16.820	1	.000	.358

a. Variable(s) entered on step 1: Economically Disadvantaged, LEP, Special Education, Early Childhood Program Participation, Ethnicity-Caucasian.

These models indicate that in both language arts literacy and mathematics, early childhood program participation is not a significant contributor to or a reliable predictor of academic achievement as measured by the NJ ASK 3.

Summary of Results

The purpose of this study was to evaluate the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3. Quantitative research methodology was utilized to gather and analyze data related to the purpose of the study. This case study reviewed and analyzed data from one P-12 school district in central New Jersey.

Data analysis was conducted in two stages. First, the data analysis began with an in-depth look at the influence of early childhood program participation as measured by the NJ ASK 3 in the areas of language arts literacy and mathematics when controlling for individual variables. For each of the individual variables, multiple and logistic regressions were run in the areas of language arts literacy and mathematics. The purpose was to see how the primary variable, early childhood program participation, interacted with the other variables.

Results from the data that was collected and analyzed through regressions revealed that early childhood program participation was significant in all categories for both language arts literacy and mathematics. In looking at subcategories of students, various subcategories of students were deemed significant contributors. These results also varied by language arts literacy and mathematics. In the area of language arts literacy, the subcategories that were significant contributors and reliable predictors of student performance included Ethnicity-Hispanic, Ethnicity-African American, Ethnicity-Other, Economically Disadvantaged, Limited English Proficient, and Special Education. In the area of language arts literacy, the subcategory that was not a significant contributor and reliable predictor of student performance was Gender. For the NJ ASK 3 mathematics, there were additional subcategories of students that were not significant contributors and reliable predictors of student performance. In the area of mathematics, the subcategories that were significant contributors and reliable predictors of

student performance included Ethnicity-Hispanic, Economically Disadvantaged, Limited English Proficient, and Special Education. In the area of mathematics, the subcategories that were not significant contributors and reliable predictors of student performance included Gender, Ethnicity-African American, and Ethnicity-Other.

Based upon this preliminary analysis, the researcher then wanted to examine how early childhood program participation in one P-12 school district in central New Jersey influenced performance in the areas of language arts literacy and mathematics when controlling for all significant variables. Based on this, the researcher ran simultaneous and logistic regressions with early childhood program participation and all other significant variables to ascertain the significance of early childhood program participation on the overall model. In order to control for each of the original ethnicities entered in the initial regressions, the simultaneous and logistic regressions including all significant variables was run with Ethnicity-Caucasian.

Results from the simultaneous regression for language arts literacy indicated that all of the variables that showed significance in the original multiple and logistic regression remained significant in this regression with the exception of early childhood program participation. When running a logistic regression on the same significant variables, the results indicated that all variables remained significant with the exception of early childhood program participation and Ethnicity-Caucasian, which were not significant contributors to the model. These results indicate that, although significant on an individual level, when looking at the overall model, early childhood program participation is not a significant indicator of academic achievement on the NJ ASK 3 for language arts literacy.

Mathematics results presented similar findings to that of the language arts literacy analysis. In the area of mathematics, results from the simultaneous regression indicated that all

of the variables that showed significance in the original multiple and logistic regression remained significant in this regression with the exception of early childhood program participation. When running a logistic regression on the same significant variables, the results indicated that all variables remained significant with the exception of early childhood program participation, which was not a significant contributor to the model. These results indicate that, although significant on an individual level, when looking at the overall model, early childhood program participation is not a significant indicator of academic achievement on the NJ ASK 3 for mathematics.

Chapter V includes a connection to the research findings, an analysis of the NJ ASK 3 results, a summary of the overall results, conclusions that might be drawn from this study, and implications for policy, practice, and future research.

Chapter V

ANALYSIS AND SUMMARY

Introduction

The purpose of this study was to evaluate the influence of early childhood program participation on academic achievement by grade 3. For this study, data was collected from one P-12 school district in central New Jersey in order to examine the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3. A quantitative approach to this research was used to remove opinions and perceptions from the data collection. The original sample included information for 696 students. Students were not identified during the data collection. Student data was organized and analyzed for trends related to the purpose of this study. Data was reorganized and information was extrapolated based upon various subcategories of students. A summary of findings follows.

Connection to Research Findings

The findings from the first portion of this study not only connect to, but substantiate, the research sited in the Literature Review. Numerous factors influence student learning and success including academic, social, and behavioral development, parental involvement, and interactions with students. When looking at ways in which primary and elementary students can be successful in school, three main factors surfaced throughout the research. These areas include school readiness, preschool participation, and the affects of early instruction on later school success.

In the area of school readiness, discussions center on the opportunity to provide young learners with the skills required to be successful academically, socially, and behaviorally. These skills need to be acquired at a young age so that the student can apply the skills to school situations while learning the necessary academics. Goldstein (2007) addressed the increased demands in kindergarten classrooms which resulted in the need for students entering kindergarten to have knowledge of print, letter/sound recognition, and writing skills. Justice et al. (2009) extended this discussion to include not only skill-based competencies in language arts literacy and mathematics but also the ability of students to control their social, behavioral, and self-regulatory skills to improve social interactions and communication within their learning environment.

In order to prepare for the demands of school and to allow for student success from the beginning of their academic careers, much of the research reviewed supported preschool participation. Students who attend preschool programs prior to entering kindergarten often have the opportunity to not only learn academics, but also begin to develop the social, emotional, and behavioral skills necessary to be successful in school. Dockett et al. (2007) identified that inadequate interpersonal skills inhibit learning. Their research findings indicated that students lacking interpersonal skills were more likely to have conflicts with their teachers and were often socially excluded by peers. This impacted the student's individual learning as well as the classroom dynamics for the group.

Preschool programs have been identified to affect later school success. When students have the opportunity to attend early childhood programs, they often acquire the academic and social skills they need to be successful in school. Stacks and Oshio (2009) looked at the success of kindergarten students based upon their preschool experience. They reported that, controlling

for mental age and preschool experience, children with strong social skills as measured by the number of friends they had when entering kindergarten, built more friendships and made greater gains in academic performance than their peers with less established friendships at the beginning of their kindergarten year. Stacks and Oshio (2009) reported that the teachers said that those students who come to kindergarten ready to learn are those who are physically healthy, have developed social skills, and are academically curious. Overall, much of the research identified the benefits of early childhood program participation on later school success.

The ability of the school administrator and teacher to provide programs and instruction for the skill set a child brings to school as well as participation in a preschool program may affect the child's later school success. Much of the available research indicated the benefits of preschool participation on later school success in terms of academics, social skills, and behavioral needs. Research is available on many different facets of preschool programs. One can find information on Head Start, private, and public preschool programs. Research is available that looks at rural, suburban, and urban programs. If interested in programs beyond the United States, research is available in those areas as well. While the available research measured different factors and reviewed various student needs, most of the research indicated the benefits of early childhood program participation on academic achievement. The results of this study indicate that there are benefits to young learners when attending an academically-based early childhood program.

Summary of Results

The purpose of this study was to evaluate the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3. This case study reviewed and analyzed data from one P-12 school district in central New Jersey. Results from the first portion of the data collection and analysis of regressions revealed that the interaction of another independent variable with early childhood program participation was significant in most, if not all, subcategories for both language arts literacy and mathematics. In the area of language arts literacy, significant results were noted in six out of seven subcategories. In the area of mathematics, significant results were noted in four out of seven subcategories. Specifically, looking at the subcategories in the area of language arts literacy, significant contributors and reliable predictors of student performance included Ethnicity-Hispanic, Ethnicity-Black, Ethnicity-Other, Economically Disadvantaged, Limited English Proficient, and Special Education. In the area of language arts literacy, the subcategory that was not a significant contributor and reliable predictor of student performance was Gender. In the area of mathematics, significant contributors and reliable predictors of student performance included Ethnicity-Hispanic, Economically Disadvantaged, Limited English Proficient, and Special Education. In the area of mathematics, the subcategories that were not significant contributors and reliable predictors of student performance included Gender, Ethnicity-Black, and Ethnicity-Other.

Based upon this preliminary analysis, the researcher wanted to examine how early childhood program participation in one P-12 school district in central New Jersey influenced performance in the areas of language arts literacy and mathematics when controlling for all significant variables. Based on this, the researcher ran simultaneous and logistic regressions

with early childhood program participation and all the other significant variables to ascertain the significance of early childhood program participation on the overall model. In order to control for each of the original ethnicities entered in the initial regressions, the simultaneous and logistic regressions including all significant variables were run with Ethnicity-Caucasian.

Results from the simultaneous regression for language arts literacy indicated that all of the variables that showed significance in the original multiple and logistic regressions remained significant in this regression with the exception of early childhood program participation. When running a logistic regression on the same significant variables, the results indicated that all variables remained significant with the exception of early childhood program participation and Ethnicity-Caucasian, which were not significant contributors to the model. These results indicate that, although significant on an individual level, when looking at the overall model, early childhood program participation is not a significant indicator of academic achievement on the NJ ASK 3 for language arts literacy.

Mathematics results presented similar findings to that of the language arts literacy analysis. In the area of mathematics, results from the simultaneous regression indicated that all of the variables that showed significance in the original multiple and logistic regression remained significant in this regression with the exception of early childhood program participation. When running a logistic regression on the same significant variables, the results indicated that all variables remained significant with the exception of early childhood program participation, which was not a significant contributor to the model. These results indicate that, although significant on an individual level, when looking at the overall model, early childhood program participation is not a significant indicator of academic achievement on the NJ ASK 3 for mathematics.

The results of the majority of the data analysis of this study connect to the Literature Review and much of the available research on early childhood program participation. The purpose of this study was to evaluate the influence of early childhood program participation on academic achievement by grade 3. This study focused on students in one P-12 school district in central New Jersey in order to examine the influence of early childhood program participation on academic achievement as measured by the NJ ASK 3. For the three cohorts of students utilized in this study, in most cases, early childhood program participation in this school district allowed for academic achievement as measured by the NJ ASK 3. Based upon the research questions and available data for this study, seven subcategories of students were measured in each academic area, language arts literacy and mathematics. Significant results were noted in six of the seven language arts literacy subcategories and four of the seven mathematics categories. Significant results were not noted in one of the seven language arts literacy subcategories (Gender) and in three out of seven mathematics subcategories (Gender, Ethnicity-African American, and Ethnicity-Other). Based upon the results of this study, when compared to the research, the first portion of the analysis supports the hypothesis that early childhood program participation may influence academic achievement by grade 3.

Based upon this preliminary analysis, the researcher then examined how early childhood program participation in one P-12 school district in central New Jersey influenced performance in the areas of language arts literacy and mathematics when controlling for all significant variables. Results from the simultaneous regression for language arts literacy indicated that all of the variables that showed significance in the original multiple and logistic regression remained significant in this regression with the exception of early childhood program participation. When running a logistic regression on the same significant variables, the results indicated that all

variables remained significant with the exception of early childhood program participation and Ethnicity-Caucasian, which were not significant contributors to the model. In the area of mathematics, results from the simultaneous regression indicated that all of the variables that showed significance in the original multiple and logistic regression remained significant in this regression with the exception of early childhood program participation. When running a logistic regression on the same significant variables, the results indicated that all variables remained significant with the exception of early childhood program participation, which was not a significant contributor to the model. These results indicate that, although significant on an individual level, when looking at the overall model, early childhood program participation is not a significant indicator of academic achievement on the NJ ASK 3 for language arts literacy or mathematics.

Conclusions

The purpose of this study was to evaluate the influence of early childhood program participation on academic achievement by grade 3. This study was conducted to provide for a better understanding of early childhood program participation on academic achievement by grade 3 in one P-12 school district in central New Jersey. Quantitative research methodology was utilized to gather and analyze data related to the purpose of the study. Data was collected for this case study from one P-12 public school district in central New Jersey. The researcher worked with school district personnel to obtain student data for three cohorts of students. These cohorts included students in grades 4, 5, and 6 during the 2013-2014 school year. The original pool of data included information for 696 students. Student data was organized and analyzed for trends related to early childhood program participation and academic achievement as measured

by the NJ ASK 3. Data was reorganized and information was extrapolated based upon various subcategories of students.

The data analysis examined various subcategories of the total population. The results of this portion of the study indicated that, for this school district, students who attended the early childhood program performed in the proficient or advanced proficient range as measured by the NJ ASK 3 in the areas of language arts literacy and mathematics. Overall, students who attended the early childhood program in this district had higher mean (LAL – 198, MA – 216) and median (LAL – 200, MA – 212) scores in each area of the NJ ASK 3 than the students who entered the school district after kindergarten (mean: LAL – 190, MA – 204; median: LAL – 188, MA – 201).

After looking at the NJ ASK 3 results by total population, data on subcategories of students was analyzed to measure the significance of each population on academic achievement as measured by the NJ ASK 3 in the areas of language arts literacy and mathematics. Seven subcategories of students were statistically analyzed for each content area, language arts literacy and mathematics. Based upon the results of these regressions, significant results were noted in six of the seven language arts literacy subcategories and four of the seven mathematics categories. Results of this portion of the research indicated that, for most cases in this P-12 school district, early childhood program participation provides a better chance for academic achievement in language arts literacy and mathematics as measured by the NJ ASK 3.

Once the individual subcategories were analyzed, the researcher examined how early childhood program participation in one P-12 school district in central New Jersey influenced performance in the areas of language arts literacy and mathematics on the NJ ASK 3 when controlling for all significant variables. Results from the simultaneous and logistic regressions for language arts literacy and mathematics indicated that the independent variables that showed

significance in the original multiple and logistic regression remained significant in this regression with the exception of early childhood program participation and Ethnicity-Caucasian, which were not significant contributors to the model. These results indicated that, although significant on an individual level, when looking at the overall model, early childhood program participation is not a significant indicator of academic achievement in language arts literacy or mathematics as measured by the NJ ASK 3.

The results of this research indicate that, when looking at individual variables, early childhood program participation may be beneficial but, on a larger scale, program participation may not impact academic achievement by grade 3. While examining these results, the researcher contemplated the implications of this study. Looking at the individual variables with early childhood program participation would lead one to believe that participation in these programs could have an influence on the academic achievement of these students. If that is the case, one might consider the next steps to ensure the funding and implementation of quality early childhood programs. Once the researcher ran the regressions looking at early childhood program participation in the overall model, the results changed. If early childhood programs do not impact academic achievement by grade 3, administrators and teachers may consider the need to keep such programs. If it is determined that these programs do not influence academic achievement then one might ask why districts and the New Jersey State Department of Education are funding such programs if they are not effective. Funding and resources might be better distributed to other programs or activities to assist students with academic achievement. More research in different types of school districts needs to be completed before determining the influence of early childhood program participation on academic achievement.

Study Limitations and Possible Impact of Results

Limitations to this study could have impacted the overall results. This quantitative case study collected data from one P-12 school district in central New Jersey. While research is available on the influence of early childhood programs in various settings and environments throughout the country and the world, this research looked at one district. Information gleaned from this study may be applicable to the school district from which the data was obtained, as well as like school districts, but it may not be applicable to all school districts in New Jersey. Although this research includes valuable information on the affects of various components of early childhood programs, the results of this study may not necessarily be accurate for all P-12 school districts in New Jersey matching the demographics of this school district.

A second limitation to this study may be the quantitative approach to data collection. A quantitative approach to this research was used to remove opinions and perceptions from the data collection. The researcher was interested in collecting pure data. In looking at early childhood programs, there are a number of different philosophies as to how and why to teach young learners. Many educators and administrators have varying opinions as to what is best for early childhood students. By looking strictly at the data, it removes the perceptions of others as it relates to student development and academic achievement. A limitation of this study could be absence of administrator and teacher perceptions of day-to-day instruction and activities in the early childhood setting in this school district.

A third limitation to this study may be the use of three cohorts of students for the purposes of data collection. In trying to control for variables related to the sample population, these three cohorts were chosen for two reasons. First, these students took the most current version of the NJ ASK 3. During the time these students sat for the NJ ASK 3, district

curriculum was consistently written to the appropriate standards as outlined by the State of New

Jersey. The NJ ASK 3 during each of these school years was written, at minimum, to the 2009

NJ Core Curriculum Content Standards (NJ CCCS). During the 2012-2013 school year, the New

Jersey State Department of Education required that curriculum documents in language arts

literacy and mathematics be modified to align with the Common Core State Standards (2010).

As per the New Jersey State Department of Education, if curriculum documents are aligned with

the Common Core State Standards (CCSS), the curriculum addresses the same standards as the

NJ CCCS and offers extension activities, therefore the students will be exposed to the topics and

content assessed on the NJ ASK 3. The second reason why these three cohorts of students were

selected is because the early childhood program was consistent for the three years in which these

students would have participated in preschool and/or kindergarten. The limitation associated

with using information from these three cohorts, or any varying cohorts of students, is that the NJ

ASK 3 changes each year based upon the results of the assessment. While the assessment

measures similar skills and concepts, the same questions are not utilized on the assessment each

year. A different iteration of the assessment was given to each cohort as per the way in which

the State of New Jersey creates and modifies the assessment each year. Each assessment,

though, should be measuring the same or similar skills as assessed through the NJ CCCS.

One additional limitation to this study is related to the students who did not participate in

the early childhood program in this district. Data for this research was analyzed based upon

participation in this district's early childhood program. Information as to early childhood

program participation in another setting was not obtained for students who entered the district

after kindergarten. Students who entered this district after kindergarten may have participated in

a high-quality early childhood program in another district or private school.

Recommendations for Policy, Practice, and Future Research

Recommendations for Policy

Based upon the analysis and results of this research, the following implications are
identified in the area of policy:

1. Necessity of Early Childhood Programs. Policy makers should utilize the research to
    determine if early childhood programs are effective for students. If it is determined
    that early childhood programs are effective, policy makers should provide funding for
    such programs. If it is determined that the early childhood programs are not effective,
    policy makers should not mandate such programs.

2. Entrance Birth Date for Preschool and Kindergarten Students. Policy makers should
    consider standardizing the entrance date for preschool and kindergarten students
    throughout the State of New Jersey. Currently, local public school districts set the
    birth date for students entering kindergarten programs. This date may be different
    from one district to the next. Setting a state-wide entrance birth date for preschool
    and kindergarten students would allow for continuity between all public school
    districts.

3. Entrance Assessment for Preschool and Kindergarten Students. Policy makers should
    consider entrance assessments based upon the New Jersey Preschool Standards of
    Learning for preschool students and the NJ Core Curriculum Content Standards and
    Common Core State Standards for kindergarten students. A baseline of information
    on the students would allow for an equal distribution of students across classes in a

school and the ability for students to travel between school districts with consistent

information related to the academic and social-emotional growth.

4. Financial Assistance for the Implementation of Early Childhood Programs. Policy

makers should consider funding the implementation of early childhood programs

throughout the state for all districts. Prior to the implementation of the Preschool

Standards for Learning in 2010, the New Jersey State Department of Education

shared with school districts the plan for mandated preschool programs. The New

Jersey State Department of Education was not willing or able to fund these programs

for districts not in need based upon their socio-economic status so implementation of

the programs was not required. A funding plan could be outlined where assistance is

provided for program start-up and gradually removed as the districts build their own

budgets in this area. Supporting districts in this endeavor would allow for better

prepared students in school districts throughout the state of New Jersey.

Recommendations for Practice

Based upon the analysis and results of this research, the following implications are

identified in the area of practice:

1. Effective Early Childhood Programs. Administrators and teachers should continually

analyze data from their early childhood programs to determine the effectiveness for

students. If programs are not effective, they should either be changed to become

effective as measured by a data source or resources should be put into other programs

that demonstrate an impact on student learning and academic achievement.

2. Information Sessions for Parents. Administrators and teachers may wish to build into

   their school calendars information sessions for parents on a regular and consistent

   basis. Related to this study, information sessions could be offered to parents of

   students in the early childhood program from before they register through their early

   years of education. Programs could be centered on the registration process, what to

   expect the first year, academics, social-emotional growth, and how to help students at

   home, to name a few.

3. Transition Programs and Activities. Administrators and teachers may wish to create

   transition programs and activities for parents and students. These programs or

   activities would facilitate the transition into school for the first time, between levels

   within the early childhood program, and into the primary grades. Programs and

   activities could be scheduled for parents and students, separately and together, so that

   they have an understanding of what each will experience as well as information to

   allow the parents and students to work together as they transition through the

   program.

4. Parental Support. Once the students begin the program and the initial workshops are

   complete, administrators and teachers may wish to provide continued support to

   parents. This support could be presented in a variety of ways. In order for parents to

   have an understanding of classroom practices and procedures, the teacher may wish

   to have a weekly newsletter indicating objectives and activities. This will allow

   parents to speak with their students about class work. Administrators may wish to

   create a weekly or monthly newsletter indicating important school events and

   meetings. Administrators and teachers may wish to be available to parents for

individual meetings in order to support the needs of the parents and students to allow

for a positive school experience. Parent workshops can be made available on a

regular basis at various times of the day and evening. Topics should vary to provide

an area of interest for all parents.

5. Needs of Specific Populations. Administrators and teachers may wish to consider

special programs or support services for specific populations. For example, if a

district has a large number of students from a specific ethnic background, the district

may wish to offer sessions in a particular language or provide materials specific to

that group.

Recommendations for Future Research

Based upon the analysis and results of this research, the following implications are

identified in the area of future research:

1. Student Behavior, School Readiness, and Academic Achievement by Grade 3. While

conducting research for this study, it was evident that little work has been done in the

area of student behavior in early childhood and primary grades as it relates to

academic achievement. Based upon the theories of Piaget, Vygotsky, and Erikson, as

well as the school funding spent on support and intervention programs at these grade

levels, understanding how student behavior affects learning is imperative for

administrators, teachers, and parents.

2. Age Appropriate Programs to Address School Readiness Needs. If additional

research related to student behavior and academics was available, it may provide

direction for administrators and teachers to look for and/or design age-appropriate

programs for early childhood and primary students to address school readiness needs based upon behavior. Providing prevention programs for students before the need arises may help administrators and teachers in a variety of ways. First, students will have access to programs that will help them manage their social, emotional, and behavioral reactions to new situations in school while learning academics. Students will know how to handle a situation with the appropriate skills before the situation arises. The creation of age-appropriate programs to address school readiness needs will allow students to learn the skills necessary to be successful in school before their behavior becomes a problem. Administrators and teachers in school districts across the United States should consider utilizing research on school readiness and academic achievement to modify and enhance their current programs.

3. Decrease in Remediation Programs. Trying to teach students management skills after a problem arises puts them behind on the academic and social skills necessary to be successful in school. These students will spend their time trying to catch up. Providing support for students at an early age may afford districts the opportunity to decrease the remediation programs needed for students in elementary grades, allowing for a reallocation of funds. In the future, districts may be able to decrease or even eliminate programs that are no longer necessary because student needs were supported early in their school experience.

4. Qualitative Study on the Influence of Early Childhood Program Participation on Academic Achievement. Research is needed in the area of qualitative studies related to early childhood program participation and academic achievement by grade 3. This research focused solely on the quantitative aspect of the data. Additional research on

the perceptions of administrators and teachers would benefit the greater understanding of this area of focus.

5. Study Districts in Urban and Rural Communities. The research for this study was limited to one school district in central New Jersey. Research is needed in differing communities including urban and rural communities.

6. Study Districts with Different Demographics. The research for this study was limited to one P-12 school district in central New Jersey with a District Factor Grouping (DFG) of DE as described by the school district funding formula for stratified socio-economic status (SES) generated by the New Jersey State Department of Education. Additional research should be conducted with students in varying DFGs.

7. Study Districts that Administer a Different Assessment to Primary Students. The analysis of academic achievement was measured by the NJ ASK 3. Standardized data on student achievement prior to grade 3 was not utilized in this study. Additional research should be conducted utilizing assessments given in a school district from early childhood through grade 2 or 3. This would allow a reference to measure academic achievement annually to look for trends by grade level and demographic group.

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